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A SYSTEMATIC INVESTIGATION OF THE  
DEVELOPMENT AND IMPLEMENTATION OF  
ACTIVITY-BASED BUDGETING SYSTEMS IN THE  
UK: THREE CASE STUDIES

LANA YAN JUN LIU

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of the requirements of the  
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## ABSTRACT

Literature describes Activity-Based Budgeting (ABB) as an extended and advanced use of Activity-Based Costing (ABC) in a budgeting process. Despite some potential benefits of an ABB approach being suggested by a few academics and management consultants (Brimson & Antos, 1994/1999; Brimson & Fraser, 1991; Kaplan & Cooper, 1998; Sharman, 1996), very limited published literature has reported the actual ABB experience in practice. Empirical evidence from this research suggests that ABB development and implementation processes tend to encounter problems in practice which hinder the progress and even the successful completion of these processes. In the light of a general lack of published literature on ABB, it is thus necessary to explore some fundamental issues on the applications of ABB, investigate factors that may determine the success or otherwise of an ABB implementation, and gain an in-depth understanding of generic and specific attributes of an ABB process within an organisational context.

This study examines the development and implementation of ABB systems in three UK organisations: Scottish Courage Brewing Limited (SCB) (which is a wholly-owned subsidiary of a multinational brewer, Scottish and Newcastle plc), BG Transco plc (Transco) (which is a public listed organisation and operates in the regulated gas supply market), and Crown Prosecution Services (CPS) (which is one of the governmental agencies). In particular, this study examines the relationships between design specification of ABB systems, budgetary purposes and organisational objectives for system implementations on the basis of the ABB experiences gathered from SCB, Transco and CPS.

Four basic themes emerge from this study. First, it is rather difficult to implement the ABB model into a computer system based purely on the concept of 'ABB as a reverse ABC process'. Such difficulty arises due to the fundamental difference in data processing requirements, namely data aggregation in an ABC process and data dissemination in an ABB process. This difference can create major permutation problems and render an ABB system significantly less cost-effective. Second, ABB information can enhance a strategic planning process by providing a clearer cross-functional view of an organisation's activities/processes and highlighting a causal link between performance and resource. In that sense, ABB information is perceived to be useful by top and middle line managers who want to see organisational performance and processes in a holistic manner. The existence of limited cost variability, which has been suggested in the literature as being unsuitable for the application of activity-based systems, does not prevent managers from using activity-based information to support decision making. Third, the success of an ABB implementation is attributed to a combination of internal and external factors. The internal factors are mainly related to technical, behavioural, organisational and cultural perspectives. For example, budgets and budgeting processes can help to form a particular set of norms (culture). The implementation of an ABB system may be perceived as an attempt to break the existing culture by introducing a new set of norms. Organisational restructuring, which destabilises the existing culture, may have some positive impacts on the ABB implementation. Furthermore, supportive administrative arrangements (e.g. standardised

procedures and formalised goal/sub-goal development processes) and budgetary devolution can also help to define the precise role of an ABB system relating to organisational objectives, and thus pave the way for a smooth ABB implementation. Evidence of this research suggests that an ABB implementation can also be substantially influenced by some external factors, such as political concerns, regulator's pressure, and market competition. Fourth, some generic issues relating to the implementation of ABC/M and budgeting systems, such as top management's commitment, simplicity, compatibility and resistance to changes are also relevant to the implementation of an ABB system.

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## PUBLICATIONS AND PAPERS

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An early version of the material in Chapter 5, plus some additional material not used in this thesis, has been published in a collection of papers presented at BAA/AIB conferences held at Sunderland University and Manchester Metropolitan University respectively.

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## **DECLARATION**

No portion of the work referred to in this thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning. Except insofar as stated in the acknowledgements to this thesis the text itself, the work contained herein is that of the author.

September 2002

Lana Yan Jun Liu

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# GLOSSARY AND ABBREVIATION

## General

|      |   |
|------|---|
| ABB  | Activity Based Budgeting                  |
| ABC  | Activity Based Costing                    |
| ABCM | Activity Based Cost Management            |
| ABM  | Activity Based Management                 |
| BPR  | Business Process Re-engineering           |
| JIT  | Just-In-Time                              |
| PPBS | Planning Programming and Budgeting System |
| ZBB  | Zero Base Budgeting                       |

## Scottish Courage Brewing

|              |  |
|--------------|--|
| Cost Control | A customised software ABC package which was designed to deal with Scottish Courage’s costs. It is accustomed to cost with fixed nature, thus, variable costs have to be calculated in computer spreadsheets and then input to this package.  |
| DDE link     | Data transfer link which enables the transfer of variable costs data from computer spreadsheets to Cost Control.   |
| S & N        | Scottish & Newcastle plc., which is a publicly listed multi-national company and whose major business is brewing, beer retailing and leisure business. During the course of this case study, S & N has moved away from leisure business to concentrate on brewing and beer retailing business. Scottish Courage Brewing is the production wing of this plc.. |
| SCB          | Scottish Courage Brewing Ltd.  |

## British Gas Transco plc

|         |  |
|---------|--|
| ACC     | Area Control Centre  |
| ATS     | Area Transmission System   |
| LDZ     | Local Distribution Centre.   |
| NCC     | National Control Centre  |
| NTS     | National Transmission System   |
| Ofgem   | Director General of Gas and Electricity Market. It is the regulator of Transco |
| Transco | British Gas Transco plc  |

## Crown Prosecution Services

|                 |  |
|-----------------|--|
| ABC performance | = ‘Should Take’ ABC timings x Caseload (e.g. number of shoplifting cases finalised, number of telephone advice provided to the police) |
| ABC ratio       | A benchmark ratio that compares individual Areas’ ABC performance against the whole 42 Areas’ performances.                            |
| ABC timings     | Activity drivers which are designed to measure the time spent on various activities.   |
| Area managers   | Managers at Area level, including CCP, AreaBM and BCP  |
| AreaBM          | Area Business Manager  |
| BCP             | Branch Chief Crown Prosecutor  |
| C.J.S.          | Criminal Justice System  |
| CCP             | Area Chief Crown Prosecutor  |
| CEMC            | Chief Executive Management Committee   |
| CIS             | Corporate Information System, which consists of its ABC model  |
| CPS             | Crown Prosecution Services   |
| IRPMB           | Internal Resource Performance Management Branch  |



# Chapter 1            Introduction

## 1.1.            Research on Activity-Based Budgeting

Activity-Based Budgeting (ABB) is a term that refers to the practice of applying an Activity-Based Costing (ABC) system to budgeting processes (Kaplan & Cooper, 1998). The framework and the design of ABB processes have been reported in the literature by management consultants and academics (Brimson & Fraser, 1991; Brimson & Antos, 1994/1999; Kaplan & Cooper, 1998; Sharman, 1996).

A framework for ABB was proposed by management consultants Brimson and Fraser (1991)<sup>1</sup> shortly after the emergence of ABC in the late 1980s<sup>2</sup>. This framework combines a number of well-proven management practices drawn mainly from priority base budgeting and Total Quality Management (TQM), together with ABC management concepts (Brimson & Fraser, 1991, p.42) (see Chapter 2 for more details). The main purpose of this ABB framework is to enhance processes for planning and controlling expected activities of an organisation and to derive a cost-effective budget that meets forecasted workload and agreed strategic goals (Brimson & Antos, 1994).

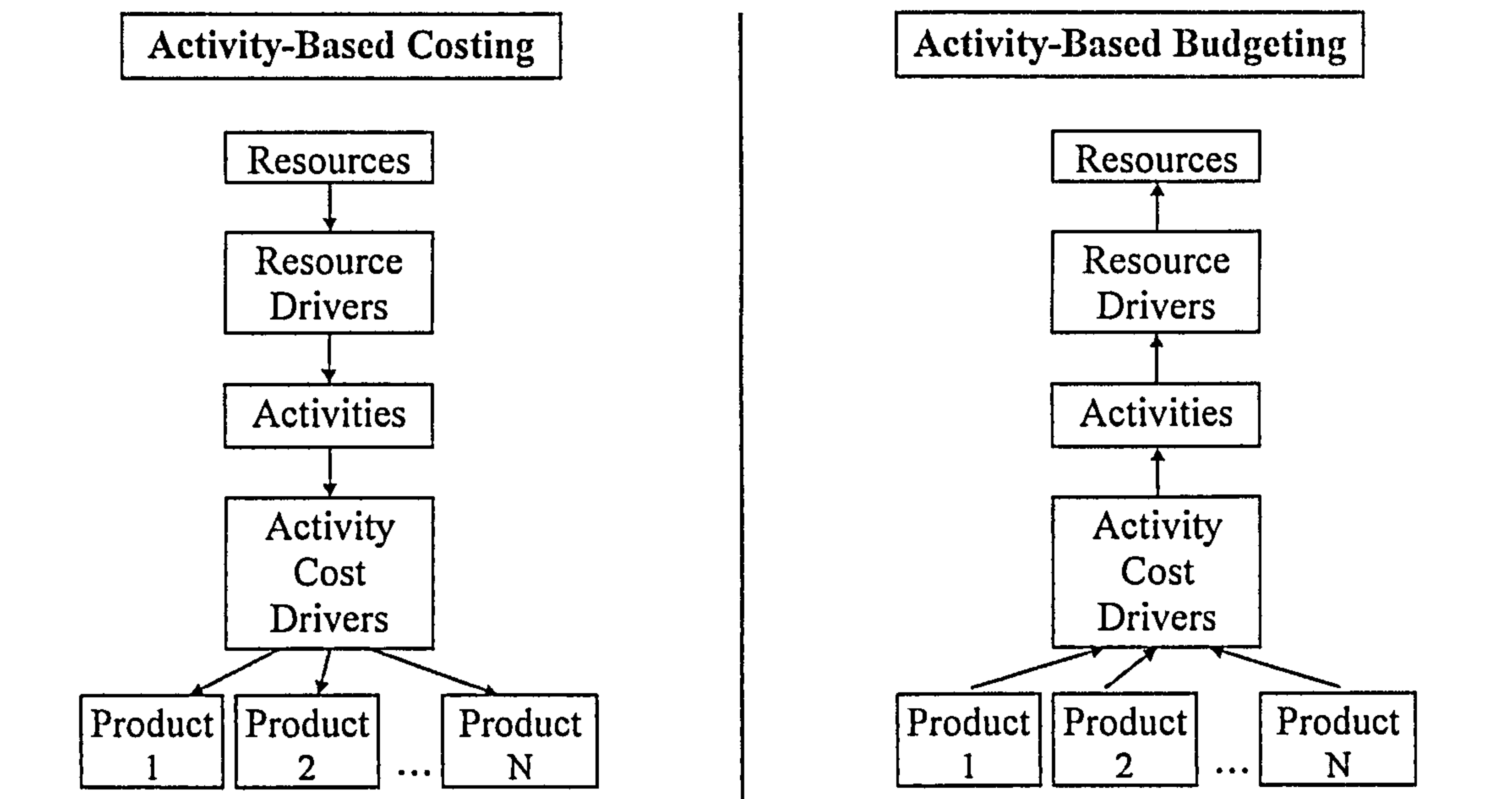
An ABB process was broadly described as reversing the methods of cost ascertainment following an ABC perspective (Kaplan & Cooper, 1998) (see Figure 1.1). The process starts with generic planning and budgeting, the purpose of which is to estimate the next period's sales and production volumes. It then proceeds with a forecast of the demand for organisational activities to meet the planned targets and the calculation of the resource demands needed to sustain these activities. Next the actual resource supply needed to meet the calculated activity demands can be determined. Finally the practical capacity of resources to perform forecasted activities can be determined.

---

<sup>1</sup> This was the first article published on ABB approach which stated that this approach was '..... Developed by consultants Coopers and Lybrand Deloitte'.

<sup>2</sup> Johnson (1992) has expressed his doubts on the emergence of ABC since the evidence indicated that General Electric had pioneered the ABC methods (i.e. applying activity cost analysis in managing indirect costs) in the early 1960s. Johnson and Kaplan (1987) have revealed that many firms began to experiment with alternative allocation mechanisms in the late 1960s. ABC, however, did not become widely adopted until the late 1980s and earlier 1990s when the emergence of changing manufacturing methods, fierce competition and inexpensive information technology resulted in the requirements for business to seek continuous improvements (Cooper, 1990a).

**Figure 1.1 ABB Process in Reverse of ABC process**



Source from: Kaplan & Cooper, 1998. *Cost and Effect* p. 303.

ABB is regarded as an important budgeting technique by some academics and management consultants because it can potentially reduce the pitfalls of conventional budgeting processes (e.g. across-the-board cuts, a lack of linkage between long-term strategies and short-term actions, and encouraging budget 'padding' or slack) (Borjesson, 1997; Kaplan & Cooper, 1998; Wise, 1988). Based on the above brief descriptions of the ABB framework and process, it can be argued that ABB systems may 'fit' well into the modern business environment. Another attractive aspect of ABB is that the ABB framework enables a planning system to be designed on an enterprise-wide basis so that the planning process of resources and activities which are inextricably linked can be carried out in an integrated manner (Brimson & Fraser, 1991; Glad & Becker, 1994; Sharman, 1996). Theoretically speaking, the ABB approach, i.e. analysing an organisation in terms of activities/business processes and then 'budgeting' based on this information, has the following potential advantages (Brimson & Antos, 1994; Klammer, et. al., 1997; Innes & Mitchell, 1998; Robinson & Liu, 1998):

- Ensure that plans are transmitted to a level at which appropriate and timely actions can be taken;
- Facilitate goal congruence;
- Highlight cost drivers;
- Improve visibility of business processes;

- Encourage strong team work across the entire organisation – from the top management to front line employees;
- Eliminate budget slack and break the tendency to support ‘empire building’;
- Support strategic planning and management decision making processes;
- Support continuous improvement of business processes and performances;
- Enable appropriate funding of business activities;
- Enhance support for making business decisions.

## **1.2. The Need to Clarify the Design and Implementation Issues of ABB Systems from a Practical Perspective**

In recent years, business organisations have been motivated to make radical changes to their traditional business thinking and operational methods in response to changes in the competitive economic environment in which they are operating (Arunagiri & Rao, 1992; Berliner & Brimson, 1988; Doyle, 1994). These ongoing changes are mainly driven by globalisation, deregulation, and rapid development of computer and information technology (Hope & Fraser, 1997; Marchant, 1998). The proliferation of the Internet technology, for example, has enabled the emergence of ‘e-commerce’ which radically changes the traditional supply chain and promotes aggressive competition between suppliers to produce low-cost and fast delivery services. Business organisations, therefore, have the need to place significant emphasis on lean operations in order to survive and succeed in the face of fierce competition. Consequently new manufacturing and management philosophies and cost accounting measures have been introduced in response to this need. Some of the better known paradigms include: TQM, Just-In-Time (JIT), Manufacturing Resource Planning (MRP), balanced scorecard (Kaplan & Norton, 1996), ABC (Cooper, 1989; Cooper & Kaplan, 1988), Activity-Based Management (ABM) (Brimson & Antos, 1994; Cooper et al, 1992a/b), and Economic Value-Added (EVA) (Achstatter, 1995; Stewart, 1991; Sunderland & Kane, 1996). It is claimed by their advocates that, if implemented successfully, these new paradigms can help business organisations to measure their business processes better and to reduce the influence of uncertainty on their business operations.



Business operations, especially leaner ones, require careful planning in order to ensure continuity and flexibility of business processes and to achieve optimum utilisation of organisations' resources. Budgeting contributes to this aim as it is used by most business organisations as a means of planning and control to allocate limited resources in order to sustain the business operations and to ensure consistency between long-term objectives and short-term business actions (Boyns, 1998; Drury, 1996; Horngren, et al., 1999a). Therefore, effective, accurate and efficient budgeting paradigms are crucial to many business organisations. Conventional budgeting methods have been criticised for not satisfying modern business organisations' needs to achieve efficient control over the allocation of limited resources (Borjesson, 1997; Brimson & Antos, 1999; Newing, 1994). Hence, there is a perceived need to change or improve the conventional budgeting methods. ABB is one candidate to achieve this needed change and improvement. The case for considering ABB in this respect is duly addressed in the following sections (1.2.1-1.2.3).

### **1.2.1      *The Need to Change Conventional Budgeting Methods***

In view of the importance of budgets, attempts have been made over the years to reform the process of budgeting strategically and operationally in order to optimise resource utilisation, to rationalise business processes and to enable attainment of organisational objectives (Barkman, 1997; Grasso, 1997; Wise, 1988). In the 1950s, for example, performance budgeting, which sought to tie budgeting to performance, was introduced to organisations in both private and public sectors in the U.S. and Europe (Ferris & Graddy, 1998; Lightle & Talbott, 1995; Lindberg, et al. 2000; Mol, 1997; Willoughby & Melkers, 2000). However, a lack of any long-term considerations in performance budgeting resulted in short-termism (i.e. with no consideration of the effects of actions on long-term objectives) (GAO, 1997). In the wake of its failure, planning programming and budgeting systems (PPBS) were introduced in the 1960s in an attempt to bridge the gap between budgetary planning and decisions to achieve both long-term and short-term objectives (Shehane, 1994). Zero-base budgeting (ZBB) appeared in the 1970s with an attempt to rationalise the input-output link underlying the budgeting process (Grasso, 1997; Wilhelmi & Kleiner, 1995, Wise, 1988). Although the philosophies behind both PPBS and ZBB are to improve the linkage between budgeting

processes and organisational objectives, the implementation of these two systems is proven to be relatively costly and highly labour intensive (Barkman, 1997; Sytsma, 1998; Drury, 2000). Thus, the simple line item budgeting (in public service) or other conventional budgeting methods are still widely used in current business practice despite the various criticisms of its inadequacy (see Table 1.1) (Borjesson, 1997; Drury, et. al., 1993; Finney, 1993; Hofstede, 1968; Newing, 1994; Prendergast, 1997).

**Table 1.1      Pitfalls in Conventional Budgeting**

| Objective              | Emphasis in practice   | Problem   |
|------------------------|--|---|
| Strategic direction    | Historical extrapolation<br>Arbitrary cuts   | Not linked to strategy<br>Wrong services cut  |
| Allocate resources     | Functional organisation<br><br>Annual process<br>Cost element focus<br><br>Investment benefits understated | Allocation depends on budget holders' negotiating skills<br>Inappropriate cycle times<br>Task outputs not visible, especially indirect<br>Surplus resources not reallocated |
| Continuous improvement | Incremental improvement<br>Costs identified as fixed or variable   | Internally driven<br>Fixed costs not reduced  |
| Common objectives      | Predominantly top down<br>Financial measures   | Lack of commitment<br>Distorts operational decisions  |
| Add value              | After event reporting of actuals<br>Bureaucratic   | Variances not prevented<br>Wasted opportunity   |

Source from: Newing, R., 1994. Out with the old, in with the new, *Accountancy*, July, p.49.

The inadequacy of conventional budgeting is often clearly exposed when it is used to support some of those better known paradigms (e.g. TQM, JIT, MRP, Balanced Scorecard, ABC, ABM, EVA). For example, a MRP system requires adequate information about the resource utilisation in the manufacturing processes. Since the allocation of resources under conventional methods is heavily based on historical financial costing information, conventional budgeting methods provide relatively little support in terms of linking resource deployment with changes made through manufacturing processes. Consequently, variances between budgets and actuals, in a conventional stance, provide relatively little information to reveal the improvement of resource utilisation made before and after adopting the MRP paradigm.

In contrast to conventional methods, information such as ‘activity cost’, ‘output’ and ‘workload’, which is used routinely by ABC and ABM, promotes a growing understanding of business operations which are unveiled by activity analysis. Interests in allocating resources based on ABC information (e.g. the ABB applications) are perceived in practice as addressing the major limitations of conventional budgeting and a natural progression from the successful application of ABC (Business Today, 2000).

### **1.2.2 *Business Organisations’ Interests in ABB***

The enthusiasm and interests in ABB expressed by business organisations have been reported in the literature (e.g. Borjesson, 1997; Brimson & Fraser, 1991; Brimson & Antos, 1999; Foster & Swenson, 1997; Innes & Mitchell, 1995a/b; Kaplan & Cooper, 1998; Newing, 1994; Wise, 1988). Surveys conducted to measure the extent of success of ABC implementation have shown a certain degree of anticipation to extend the use of ABC to ABB. For example, in their survey of ABC implementation in the U.K. large organisations, Innes and Mitchell (1995a) revealed that 29 out of 49 (60%) of ABC users had applied ABC techniques to budgeting and considered their use of ABC in the budgeting process as a fairly important and successful application. On the basis of respondents to their survey which involved 166 ABC users at 132 organisations, Foster and Swenson (1997) also indicated that, to some extent, ABC had been used for budgeting and planning. In their survey of ABC applications within organisations in the logistics sector, Pohlen and Londe (1999) revealed that 19% of 282 surveyed organisations considered ABB as a progression to the use of ABC information.

The interests in ABB have also been extended to government organisations. For example, the government of Ireland was considering the application of ABB as a future support to the allocation of its foreign aid fund (Government of Ireland, 2000). Owing to constraints of public resources, some government organisations in the U.K. were actively seeking better budgeting systems to assist them to allocate and utilise resources more effectively and efficiently (Bromwich & Lapsley, 1997; Likierman, 2001; Midwinter & McGarvey, 2001). The two organisations (i.e. Crown Prosecution Services, a government funded organisation and BG Transco, a government regulated organisation), which have been identified and chosen as two of the three case study



organisations in this research programme, have expressed their interests in ABB and have undergone the implementation of respective ABB systems (see Chapters 6 and 7).

### 1.2.3 *The Need to Clarify the ABB Design and Implementation Issues*

While enthusiasm and interests in ABB exist, as revealed by the surveys mentioned in Section 1.2.2, some issues related to the ABB implementation have not been properly addressed by this type of research. These survey results explain relatively little about:

- *The differences of design specifications between ABB, ABC and ABM models.* Survey results reveal relatively little about the design specification. A lack of clear specification leads to difficulty in ABB design and implementation. For example, how does an organisation use an ABC cost allocation model (i.e. using multiple-stage cost drivers to allocate costs from resources, through activities, to products, services or customers) and ABM models (e.g. using 'workload', 'output' measures to trace through the business processes) to form an ABB model? How does an ABB model developed in a manufacturing organisation differ from one in a government organisation?
- *The extent of ABB applications.* These survey results give relatively limited insights about the extent of ABB application (i.e. a full scaled ABB application as described by Kaplan and Cooper (1998) as opposed to a partial implementation which simply adopts some ABC information in a budgeting process).
- *The existence of obstacles in the actual implementation of ABB.* Since these survey results tend to emphasise on the success measures and the extent of ABC applications, they give relatively little insights into actual ABB implementation processes. The existence of obstacles, faced by ABB system managers, has not been reported in detail.

Thus surveys, as one might expect, do not provide a rich description and analysis either of the form of ABB or of the process and impact of its use in a real organisational context. Moreover, apart from the surveys, very few detailed reports from the academic literature are available on the actual form of ABB in practice and on the

design, implementation issues and users' experiences associated with ABB systems (Dahlgren & Holmstrom, 2000; Robinson & Liu, 1998).

A preliminary investigation into ABB implementation and use, which forms an integral part of this research programme, revealed that organisations pioneering the introduction of ABB have experienced various degrees of difficulty (Robinson & Liu, 1998)<sup>3</sup>. A part of this investigation, which is to identify the extent of the ABB system implementation in the U. K, involves the collection of evidence from some 82 organisations that had participated in a two-year (1996-1997) nation-wide series of 'ABM Workshops'<sup>4</sup>. A simplified presentation of the results of this investigation is shown in Table 1.2. It can be seen from Column A in Table 1.2 that 20 out of 82 (24%) organisations responded positively to the question of 'the adoption of ABB technique' asked during the workshops. This result confirms the relatively high level of interest indicated in the previous section. Despite this level of interest, a follow-up enquiry, which forms a part of the preliminary investigation, revealed that only 5 out of 82 (6%) organisations had actually implemented ABB systems<sup>5</sup>.

The significant difference between the data expressed in columns A and B, as shown in Table 1.2, raises some concern about the actual utilisation of ABB in business organisations. Follow-up enquiries to those participating organisations indicate that some difficulties, which almost inevitably include 'teething problems', are encountered by business organisations in their attempts to implement ABB systems. Two of the few empirical studies of ABB implementation have also revealed the difficulties in ABB implementation. Borjesson (1997) reported in his case study of a Swedish organisation that only two departments within the organisation were able to prepare budgets based on activities and the organisation failed to replace its traditional budgeting process with the ABB process. Dahlgren and Holmstrom (2000) also observed, in their case study of

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<sup>3</sup> A longitudinal research on ABB has been carried out by University of Northumbria at Newcastle. Preliminary investigations involving 82 organisations that participated in Chartered Institute of Management Accountants (CIMA) 'ABM Workshops' indicated that: (1) 20 out of 82 or 24.39% of the participant organisations claimed that they have adopted in some forms of ABB or were actively seeking to adopt ABB; (2) some degrees of difficulty had been experienced during various phases of applying ABB theory to practice (Robinson & Liu, 1998).

<sup>4</sup> The series of 'ABM workshops' was sponsored by Chartered Institute of Management Accountants (CIMA).

<sup>5</sup> During the selection of candidate organisations to form this case study, 4 out of this 5 organisations have experienced some sorts of difficulties and had since ceased to continue their original implementation plans. The experiences of three organisations are described in Chapters 5-7.



Asea Brown Boveri Cewe (ABB, a Swedish manufacturing organisation), that the implementation of ABB, despite positive intentions, remained incomplete.

Table 1.2 Results of Preliminary Investigation Based on the ‘ABM Workshops’

| Sectors                 | No. of participants | *‘Yes’ Response to ‘Adoption of ABB’ (A) | <sup>α</sup> Claim of ‘implemented ABB’ (B) |
|-------------------------|---------------------|--|---|
| Manufacturing           | 28                  | 5  | 1   |
| Public                  | 10                  | 2  | 1   |
| Health & Pharmaceutical | 4                   | 1  | 0   |
| Financial services      | 15                  | 4  | 0   |
| Utilities               | 4                   | 3  | 2   |
| Services                | 16                  | 3  | 1   |
| Higher education        | 3                   | 1  | 0   |
| Research organisations  | 2                   | 1  | 0   |
| Total                   | 82                  | 20                                       | 5   |
|                         | 100%                | 24%                                      | 6%  |

Note: \* represents organisations that responded ‘yes’ to the question of ‘the adoption of ABB technique’ during the workshops.  
<sup>α</sup> represents organisations who replied to the follow-up enquiries on whether they have actually implemented ABB systems.

Apart from the above empirical studies, existing ABB literature provides relatively little evidence from a practical stance in respect of the following important issues:

- The technical design specification of an ABB system,
- Implementation of ABB and its role in facilitating business budgeting processes and integrating with management information systems within an organisation, and
- Users’ perception of the usefulness of an ABB system.

There is, therefore, a need to address the above issues from an empirical stand so that the impacts of various organisational and human factors associated with the technical aspects of an ABB implementation can be clearly understood. In order to fulfil this need, this research aims to address these issues. The theoretical underpinning of this study is based on an understanding of ABC and budgeting *per se* obtained from reviewing prior work on the principles, practices and effects of budgeting in an organisational context (see Chapters 2 and 3).

### 1.3. Objectives of this Research

The objectives for this research programme stem from a lack of empirical evidence available to address the important issues identified above, and from the need to explore the state-of-the-art in ABB practice. The research objectives are to:

- (i) Obtain a rich technical description of the nature of operational ABB systems. Some differentiation and consideration of generic and situational characteristics will be made.
- (ii) Investigate the dynamics of these systems in terms of their designs, implementation and operational processes.
- (iii) Research the views of those involved in ABB: designers of the system; operators of the system; users of the system; and subjects of the system.
- (iv) Identify technical, behavioural, organisational and cultural factors which influence the design, implementation and operation of ABB systems.

In order to achieve these research objectives, a case study research approach<sup>6</sup> is adopted as the basis of the empirical part of the research (which is further explained in Chapter 4). Suitable organisations with actual hand-on experience of ABB are identified and included in the case study research. Data from these organisations forms the basis for the case study research. The empirical results provide insights into ABB from a practical viewpoint so that comparison with the theoretical framework as reported in the literature can be carried out. Furthermore, the use of case study research enables this research to investigate the effects of commonly identified generic budgeting issues in the context of ABB (such as participation, devolution, performance measurement, attainability of organisational goals).

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<sup>6</sup> The case study approach has also been proposed by academics in order to gain detailed and in-depth understanding. For example, Innes and Mitchell proposed further research to investigate 'the claims on the beneficial impact of ABC on their companies through case studies which permit a more direct and detailed investigation of the full (positive and negative) effects of ABC (Innes & Mitchell, 1995a, p. 151)'.

## 1.4. Contribution to Knowledge

As indicated in the literature review (see Chapter 2 & 3) and previous research work (Lyne, 1988), it seems that material related to empirical studies of ABB, budgets and budgeting process from public domain literature is still relatively limited. In addition, calls for empirical study into practices in view of their limited evidences emphasised the perceived need to investigate paradigms, such as ABB, in an organisational context (Ashton, et al, 1991/1995; Otley & Berry, 1994; Scapens & Arnold, 1986).

From the literature, it can be seen that the theoretical framework of ABB has been proposed by a small number of influential academics (e.g. Borjesson, 1997; Cooper & Kaplan, 1999) and promoted by several leading consultants (e.g. Brimson & Fraser, 1991; Brimson & Antos, 1999; Connolly & Ashworth, 1994; Sharman, 1996). There are very few suggestions in the ABB literature that the implementation of ABB may be complex and problematic, and yet the preliminary investigation undertaken as part of this research programme (see Section 1.2) has revealed that a number of organisations pioneering ABB have experienced significant difficulties. This tends to suggest that ABB processes are relatively more complex and difficult than the theoretical proposals in the literature. Hence it is hoped that the results of this research will be of value to both academics and practitioners.

This research makes a contribution to knowledge in the following three areas:

- (i) It provides the first detailed account of ABB implementation in three UK organisations. It includes the perspectives of managers from a wide spectrum of functional areas, hierarchical levels and relationship to the budget.
- (ii) It provides an informed and relatively clear description and understanding of ABB that has been synthesised from practical and theoretical viewpoints.
- (iii) It is the first analytical evaluation of theoretical ABB frameworks in terms of their practical applications and their relationships to generic issues in the prior ABC, ABM, and budgeting literature.

In summary, the units of analysis, the time period under consideration, the linkage of practical issues to the established theoretical frameworks, and the development of a theory of ABB implementation distinguish this research from previous case studies



that, at best, have simply described and presented practical examples of technical aspects of ABB for illustrative purposes.

## 1.5. Outline of the Thesis

The next chapter begins with reviewing the major prevailing traditional and emergent literature to ABB as the standard ways of making a start. However, a major problem confronting a novel researcher in this area is which theoretical perspective is most appropriate. A Ph.D. can be a discovery voyage of searching a theoretical perspective as well as gathering supporting empirical evidence on a question, problem or situation. For example, the initial dilemma faced in this research was to decide upon the theoretical stances, either based on activity-based literature or on budgeting literature. One way of resolving this theoretical dilemma is to choose a perspective in advance and to test its efficiency in the field with a view to confirming, modifying or rejecting it. Another is to carry a variety of possible perspectives into a pilot study to establish which is most meaningful in content and then to test them in the field. This carries the danger of theoretical eclecticism and a lack of focus, but it has the advantage of creating theory from the extant situation and, as was found to be the case here, to permit the insights of a variety of theoretical approaches to inform the actual situation simultaneously. Given the lack of any single comprehensive theory of ABB, this latter case has its attractions as it can help the emergence of a fuller picture of pertinent events, albeit in a somewhat disjointed theoretical framework.

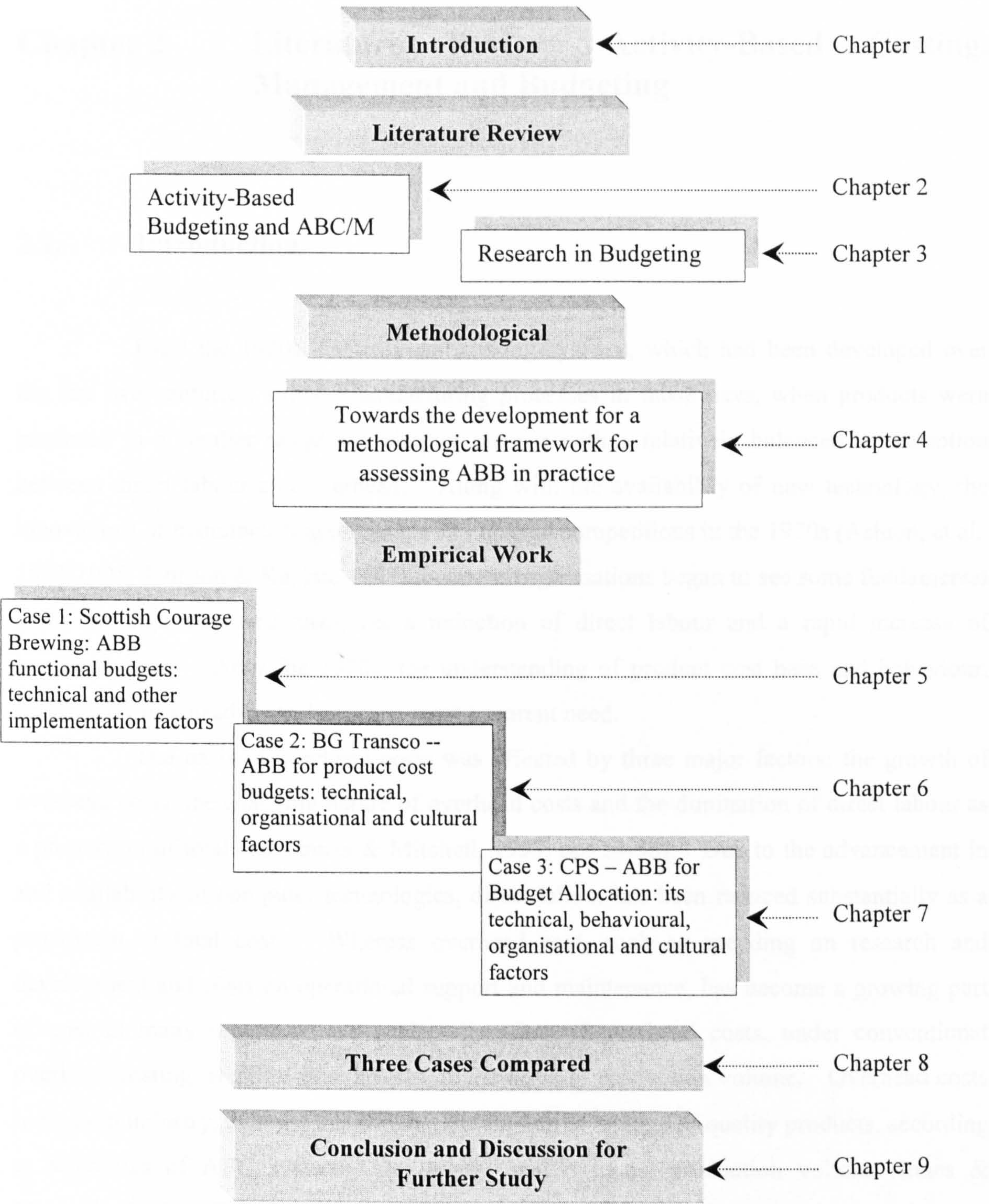
This research thus extends its review of ABB literature into two related stances, namely ABC and Budgeting. The emergence of ABC, and later ABCM, has stimulated a substantial amount of management accounting research. Over the last decade, many studies have revealed a variety of issues on the theoretical and empirical aspects of ABC and ABCM (e.g. Anderson, 1995; Cobb et al, 1993; Cooper, 1988a/b; Cooper, et. al. 1992a; Innes & Mitchell, 1998; Krumwiede, 1998a/b), which have inevitable linkage with the development of ABB. This is discussed in Chapter 2. Budgeting has been an extensively researched topic in management accounting, behavioural science, organisational and cultural studies (e.g. Argris, 1952/1996; Gagliardi, 1990; Hofstede, 1980/1986; Otley, 1978/84; Wildavsky, 1961/64/75). Issues

such as the development of budgeting processes, participation and organisational impacts may inevitably have an influence on the use of ABB and these topics are discussed in Chapter 3. The literature review in ABC and budgeting informs the structure of this research study. Together with the justification of research methodology in Chapter 4, the ultimate choice of triangulation in the case study is made to alleviate undue selectivity and to increase the validity of empirical data collected for this research.

Figure 1.2 illustrates the organisation of the thesis. It is essentially organised into four sections, Chapters 1-3 leading to the development of a conceptual framework for this research, with Chapter 4 providing detail and justification of the theoretical approach to the research design and empirical method chosen. Chapters 5-7 provide the illustration, results and evaluation of the empirical work in respect to the three case study organisations. A comparative analysis of the empirical work is presented in Chapter 8. The conclusions and suggestions for further studies are in Chapter 9.



Figure 1.2      Organisation of Thesis





## **Chapter 2      Literature   Review:   Activity-Based   Costing, Management and Budgeting**

### **2.1.      Introduction**

Until the 1920s, conventional costing systems, which had been developed over the last two centuries, suited manufacturing processes in those days, when products were produced in a smaller range and simpler manner with a relatively balanced consumption between direct labour and overhead. Along with the availability of new technology, the innovations of manufacturing processes and foreign competitions in the 1970s (Ashton, et al., 1991/1995; Johnson & Kaplan, 1987), business organisations began to see some fundamental shifts on their cost structures, i.e. a reduction of direct labour and a rapid increase of overhead costs. After the 1970s, the understanding of product cost base and behaviour, particularly overhead costs, became a most apparent need.

The basis of overhead costs was affected by three major factors: the growth of overhead costs, the changing nature of overhead costs and the diminution of direct labour as a proportion of total cost (Innes & Mitchell, 1993, pp. 54-56). Due to the advancement in and availability of computer technologies, direct labour has been reduced substantially as a proportion of total cost. Whereas overhead cost, such as spending on research and development and costs on operational support and maintenance, has become a growing part of cost in many organisations. The allocation of overhead costs, under conventional overhead costing, is still driven largely on the basis of production volume. Overhead costs in modern industry, to assist the efficient production of a range of quality products, according to advocates of ABC systems, are largely unaffected by production volume (Innes & Mitchell, 1998, p. 7). Rather, the nature of overhead costs represents a series of activities that an organisation carries out not only to support its current production but also to explore future business opportunities. Thus, it becomes obvious that a more appropriate allocation base, or multiple bases to allocate costs based on the direct nature of attribution to the products are needed. The emergence of ABC seems to provide an answer for this need.

Earlier attempts, either consciously or unconsciously, to introduce activity costing can be dated back to the 1940s<sup>1</sup>. The present-day ABC is a result of co-operation between both practitioners<sup>2</sup> and academics to advance management accounting practice. Two academics – Robin Cooper and Robert Kaplan – from Harvard Business School can be credited with the promotion of this popular approach through their series of case study publications (Cooper, 1988a/b; Cooper & Kaplan, 1991a)<sup>3</sup>.

In summary, the emergence of ABC can be attributed to the following two reasons:

- (i) The obsolescence of most organisations' cost accounting methods (especially overhead costing) in the face of the rapid advancement in contemporary business operations.
- (ii) The lack of development in conventional costing systems to reflect the internal changes in the nature of overhead costs and external changes in social, economical and technological developments.

This chapter reviews the literature of ABC, ABCM and ABB respectively. The review within each discipline focuses on definition, design, implementation, and issues arisen from implementation and the use of the respective systems. A building block for the framework of this research is formed on the basis of literature review in this chapter and next chapter (an overview on budgeting literature).

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<sup>1</sup> Aiyathurai, et al. (1991) reported the use of one such method being employed at the Tennessee Valley Authority in the 1940s, Horngren (1990) indicated a method similar to ABC methods used in the calculation of distribution and selling overhead in 1950s, Pyhrr (1973) applied activity analysis in zero based budgeting, Solomons (1968) introduced an ABC idea as a reliable basis for overhead cost computations, and Staubus (1971) formally discussed the term 'activity costing' and its theoretical applications.

<sup>2</sup> The present-day ABC was developed during the 1970s and early 1980s in consulting firms such as Bain & Co. and Boston Consulting Group and in organisations such as Schrader Bellows, John Deere and Union Pacific, together with academics in Harvard Business School (Kaplan & Cooper, 1998).

<sup>3</sup> In their version of the emergence of ABC, Kaplan and Cooper (1998) stated that: 'the term 'activity-based costing' was first used in a John Deere pilot study of a new costing approach (see R. S. Kaplan and A. March, "John Deere Component Works (A)," Harvard Business School Case #9-187-107). The term first appeared in R. Cooper, "Cost Management Concepts and Principles: The Rise of Activity-Based Costing – Part One: What is an Activity-Based Cost System?" Journal of Cost Management, Summer 1988, pp. 45-54; and Cooper and Kaplan, "Measure Costs Right: Make the Right Decisions" Harvard Business Review, September-October, 1988, pp. 96-103.



## 2.2. Activity-Based Costing

### 2.2.1 *Definition*

Generally speaking, ABC is a costing structure based on activities. It is based on the logic that activities consume resource (and thus incur costs) while products consume activities (Cooper & Kaplan, 1988). Thus if the consumption of activities by products can be measured then costs can be tracked, through resource consumption patterns, to products (Innes & Mitchell, 1991/1995b).

Activity-based cost systems, according to Cooper and Kaplan (1992), are used to estimate the cost of producing outputs by the consumption of resources used and activities performed in organisational processes, in that cost causality can be visualised to enable the identification of used and unused activities. Such visibility can be illustrated in the following equations (Ibid.):

$$\begin{aligned} \text{Activity Availability} &= \text{Activity Usage} + \text{Unused Capacity} \\ \text{or} \\ \text{Cost of Activity Supplied} &= \text{Cost of Activity Used} + \text{Cost of Unused Activity} \end{aligned}$$

### 2.2.2 *Design of ABC Systems*

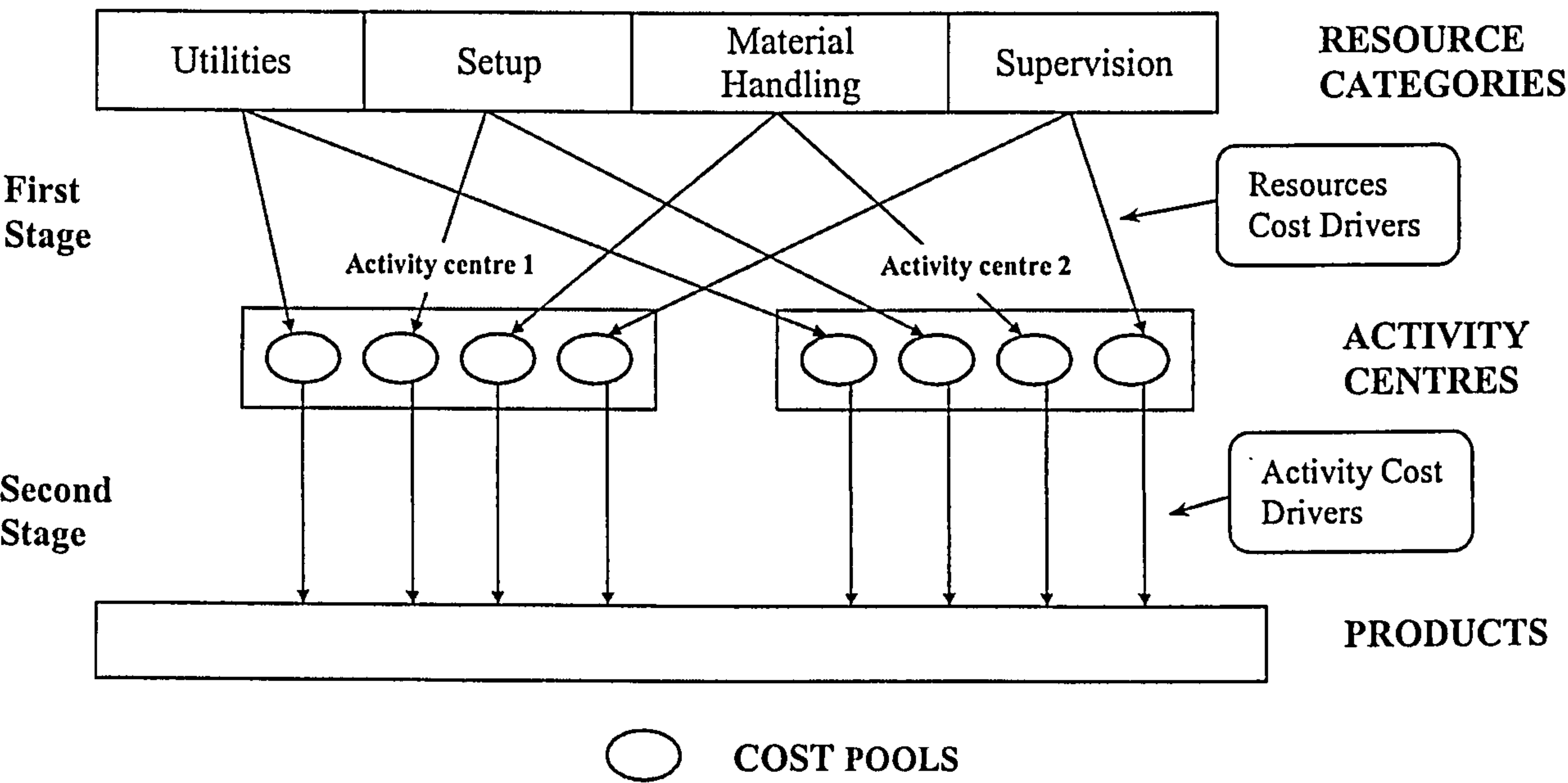
ABC introduces a two-stage method that attributes costs first to production and business activities, and then to products (on the basis of resource usage). The two-stage procedure (see Figure 2.1) describes a basic theme in the design of the ABC system (Cooper, 1987):

*“The first stage takes such resources as direct labour and supervision and splits them up into sections, each related to a segment of the production process. These segments can be machines, ... collections of machines, or even entire departments. ... These costs are then traced, in the second stage, from the*

*cost pool to the product using a measure of the quantity of resources consumed by the product.”*

As shown in Figure 2.1, basically, stage one of an ABC system is to establish a set of cost pools in which each types of activities, which consume resources (direct and overhead), can be identified and traced to. Rate, or cost driver, is determined by linking resources consumed to the activities carried out, rather than unrelated production volume. For example, cost of maintenance is determined by the number or times of routine monthly maintenance (cost driver) required for normal operation, which is not necessarily directly proportional to the production volume. Stage two of an ABC system links all activities to products based on a set of cost drivers that link activities to products. For example, a plant manager carries out a number of activities related to a range of products that he is responsible for. Therefore, he needs to proportion the time he spent on the supervision of existing products and development of new products accordingly.

Figure 2.1 Conceptual Model of an ABC System



Modified from: Beaujon, G. J. & Singhal, V. R., 1990. Understanding the Activity Costs in an Activity-Based Cost System. Journal of Cost Management, Spring, pp. 51-72.

A detailed design of an ABC system can be derived from the following five-steps (Cooper, 1990b):

- (i) *Aggregate actions into activities*: actions, or broader definition of activities, in an organisation can be so vast that it is not economically viable to use a different cost driver for each action. Thus, activities, within ABC systems, are treated as the collection of actions and can be measures by a single driver to trace the costs of those activities to products.
- (ii) *Report the cost of activities*: a certain level of detail is required to report the cost of activities. For example, an ABC system may report the purchasing cost for product X as £10, this amount includes activities such as receiving purchase requests, making enquiries to alternative suppliers, placing orders, confirming delivery, approving payment and sustaining departmental work (e.g. supervision, training, etc.). The system may break the costs down and report the details such as purchase request receiving cost of £1, enquiry cost of £1.5, etc.. The level of details and aggregation depends on the system requirement specified by the management.
- (iii) *Identify activity centres*: an activity centre is a segment of the production process for which the cost of the activities are required. This enables managers to visualise their activities and subsequently helps them to control their activities.
- (iv) *Select first-stage cost drivers*: it traces the costs of inputs into cost pools in each activity centre.
- (v) *Select second-stage cost drivers*: the cost drivers determined at the first stage are reviewed again for their suitability in linking activities to products.

From the above description of the conceptual design of ABC systems it is apparent that the two-stage process is common to both conventional and ABC costing systems (Innes & Mitchell, 1998). Under both systems, costs are pooled and re-allocated to products based on a series of cost drivers. The differences are the number of allocation criterion and the measurement base. Under the conventional approach, the basis of pooling and reallocation utilises a single allocation criterion, normally production volumes or production department cost pools (but not activity cost pools), to re-allocate arbitrarily and reapportion all production overheads, regardless of cause and effect of those overheads to



products. Whereas under ABC, costs, including overhead costs, are put first to a number of activity-based cost centres which are then directly linked to products through a series of cost driver rates (Ibid., pp. 21-23). For example, costs incurred from supporting functions (e.g. maintenance) are directly allocated to products through their own cost driver rates (e.g. number of set-ups). This means clear causal links between activities and their use on final products are inherent in an ABC system.

In addition, where a volume-based measure is used as an allocation rate to all costs in a conventional approach, there will be a systematic distortion in the attachment of all the non-volume related direct costs and overheads to products, i.e. those high volume products will end up subsidising specialist ones. This is because the specialist products (e.g. tailor-made cars that are manufactured according to customers' requirements, such as colour and interior) require more involvement of managers/supervisors, engineers and skilled workers (thus incur more overheads) in comparison to the high volume products. Therefore, if a volume driven cost base (e.g. number of cars) is used to allocate overhead costs, the overhead costs are shown to be more in high volume ones than the specialist ones, simply because of the production volumes. ABC, on the other hand, can use multiple allocation bases for the allocation of overheads, e.g. the proportion of time spent on each product for managers and engineers and number of set-up for skilled workers. Through these multiple allocation bases, the more relevant and accurate costs for the production between specialist and high volume products can be differentiated and reflected accordingly.

Thus although a certain degree of similarity can be observed between conventional and ABC systems, the latter is a refinement of the former via the logic established behind the allocation of costs to products via multiple cost drivers. The benefits of an effective ABC system can be summarised as follows:

- (i) It is a complete overhead activity analysis which focuses a firm's efforts on non-value added costs and ways to reduce or eliminate them (Brimson, 1991). A focus on overhead should lead to reduce transaction complexity via the visibility of cost causality and highlighting of unnecessary overhead. Overhead is no longer treated as an unavoidable or sunk cost, but as avoidable in a long run, which will eventually lead to activity-based cost management (Chalos, 1992).

- (ii) Product costs, even with a limited number of cost drivers being applied to the aggregate product lines, become relatively more accurate than those calculated using direct labour or machine hour-based allocations (Cooper & Kaplan, 1992).
- (iii) An ABC system helps to establish forward focuses on accounting customers (e.g. managers) and estimated future information, rather than on financial accounting, accountants and past information under conventional cost accounting systems (Brimson, 1991).
- (iv) An ABC system, through its use of multiple cost drivers to trace the costs in a manufacturing process, establishes a clear causal link between resources, activities and products (Cokins, et. al., 1993).

### 2.2.3 *Implementation of ABC Systems*

Having reviewed the emergence, definition, designs and benefits of ABC, it seems that ABC can potentially provide more accurate costing information to business practice. However, some studies found that ABC has not been widely adopted in practice (Burns & Scapens, 2000; Bromwich & Hong, 1999; Cobbs, et. al., 1992; Innes & Mitchell, 1995a/1998; Malmi, 1997; Roberts & Silvester, 1996). These studies revealed the following issues related to ABC implementation processes:

- (i) The variations of objectives, rigours and commitment for an ABC implementation (Innes & Mitchell, 1998), i.e. the problems between an organisational functional structure and the extent of ABC applications became obvious when ABC is used not only for product costing but for cost management;
- (ii) The institutional action of existing procedures which hinders change (Burns & Scapens, 2000; Chenhall & Langfield-Smith, 1998; Innes & Mitchell, 1998; Markus, 1983; Scapens, 1994), i.e. that managers and accountants who are accustomed to and have positive opinions about the relevance and usefulness of the existing accounting systems may cast doubt on and/or resist the adoption of new techniques and systems;

- (iii) The costs and difficulties in implementing ABC systems (Cobb et al., 1992/3; Innes & Mitchell, 1995b/1998; Malmi, 1997); and
- (iv) Restrictions of cost variability which may affect the relevance and usefulness of ABC information for decision making (Bromwich & Hong, 1999; Noreen, 1991).

These issues, which appear to relate to ABC implementations, may have a generic nature and bear relevance to other activity-based system implementations, e.g. ABCM and ABB. This is because activity information such as cost drivers and activity unit costs used in an ABC system can be readily incorporated into the structure of an ABCM or ABB system. Further factors affecting an ABC implementation process may re-occur in an ABCM or ABB implementation. Thus it is necessary to review literature on ABC implementation in order to identify a range of issues that are relevant to the study and the understanding of ABB.

The first concern is about variations of a system. The term 'system' can be associated with a number of variations, such as objectives, and technical implications (e.g. software packages and system designs, such as cost drivers and number of activities) and organisational factors (e.g. size and existing procedures). Among them, a system's objective can be regarded as a major source of variation (Innes & Mitchell, 1998). In the case of an ABC system the decisions on what purposes an ABC can serve is a stepping stone towards building a system for product costing, cost management and/or planning (including budgeting). To achieve one or more purposes, an ABC implementation needs to identify relevant activities, cost pools and cost drivers. In this respect, issues arising from and practical problems associated with the implementation processes that aim to achieve some generic objectives may have a generic nature.

Early studies of ABC implementation were carried out by academics and management consultants in the areas of system design specifications, selection of activities and cost drivers, and process design (e.g. Campi, 1992; Cokins, et al., 1993; Cooper, 1990b; Innes & Mitchell, 1995b; Lawson, 1994; Mevellec, 1993; Morrow & Connelly, 1994). On the basis of these studies the existence of some generic issues and steps can be observed. For example, Morrow and Connelly (1994) categorised practical problems associated with ABC implementation into five areas: (1) behavioural, (2) project focus, (3) commitment, (4) data availability, and (5) consistency of approach. Cooper (1990b) suggested that some



common steps can be taken in order to ensure a successful implementation: (1) ABC education, (2) design meetings to ensure the correct approach taken and reach consensus to the design of the system, (3) data gathering, (4) progress meetings to keep management informed and (5) the implementation team updated and results meetings. Taking account of the restriction of time and cost of an ABC implementation, he also identified six major decisions in relation to the design of an ABC system before actual implementation. The decisions to be addressed are (Ibid, 1990b):

- (i) Stand alone or integrated system,
- (ii) Simple or complex design,
- (iii) Level of precision desired,
- (iv) Historical or future orientation,
- (v) 'Ownership' of final system,
- (vi) Whether a formal design plan should be used.

Other researchers supplemented the above steps with other related issues, such as appropriate management processes, nature of behaviour and organisational barriers, that should be considered in an ABC implementation (e.g. Cooper, et al, 1992b; Kleinsorge & Tanner, 1991; Miller, 1990; Norkiewicz, 1994).

Apart from the above, some publications reported the results of investigations on ABC implementations in business organisations and revealed experience gained and lessons learnt. The differences in specifications (in the design of ABC systems) and views expressed by managers and accountants (as reported in those publications) are generally in agreement with theoretical work reported in the literature. More importantly, the possible applications of ABC systems for the purpose of cost management are also addressed in these reports. For example, a PC-based ABC system was used by a small manufacturer to identify non-value-added activities and to provide relevant information for long-term profitability analysis of products (MacArthur, 1993). Eiler and Campi (1990) detailed the steps adopted by an organisation in chemical industry which utilised preliminary diagnosis for business profiling through activity and cost driver analyses.

In summary, those studies of ABC implementation in the early 1990s primarily focused on technical aspect of ABC and were rather oblivious to the fact that ABC systems need to exist in social settings, in which technical implementation may be affected by a wide

range of other non-technical factors. To a certain extent, these publications, according to Innes and Mitchell (1998, p. 76), 'fall into two categories. The first is reflective, usually written by those who have been responsible for designing and running a system. The second type is produced by academics as teaching case studies. Both of these approaches may suffer from a lack of objectivity in the generation and presentation of information.'

In a search for more relevant knowledge of ABC implementation, a series of case studies, adopted from a social science stance, were reported in the literature about the ABC implementation processes and their impacts on organisations and management. From their longitudinal study of an organisation's initiation and implementation of ABC concept, Innes and Mitchell (1991) reported that some benefits have been achieved as a result of ABC implementation (e.g. cost saving, increased visibility of several overhead areas, elimination of non-value added activities in customer servicing and identification of maintenance problem areas). They also revealed some difficulties (e.g. managerial enthusiasm for ABC without being fully aware or prepared for pros and cons in an ABC system, risk of insufficient resources throughout the implementation process, and potential conflict between process information revealed from ABC and functional structure of an organisation). They suggested that some factors, in their view, are essential to achieve a successful ABC implementation. These factors include the establishment of objectives for ABC implementation to match the underlying strategic policies and goals of the firm, top management support, adequate and readily available resources provision, involvement and consultation of staff, and participative approach in data gathering.

Another study which focused on the identification of success factors at various stages of ABC implementation was conducted by Anderson (1995). In her longitudinal investigation of General Motor (GM) between 1986-1993, she first segmented GM's ABC implementation process into four stages (i.e. initiation, adoption, adaptation and acceptance) by adopting Cooper and Zmud (1990)'s Factor-Stage Model as a structure to describe the implementation of ABC at GM. She then found evidence to associate factors with various implementation stages. For example, organisational factors, such as support by upper management and investment in training, are found to affect the various stages significantly in different ways. Other contextual factors, such as competition, relevance to managers' decisions and compatibility with existing systems have varying degrees of impact among the

various stages studied. Besides Anderson (*ibid.*), other two studies have also attempted to segment ABC implementation stages. Gosselin (1997) divided the implementation of ABC into two stages: adoption and implementation. He found that ABC adoption is associated with a 'prospector' strategy and with vertical differentiation whereas ABC implementation is associated with centralised decision making and formalised job procedures, but not with the strategy or vertical differentiation. Krumwiede (1998b) studied the influence of organisational and contextual factors affected on a ten-stage ABC implementation process. He found evidence to support the view that some factors become important as the implementation process proceeds from initial towards final stages. He confirmed earlier studies that organisational factors (i.e. top management support, non-accounting ownership and implementation training) were strongly linked to the probability of reaching the highest stage of an ABC implementation. Contextual factors, on the other hand, which had the potential of distorting costs, appeared to be an important motivator in both the adoption and routinisation stages of an ABC implementation.

A summary of prior empirical studies focusing on factors affecting the 'success' of ABC implementation is listed in Table 2.1.



Table 2.1 Prior Studies in ABC Implementation

| Arthur(s)               | Research Method  | Source  | Implementation Stages  | Measurement of 'Success'   | Main factors influencing 'Success'   |
|-------------------------|--|---|--|--|--|
| Innes & Mitchell (1991) | Case study of one UK based manufacturing organisation  | CIMA, London<br>"Activity Based Cost Management: A Case Study of Development and Implementation"  | <ul style="list-style-type: none"> <li>Initiation</li> <li>Implementation</li> </ul>                                   | Perception by information producers (accountants), users (managers) as well as cost saving | External consultation, top management support, resource adequacy, participative manner in data gathering.  |
| Bhimani & Pigott (1993) | Case study of one British pharmaceuticals company      | <i>MAR*</i> , Vol. 3, pp. 119-132<br>Implementing ABC: a Case Study of Organizational and Behavioural Consequences  | Not segmented  | Perception by factory managers and Head Office managers                                    | External consultation, involvement of selected managers from factory and Head Office, heavy reliance on input from factory managers' knowledge of operational details, information available for both managers at factory and Head Office                                      |
| Anderson (1995)         | Case study of one American organisation                | <i>JMAR*</i> , Vol. 7, pp. 1-51.<br>"A framework of assessing cost management system changes: the case of activity-based costing implementation at General Motors, 1986-1993" | <ul style="list-style-type: none"> <li>Initiation</li> <li>Adoption</li> <li>Adaptation</li> <li>Acceptance</li> </ul> | Successful attainment of stage   | Individual, technological, organisational, task and external environmental factors, including compatibility with existing systems, relevance to manager's decisions, and competition.  |
| Shields (1995)          | Survey of 143 organisations that had implemented ABC   | <i>JMAR*Vol. 7, pp. 148-166.</i><br>"An Empirical Analysis of Firms' Implementation Experiences with Activity-Based Costing   | Not segmented  | Management evaluation and dollar improvement   | Top management support, linkage to quality initiatives and to personal performance measures (pay/appraisal), implementation training and resource adequacy.<br>Technical characteristics of the system (e.g. software and stand-alone systems) are not associated with success |
| Swenson (1995)          | Telephone survey of 50 individuals at 25 organisations | <i>JMAR*</i> , Vol. 7, pp. 167-180.<br>"The Benefits of Activity-Based Cost Management to the Manufacturing Industry"   | Not segmented  | Use and satisfaction with ABC  | Not applicable.  |

| Arthur(s)                | Research Method  | Source  | Implementation Stages          | Measurement of 'Success'  | Main factors influencing 'Success'  |
|--------------------------|--|---|--------------------------------|---|---|
| Innes & Mitchell (1995a) | Survey of U.K.'s largest organisations   | <i>MAR</i> <sup>a</sup> , Vol. 6, pp. 137-153.<br>"A survey of Activity-Based Costing in the U.K.'s Largest Companies"  | ■ Adoption                     | Attainment of stage   | Sale revenue, top management support, continuous improvement  |
| Gosselin (1997)          | Survey of 161 Canadian manufacturing SBU's   | <i>AOS</i> <sup>b</sup> , Vol. 22, No. 2, pp. 105-122<br>"The Effect of strategy and Organizational Structure on the Adoption and Implementation of Activity-Based Costing" | ■ Adoption<br>■ Implementation | Attainment of stage   | Adoption: prospector strategy<br>Implementation: hierarchy organisational structure, centralised decision-making, and formalised job procedures.  |
| Foster & Swenson (1997)  | Survey of 166 ABC users at 132 organisations<br>Field visits to 15 sites                 | <i>JMAR</i> <sup>*</sup> , Vol. 9, p. 109-142.<br>"Measuring the Success of Activity-Based Cost Management and its Determinants"  | Not segmented                  | Usage, decision actions, dollar improvements and management evaluations | Supplementary to Shield (1995)'s factors with years of usage, number of primary applications, link to compensation, champion, cross-functional support and commitment and culture.                                |
| McGowan & Klammer (1997) | Survey of 53 employees from 4 targeted sites   | <i>JMAR</i> <sup>*</sup> , Vol. 9, pp. 217-237<br>"Satisfaction with Activity-Based Costing Management Implementation"  | Not segmented                  | Employee satisfaction with ABC  | Supplementary to Shield (1995)'s factors with clarity of objectives, quality of ABCM information, preparers over users, implementation involvement.   |
| Anderson & Young (1997)  | Surveys and embedded multiple case study of 21 ABC projects in 2 U.S. auto/manufacturers | <i>Working Paper</i> , University of Michigan<br>"Evaluation of Activity-Based Costing Systems: The Impact of Contextual and Procedural Factors"                            | Not segmented                  | Management evaluation, perceived accuracy and use                       | Quality of information system, reward structure, union support, resource adequacy, need for change, individual commitment.  |
| Malmi (1997)             | Case study in a Finnish Company  | <i>MAR</i> <sup>a</sup> Vol. 8, pp. 459-480.<br>Towards Explaining Activity-Based Costing Failure: Accounting and Control in a Decentralised Organisation                   | Not segmented                  | n.a.  | In the context of strategic decision-making the success of ABC cannot depend on whether its results require any actions or decisions to be taken, but on its ability to make a correct diagnosis of the situation |



| Arthur(s)           | Research Method  | Source  | Implementation Stages | Measurement of 'Success'  | Main factors influencing 'Success'   |
|---------------------|--|---|-----------------------|---|--|
| Krumwiede (1998b)   | Survey of 225 members of the Cost Management Group at U.S. manufacturing organisations | JMAR*, Vol. 10, pp. 239-277. "The implementation stages of activity-based costing and the impact of contextual and organisational factors"  | Attainment of stage   | Stage of ABC implementation   | Organisational factors (top management support, non-accounting owner-ship and implementation training)<br>Usefulness of cost information, IT existence, less task uncertainty and larger organisations are more likely to adopt ABC. |
| Innes et al. (2000) | Survey of UK's largest companies   | MAR <sup>α</sup> Vol. 11, pp. 349-362. Activity-Based Costing in the U.K.'s Largest Companies: a Comparison of 1994 and 1999 Survey Results | ■ Adoption            | Success of specific applications (e.g. performance evaluation and improvement) and Size (i.e. larger companies are more likely to adopt). | Both 1994 and 1999's survey results show top management support as a strong impact to success.<br>Involvement of accountants does not have a beneficial effect.  |

Note: JMAR\* – Journal of Management Accounting Research; MAR<sup>α</sup> -- Management Accounting Research; AOS<sup>β</sup> -- Accounting, Organisations and Society.



In summary, ABC implementation issues reported in the literature can be summarised as follows:

- Practical knowledge of applying the conceptual design of an ABC system within an organisation context: this mainly includes the identification of a suitable number of cost drivers and activities, selection of activities that relates to products, linkage between ABC to organisational strategic objectives, and an understanding of capability of existing computer systems to support ABC systems.
- Organisational factors: top management support, resource adequacy, implementation training, and structure of organisation and culture.
- Behavioural factors: participative manner in the process of development and implementation of ABC systems and awareness to individual users' behaviour.
- Other contextual factors: competition, task, quality and relevance of cost information to managerial decisions, size of organisation, compensation and reward, general need for change, and culture.

### **2.3. Activity-Based Cost Management**

While ABC was initially introduced as a method to achieve a relatively accurate product costing, it was soon found to have a wide range of usage for cost management purposes. The inclusion of product and activity costs, where activities are the fundamental building blocks of business process, creates a cross-functional process view, i.e. the ABCM perspective.

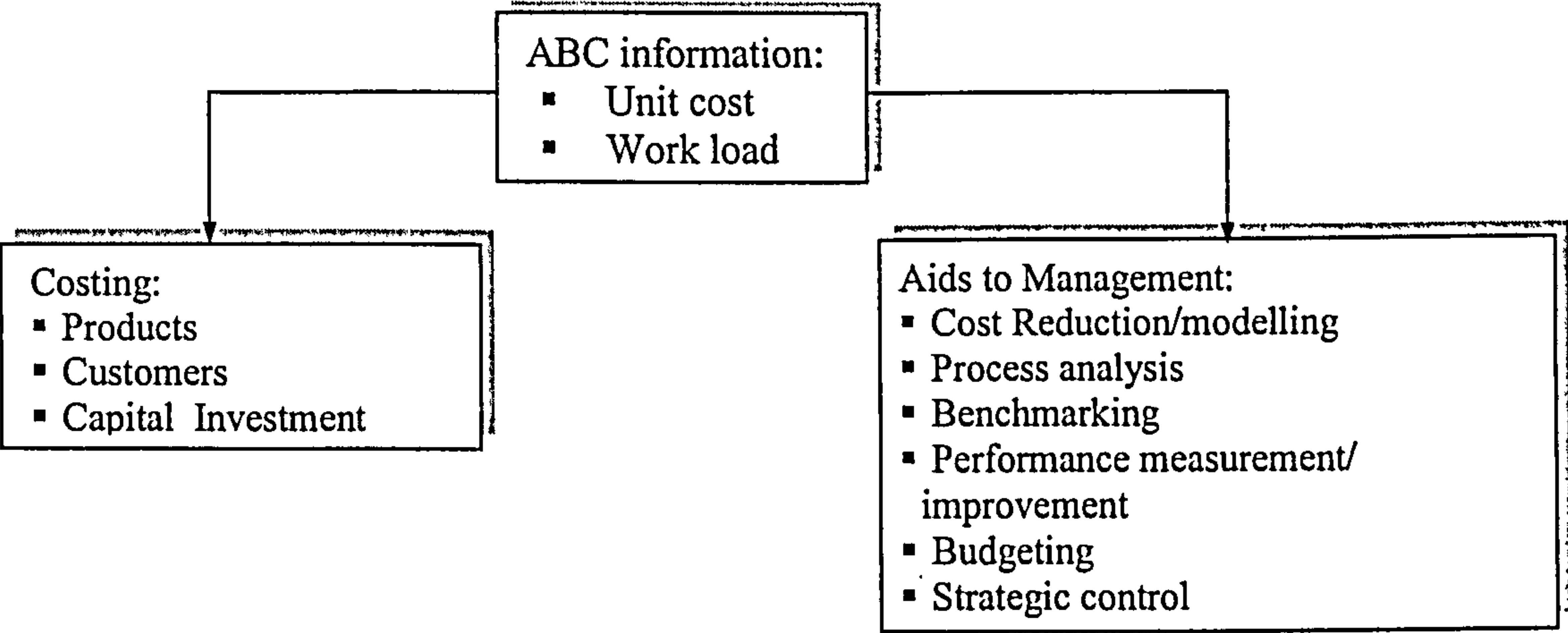
2.3.1 Definition

An ABCM refers to the use of ABC information to highlight activities that incur costs and promote management decisions that are consistent with business operations and lean production<sup>4</sup> (Cooper & Kaplan, 1991b).

2.3.2 Applications of ABCM

Generally speaking, applications of ABCM, or the use of ABC information for management purpose can be broadly divided into two areas, namely costing and management, this is shown in Figure 2.2.

Figure 2.2 The Use of ABC Information



In the case of costing, the causal link between resource, activities and products/services can be connected via cost drivers to individual product lines, thus increasing the visibility of product (customer) costs and its relevant cost components. As a result, cost analysis aiming at cost reduction can be conducted in a relatively simple and

<sup>4</sup> The lean production includes reduction of inventories; process re-engineering within business (e.g. the tendency to use common components and reduction of total quality costs or non-value added cost as a result of quality improvement) and within supply chains (e.g. JIT or minimising costs of ownership through supplier management); customer profitability analysis and decision analysis (via linking product design decisions to manufacturing cost).



effective manner via segregation of types of products (e.g. specialist against high volume ones) and components (e.g. costs for direct and support activities).

For cost management purposes, activity information can be utilised as a part of management information to provide support to management decision-making processes, which often need to examine activities across departmental boundaries in an attempt to re-engineer business processes. In this respect, an ABC process tends to offer relatively rigorous and thorough investigation of the business processes in terms of scope and sophistication.

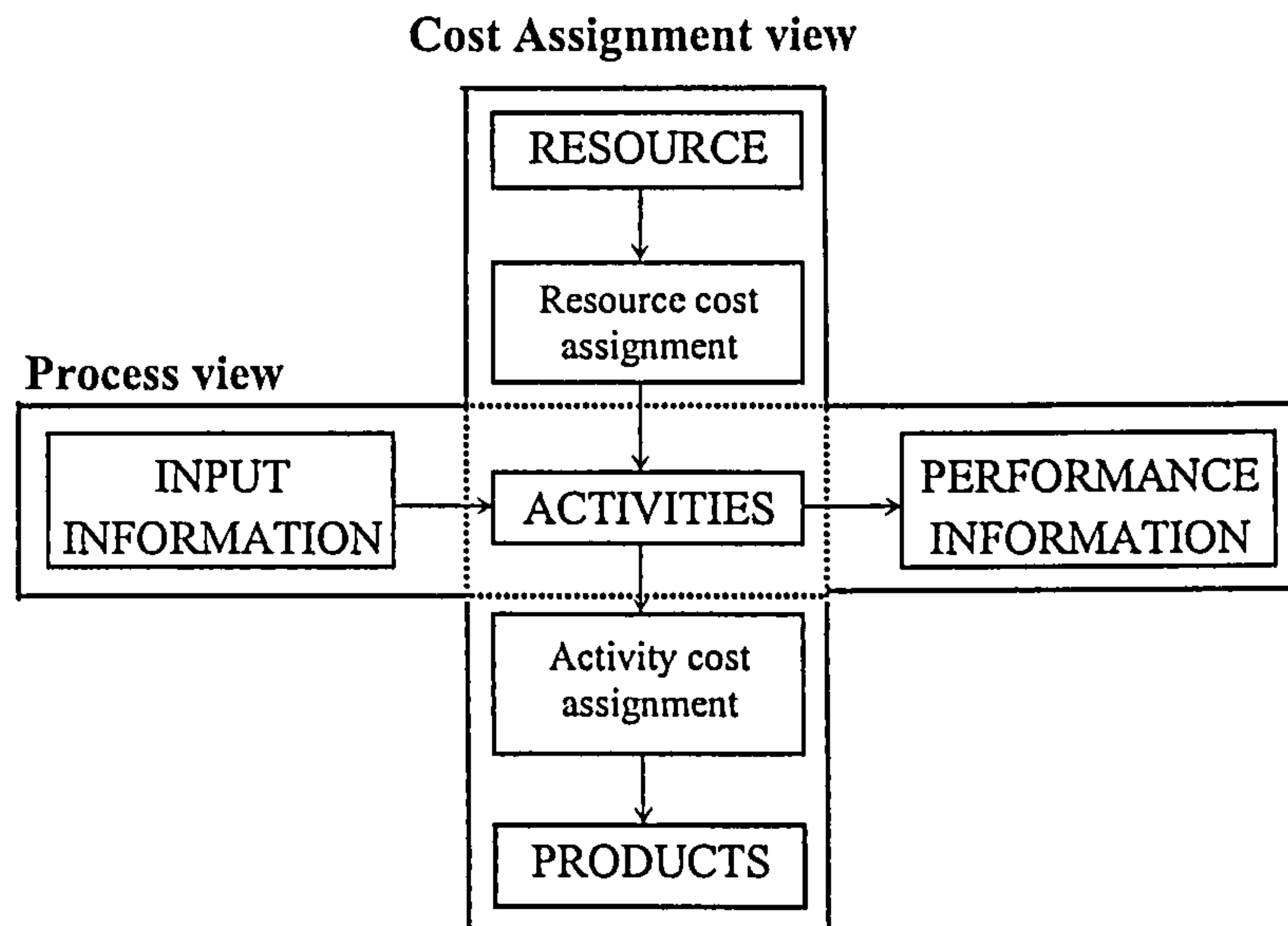
Activity analysis is an integral part of the ABC analysis. Schematically, an activity refers to a unit of work that has identifiable starting and ending points, that consumes resources (inputs) and produces outputs. An organisation thus can be viewed as a system consisting of activities (see Figure 2.3).

**Figure 2.3 An Organisation as a System Consisting of Activities**



On the basis of activities used for ABC purposes and interpretation of activities as basic components of business processes, Raffish (1991) proposed a logic diagram of ABC (see Figure 2.4). As shown in Figure 2.4, the cost assignment view corresponds to the two-stage ABC model (as shown in Figure 2.1). It focuses on the attainment of product cost information and leads cost-related decision making. On the other hand, the ABC information used in a process view corresponds to management purposes. Hence this view is related to an ABM conceptual approach, i.e. utilising ABC information for process and activity management purpose (e.g. process re-engineering and best practice).



**Figure 2.4 Activity-Based Costing Logical Model**

Source: a logical diagram of an ABC model proposed by Raffish (1991), slightly modified.

The versatility of activity-based systems can partly be attributed to the richness of activity information, which contains quantitative and qualitative information. Quantitative information (i.e. costs and workload volume) can be used for cost assignment purpose whereas qualitative information (e.g. activity links, cost drivers, trend, and performance measures) can be utilised to serve the purpose of process control. The qualitative information formed the basis for activity-based cost management (ABCM) and for general management purposes (ABM). According to Cooper et al. (1992a), ABM is more than a system and can be regarded as a management process. They found from their case studies to a number of organisations that:

*'In a successful ABM, managers at an organisation understood that the ABC information enabled them to manage activities and business processes by providing a cross-functional and integrated view of the firm.'*

From the above view, it can be argued that the benefits of ABC can be fully realised by the use of ABCM or ABM. ABC information, by itself, does not invoke actions and decisions leading to improved profits and operating performance. However, such benefits can be reached in ABCM whereby the management institutes a conscious process of organisational change and actions in an attempt to achieve the benefits resulting from the improved insights of ABC analysis.

In conjunction with other management paradigms, such as TQM, JIT, Business Process Re-engineering (BPR), the scope of ABCM has been extended to a variety of disciplines in management accounting, such as performance measurement, customer profitability analysis and budgeting (see Figure 2.2). ABCM has been used to help managers in making strategic decisions, such as outsourcing and decentralisation, at different sectors (including manufacturing, service, not-for-profit and governmental organisations) (Anderson & Narus, 1995; Antos, 1992; Armitage & Russell, 1993; Awasthi, 1994; Carlson & Young, 1993; Chalos, 1995; Cokins, 1994; Datar, et.al., 1991; Donnelly, 1995; Green et al., 1991; Lamond, 1992; Moravec & Yoemans, 1992). For example, Innes and Mitchell (1995a) found in their survey of 251 large U.K. organisations that ABCM has been used for budgeting, cost modelling, customer profitability analysis and performance measurement. Swenson (1995) also found from his field study that apart from the initial use for product costing, the most frequent use of ABC information is to support process improvement and decisions on pricing and product mix.

The common applications of ABCM in practice are revealed in prior empirical studies, such as case studies and survey, the results are summarised in Table 2.2.

**Table 2.2 Activity-Based Cost Management Applications Adopted in Practice**

| Applications                         | Innes& Mitchell (1991) | Bhimani & Pigott (1993) | Andersn (1995)      | Shields (1995)*     | Swenson (1995)                    | Innes& Mitchell (1995a) % | Innes et al. (2000) % | CIMA Workshops' results <sup>a</sup> % |
|--------------------------------------|------------------------|-------------------------|---------------------|---------------------|-----------------------------------|---------------------------|-----------------------|--|
| Cost Reduction                       | x                      | x (product costing)     | x (product costing) | x (product costing) | x (product costing /cost control) | 89.2                      | 90.3                  | 18.0 (identify waste)                  |
| Product/ Service Pricing             |                        |                         |                     |                     | x                                 | 68.9                      | 80.6                  |  |
| Performance measurement/ improvement |                        | x                       | x                   | x                   | x                                 | 60.8                      | 74.2                  | 46.2                                   |
| Cost modelling                       |                        |                         |                     |                     |                                   | 62.2                      | 64.5                  |  |
| Budgeting                            |                        |                         |                     |                     |                                   | 56.8                      | 54.8                  | 24.0                                   |
| Customer profitability analysis      | x (order processing)   |                         |                     |                     | x                                 | 51.4                      | 51.6                  |  |

| Applications                                   | Innes& Mitchell (1991) | Bhimani & Pigott (1993)          | Andersn (1995) | Shields (1995)* | Swenson (1995) | Innes& Mitchell (1995a) % | Innes et al. (2000) % | CIMA Workshops' results <sup>a</sup> %                          |
|--|------------------------|----------------------------------|----------------|-----------------|----------------|---------------------------|-----------------------|---|
| Output decisions                               | x (sourcing)           |                                  |                |                 | x (sourcing)   | 47.3                      | 51.6                  |   |
| New product/ service design                    |                        |                                  |                |                 |                | 35.1                      | 41.9                  |   |
| Stock valuation                                |                        |                                  |                |                 |                | 24.2                      | 16.1                  |   |
| Other applications                             | x (League table)       | x (Capital Investment appraisal) |                | x               |                | 9.5                       | 16.1                  | 19.8 (benchmarking)<br>28.6 (devolve management responsibility) |
| Usable Sample size (for survey only) in number |                        |                                  |                |                 |                | 352                       | 177                   | 82  |

Note: The results revealed in this table are based on two types of empirical studies, i.e. case study and survey. 'x' refers to the application that was found to be in use in the case study organisation; whereas percentage refers to the extent of use of a particular application in the survey for a number of sample size as defined in the last row 'Usable sample size (for survey only) in number'.

\*Shields (1995) uses means test to the four purposes (i.e. activity analysis, product costing, reengineering and performance measurement) of ABC in his survey. This 'x' is combined the results shown in 'the current status of ABC' with 'future objectives of ABC'. Other applications refer to reengineering and activity analysis.

<sup>a</sup>This is a part of questionnaire used in CIMA's ABM workshops, where the use of ABM techniques are asked to participants.

From the results in Table 2.2, it is apparent that the two common applications of ABCM in those studied organisations are in cost reduction and performance measurement. Other various applications include benchmarking (or league table), sourcing, product/service pricing, customer profitability analysis, cost modelling and budgeting. A clear interest in ABB can be seen from three survey results indicated in the Table 2.2 (i.e. Innes & Mitchell, 1995a; Innes, et al, 2000; and CIMA workshops' results).



## 2.4. Activity-Based Budgeting

Among the applications shown in Table 2.2, there is an indication that organisations have already attempted to use of ABC information in budgeting, or ABB. A reason for this is that budgeting is an essential part of an organisational planning process in which organisations adopt and devise strategies to rationalise business actions in order to meet both short- and long- terms objectives, and prepare themselves for uncertainty and competition. Furthermore, some academics and management consultants view ABB as one of the advanced steps of ABC applications which can help an organisation to achieve a forward looking objective in the face of competitions (Brimson, 1991; Brimson & Antos, 1999; Brimson & Fraser, 1991; Harvey, 1991; Kaplan & Cooper, 1998).

In addition, the attention to extend ABC to ABB did not arise suddenly partially because budgeting has always been a popular research topic in management accounting (Otley, 1984). A budget is also a way to translate organisational strategic plans into a measurable form of actions. It is an aid to place direction throughout the organisation and to enable the management to exercise control over the business operations. The conventional approaches to budgeting, which rely largely on conventional costing information (in that its use of volume driven allocation bases to overhead often tends to hide causal link between cost drivers and activities consumed to products/services), provide relatively little information necessary to support managerial decision-making processes. The decisions taken on the basis of conventional budgeting methods often result in drawbacks (which are often being criticised), such as rigid across-the-board cuts, less cost-effectiveness (in comparison between the effort to construct a budget and the usefulness of a budget to management), and cause some dysfunctional behaviour (Chow, et al, 1991; Dunk, 1993s; Nouri, 1994; Prendergast, 1997; Young, 1985). The use of ABC information in budgeting (i.e. ABB), on the other hand, enables managers to visualise the causal links between business processes and ABC product costs, and this can help managers to make sensible budget decisions without causing adverse influences to productivity, quality or morale, provided the ABB system is implemented successfully.

In contrast to the large amount of research work done in the area of ABC and ABCM over the last decade, this research reveals that research in ABB is still at a very early stage in Europe (Dahlgren & Holmstrom, 2000), the U.K, and USA (Kaplan & Cooper, 1998).

The following sub-section introduces definition and the design of ABB systems, potential benefits of ABB and ABB implementation with a detailed review of empirical studies. A building block of the research framework is then presented.

### **2.4.1      *Definition and Design of ABB***

#### **2.4.1.1.      Definition**

The term “ABB” is inevitably linked with ABC, because of the historical link between costing methods and budgeting (Boyns, 1998). More importantly, the benefits of ABC information (e.g. the visibility of number of activity occurrences and causal links of resources and products via cost drivers ABB) makes the ABC an attractive extension to budgeting (Table 2.2 shows evidence to support this view). For example, using an ABB approach, an overall budget reduction of 10% may not be translated to an ‘across-the-board’ cut, but to a 15% reduction of overhead for a high-volume product line and a 5% increase of overhead for a low-volume product line. This is simply because the low-volume product line requires more support activities (thus more overhead) than a high-volume product line.

Academic advocates have suggested that an ABB approach is much more appropriate in an environment which is constantly focusing on activities in order to improve efficiency and achieve the most effective use of financial resources (Glad & Becker, 1994; Kaplan & Cooper, 1998). An ABB system is deemed to “fit” an ABCM based organisation and enables an enterprise-wide planning system in which resources and activities are inextricably linked (Brimson & Antos, 1994).

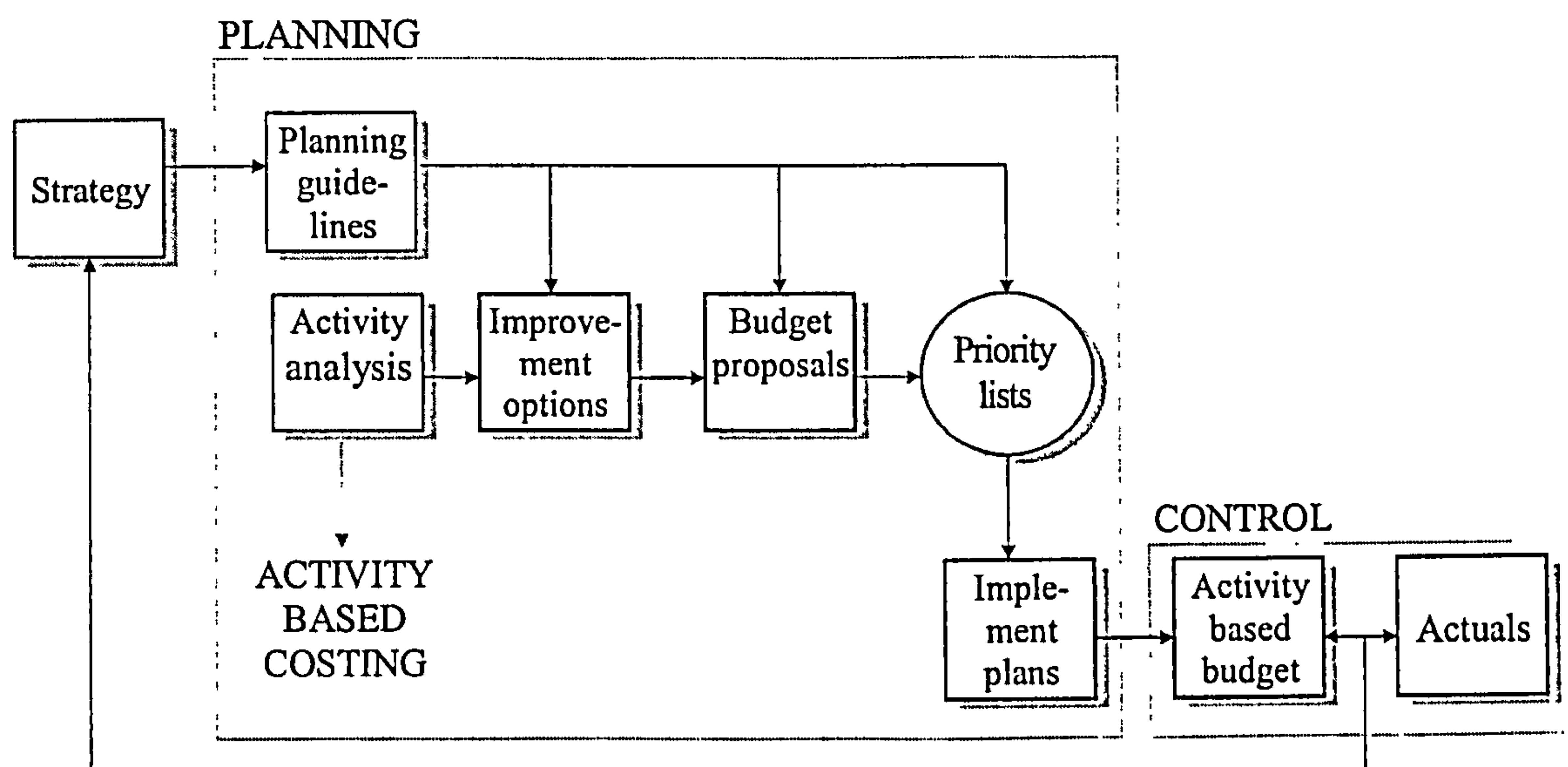
#### 2.4.1.2. Two Proposed ABB Approaches in Literature

On the basis of limited published literature, ABB is recognised by leading academics such as Kaplan and Cooper (1998) as “an extremely important application”. Indeed they have indicated that “the real sustainable payoffs from ABC & ABM cannot occur unless they become embedded in the organisation’s budgeting process (p.303)”, Sharman (1996) supports this positive view, describing ABB as “a most powerful device to our organisations in driving change and human behaviour (p.21).”

An early framework for ABB was given by Brimson and Fraser (1991) shortly after ABC emerged in the late 1980’s. They suggested that the key elements of ABB and the budget process can be illustrated by the following diagram (Figure 2.5) with particular emphasis on strategy, improvement options and priorities:

- A planning process linked to the organisation’s strategic objectives;
- Use of well proven activity analysis techniques – the heart of all activity based systems;
- Identification of cost improvement opportunities;
- Analysis of discretionary spending options and priority ranking;
- Establishment of performance targets for control;
- Integration with activity planning and accounting to provide effective control;
- A participative process to control and sustain continuous improvement.



**Figure 2.5 The ABB Process as per Brimson & Fraser**

Source from: Brimson & Fraser (1991). *The Key Feature of ABB*. Management Accounting, January, p. 42.

Brimson (1991) suggested that ‘assessing the factors that control activity volume is an important technique for budgeting the resources necessary to perform an activity (p. 64).’

Subsequently, Brimson and Antos (1994) defined ABB as “the process of planning and controlling the expected activities of the organisation to derive a cost-effective budget that meets forecasted workload and agreed strategic goals,” and emphasised that the key elements of an ABB include:

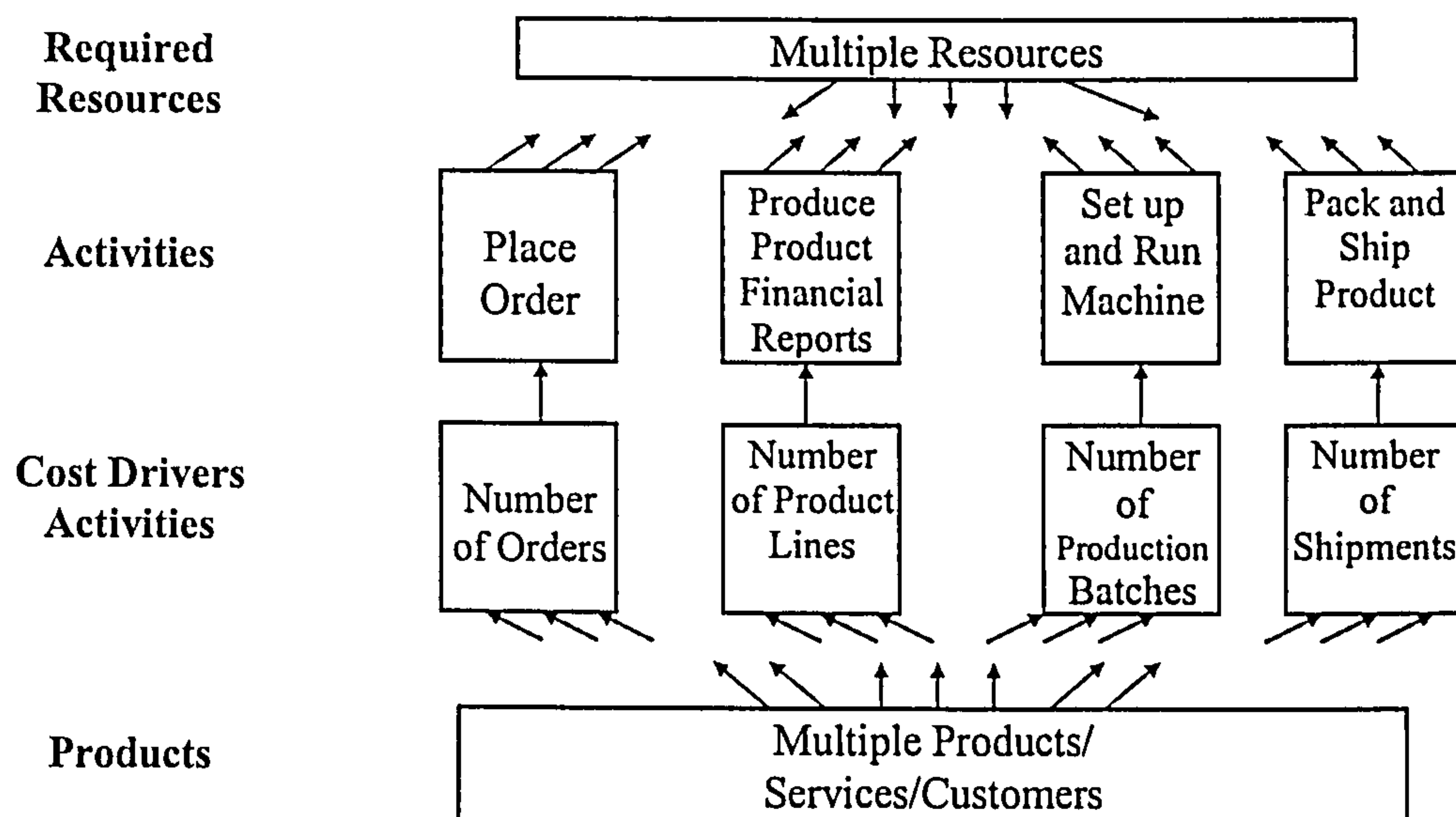
- Type of work to be done
- Quantity of work to be done
- Cost of work to be done

Brimson and Antos (1999) explained the framework with a more detailed description of ABB procedure. Together with the concept of feature costing, which is based on a process model of activity costs, their focus of ABB is mainly based on workload.

These key elements of ABB, which focus primarily on work and not costs, were also recognised by Raiborn, et al (1996): “Costs are determined after the activity workload is defined.”

Recently Kaplan and Cooper (1998) suggested that ABC provides information for important, ongoing managerial processes and is an essential component of an ABB system. Using ABB, managers can determine the supply of resources to operating units and responsibility centres based on the demands for activities they are expected to perform (Ibid.). They also suggested that ABB is an important process by which costs, previously thought to be fixed, can be realistically treated as variables, because those conventionally fixed cost can be changed based on the knowledge of the demands for activities during a budgeting period. They demonstrated the sequence of the ABB process as follow (Figure 2.6):

**Figure 2.6 The ABB process as per Kaplan & Cooper**



Source from: Kaplan & Cooper (1998). *Cost and Effect*. HBS Press Book, Boston, Massachusetts, p.304.

A brief explanation of Kaplan and Cooper's ABB process can be described as follows:

- (i) Estimate next period's sales and production volumes: this includes not only the products and services that will be sold, but also the information about individual customers (or customer types) expected to buy the products and services.
- (ii) Forecast the demand for organisational activities: this process should be identical to that used in conventional budgeting for calculating budgets for purchasing materials, the utilisation of machines, and the supply of direct

labour, based on the forecasted production mix for the coming year. ABB extends the conventional budgeting exercise by forecasting the demands for all indirect and support activities: ordering, receiving and handling materials; processing customer orders, complaints, and requests for technical support; scheduling and setting up for production runs; and all other activities identified in the activity dictionary.

- (iii) Calculate the resource demands needed for organisational activities: with the knowledge of the expected quantity of demands for activities, the budgeting team can then estimate the resources that must be supplied to perform the level of activities required.
- (iv) Determine the actual resource supply to meet the demands: at this stage, the budgeting process converts the demand for resources to perform activities (calculated in the third stage above) into an estimate of the total resources of each type that must be supplied.
- (v) Determine activity capacity: when all the resources of an activity have been identified, the user can then determine the practical capacity of the activity. This is the capacity of the resource that will constrain the ability of the firm to perform the activity.

#### **2.4.1.3. Two ABB proposals Compared: Similarities and Differences**

The framework proposed by Brimson and Fraser (1991) and the process proposed by Kaplan and Cooper (1998), at a first glance, seem to be supplementary to one another, in that Kaplan and Cooper's ABB process is to show the details of the outlining process in Brimson and Fraser's proposed framework. However, on a closer examination using Raffish (1991)'s ABC logical model – cost assignment and process views (see Figure 2.3), one can deduce that the two models have two different focuses. Brimson and Fraser's ABB framework refers to a general way to use ABC information in budgeting, and tends to be in line with the process view. As Brimson and Antos (1999, p.109) stressed 'when an organisation creates an activity-based budget, it must start with a business *process* workload that results from the customers of any business processes for



which a department performs activities.’ Thus the aim of their ABB approach is to enable management to translate strategy into a process and activity framework, to plan its future feasible business processes, and to manage activity and capacity. From their early framework and later suggestions on ABB, a clear focus on business process can be observed, such as increased understanding and assessment of business/manufacturing processes via comparisons on product lines (e.g. high- and low-volumes).

The ABB process, proposed by Kaplan and Cooper (1998), on the other hand, fits in the cost assignment view since it ‘works against normal cost flow in an ABC process’ (Kaplan & Cooper, 1998). In an ideal ABB situation, the supply of resources can be determined based on demand for the upcoming year. Kaplan and Cooper (Ibid, p. 304) described that ABB can turn conventional fixed resources (e.g. personnel, equipment and facilities, and information systems supplying computing and telecommunications) into variable ones by providing managers the information they need during the budgeting process. Thus, with these information, managers will only acquire, supply and maintain those resources needed to perform the activities expected to be demanded in the upcoming years, i.e. the determinant of resource cost information (i.e. resource supply to meet demands).

Although the two models demonstrate different views of ABB, there are also some similarities in them. Firstly, both models are activity oriented, in that activity analysis is required in both ABB models in order to obtain activity information and to establish causal links between resources and products (or services). Secondly, the implementation of both models requires ABC knowledge, in that budgeting processes are to be performed via the understanding of activity demands and the causal links between activity and resources.

Thus, in practice one has the option to choose one of the two ABB models. The choice of an appropriate model depends on the approaches and objectives taken by individual organisations. However, in all cases, ABC analysis and knowledge are essential elements in any ABB systems.

#### 2.4.2 *Potential Benefits of ABB*

Theoretically speaking, ABB can avoid the drawbacks of the conventional budgeting because of the exposure of clear causal links between resource, activities and products and visibility of cost drivers generated from ABC, which provides a foundation for achieving enterprise excellence by eliminating distortions and cross-subsidisation caused by traditional cost allocations (Brimson & Antos, 1994). By integrating ABC into a company's budgetary system, ABB provides more detailed information about overhead costs and reveals inaccuracies in spending for specific overhead resources (Brimson, 1991). The construction of an activity-based budget differs from the conventional budgeting practice, which is based on applying an inflation percentage to previous year's financial figures. Instead, ABB concentrates on the comparison between resource needed and supplied to determine whether or not there is a resource surplus or deficit, the information of which is significant for budgeting purpose (Connolly & Ashworth, 1994; McClenahan, 1995).

ABB also provides a base line for improving cost and performance by conducting a series of analyses, e.g. non-value-added analysis and best practices analysis (Brimson, 1991; Borjesson, 1997; Hood & Cohen, 1997; Klammer, et. al., 1997). According to Borjesson (1997), an important advantage of ABB is that an activity-based budget provides the possibility of evaluating efficiency by using a comparison of resource consumption and actual activity volume. Instead of concentrating on the cost of such items as salaries, supplies, and insurance, ABB focuses on the processes integral to a business (McClenahan, 1995). In addition, ABB helps organisations to distinguish between those actions that add value for customers and those that do not – such as controlling quality and performing machinery set-ups (Connolly & Ashworth, 1994).

Furthermore, integrating activity cost and budgetary information ABB provides more detailed information about overheads which is essential for the dissemination of activity-based thinking throughout an organisation (Borjesson, 1994/1997; Wise, 1988).

### 2.4.3 *ABB Implementation*

The two different focuses – process and cost assignment views (Figure 2.3) (which are presented in Brimson and Fraser (1991)'s ABB framework and Kaplan and Cooper (1998)'s ABB process<sup>5</sup> respectively) – may provide some indications to the possible budget outcomes. Broadly speaking, the two main types of ABB budgets can be derived, namely a product cost budget (whereby activity information is used in process analysis across functional departments) and a functional budget (whereby the determinant of resource cost information is formulated into a general ledger so as to group resources into functional departments). The two different budget outcomes, which are determined by the objectives of ABB system implementation, are used to support different areas of a decision-making process. Brimson and Antos (1999) studied some organisations that have implemented ABB at various stages, from progression to full implementation. They summarised the following five key areas that represented the majority of the use of ABB information (Ibid, p. 235):

- (i) Supporting strategic decision making, such as product pricing, product mix, make versus buy, and investment decisions;
- (ii) Improving concurrent engineering processes, including cost awareness in the design decisions;
- (iii) Motivating continuous improvements and the understanding of competitive gaps;
- (iv) Enhancing the ability to benchmark cost information against best-in-class;
- (v) Removing communication barriers by providing an understanding of activity workload, cost, and forecasted demand requirements.

As illustrated in Section 2.3.1-2, prior studies in ABC have revealed some initial enthusiasms in the use of ABC in budgeting (e.g. Foster & Swenson, 1997; Innes & Mitchell, 1995a; Robinson & Liu, 1998; Swenson, 1995). The potential positive

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<sup>5</sup> The ABB process, as described by Kaplan and Cooper (1998), may also be used to calculate a product cost budget, theoretically speaking, via information on determined resource costs. However, it is yet known the practical implication of such process to make it possible, because of the perceived large number of permutations.



theoretical benefits of ABB are supported by evidence presented by empirical studies. For example, based on his study of a Swedish manufacturing company, Borjesson (1997) claimed that the main interest lies in controlling indirect costs through 'questioning of proposed levels of resources for activities and an evaluation of reported performance in terms of resources per unit of output.' In a case study of an U.S. manufacturing organisation, Block and Carr (1999) stressed that 'ABB is adopted as a means to better understand its cost structure and establish reasonable product-cost projections.' Dahlgren and Holmstrom (2000) found that the use of ABB provides a continuous link between budgeting and product costing. However, detailed empirical studies on ABB are relatively scarce and hence the three case studies reported in the literature can only yield limited details on the types of budgets derived and processes of development and implementation (see Table 2.3).

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Table 2.3      Prior Empirical Research in ABB

| Arthur(s)           | Research Method   | Stages of Implementation                                  | Interviewees  | ABB Model   | Remarks   |
|---------------------|---|---|---------------|---|---|
| Bojesson (1997)     | A single case study on a Swedish manufacturing firm                       | Not segmented   | Not specified | Two steps:<br>1. Establishment of link between resource supplies and activities and assign costs (by mapping tasks and estimating time).<br>2. Question resource requirement via activity triggers and outputs of activities. | <ul style="list-style-type: none"><li>▪ Background:<ul style="list-style-type: none"><li>– Since the organisation was (and remains) reluctant to adopt activity-based thinking; old practices felt safe and convenient, ABB was an approach taken by management in an attempt to integrate activity-based thinking in annual budgeting process.</li><li>– Prototype ABB was implemented in 1993 in the accounting and order receiving department.</li><li>– Slack in its conventional budgeting process.</li></ul></li><li>▪ Factors attributes to ABB estimates:<ul style="list-style-type: none"><li>– Iterative cost assignment with reference to activities.</li><li>– Grant employee a salary increase</li></ul></li><li>▪ Benefits:<ul style="list-style-type: none"><li>– ABB simplifies evaluations of efficiency.</li><li>– ABB provides good occasions to start the continuous process of analysing and streamlining indirect work.</li><li>– ABB makes excess capacity visible.</li><li>– Key performance indicators become more relevant when contrasted with ABB information.</li><li>– It may not be the breakthrough for performance measurement of indirect work, but it is a tool that can be used in challenging the overhead dilemma.</li></ul></li><li>▪ Remarks:<ul style="list-style-type: none"><li>– There is a lack of exploration on the extent of acceptance from managers and the degree of actual use in business decision making processes.</li></ul></li></ul> |
| Block & Carr (1999) | A single case study on a U.S. digital semiconductor manufacturing company | Not segmented (but divided into two stages: ABC and ABB). | Not specified | Product cost projection via budgeting on key activities performed, rather than costs.   | <ul style="list-style-type: none"><li>▪ Background:<ul style="list-style-type: none"><li>– ABC system was successfully installed during the budgeting process.</li><li>– Old budgeting processes were ‘sloppy, inaccurate and often led to very unreliable standard costs’.</li><li>– Standard costs, which were prepared during the annual budgeting processes, were often not related to the budget spending assumptions in support departments.</li></ul></li><li>▪ Implementation issues:<ul style="list-style-type: none"><li>– Redesign of the Digital-supplied ABC accounting software – ABMS</li><li>– Extensive training was started and involved managers and operators to understand ABC principles.</li></ul></li><li>▪ Benefits:</li></ul>   |



| Arthur(s)                   | Research Method   | Stages of Implementation | Interviewees   | ABB Model  | Remarks   |
|-----------------------------|---|--------------------------|--|--|---|
|                             |   |                          |  |  | <ul style="list-style-type: none"><li>- Using ABB information, budget review became easier.</li><li>- Findings from an ABB process proved invaluable in organisational downsizing effort via selective adjustment to workforce, better assignment of overheads, and strategically elimination of planned work.</li><li>- ABB facilitated a complete mapping of each direct and support activity to each product.</li><li>- Increase understanding of cost structure, lead to target costing, change of managers' behaviours by influencing managers' focus on activities rather than on budget spending, increase departmental interdependence in the value chain</li><li>- ABB provided managers with a needed business-economic model to aid in pricing and proforma projection of financial performance.</li></ul>   |
| Dahlgren & Holmstrom (2000) | A single case study on a Swedish electronic products and articles manufacturing company | Not segmented            | Top and middle management (no explicit number of interviewees) | Budgeting activity time.<br>On the basis of estimated sales, ABB refers to a part of budgeting process that estimates (on 'best guess') time per activity at each cost centre. | <ul style="list-style-type: none"><li>▪ Background:<ul style="list-style-type: none"><li>- ABC project was stopped in 1996 after 3 years of experience. A major problem was to decide upon cost drivers.</li><li>- The list of activities (188) in ABB is linked to ABC analysis (68 main activities)</li></ul></li><li>▪ Factors that contribute to the realistic ABB estimates are that:<ul style="list-style-type: none"><li>- relevance between activity structure and operations;</li><li>- discussions on estimates prior to preparation of budgeting proposal;</li><li>- relatively stable environment with mature products (which account for not much changes on estimates); no linkage between estimates and the evaluation of resource base.</li></ul></li><li>- Participation and involvement in the ABB process received appreciation from employees.</li><li>▪ Benefits:<ul style="list-style-type: none"><li>- Budgeting activity time provided an important opportunity to link strategy with operations.</li><li>- The use of ABB provides a continuous link between budgeting and product costing. It economises on time and personnel by letting the capture of data for the ABC model be an integral part of the budgeting process.</li><li>- Potential positive effect with performance.</li></ul></li><li>▪ Weakness:<ul style="list-style-type: none"><li>- No information is available for the evaluation of a proposed allocation.</li><li>- No registration is made of actual time spent on different activities.</li></ul></li><li>▪ Remarks:<ul style="list-style-type: none"><li>- A large part of the budgeting process is still in traditional form.</li><li>- The restart of ABC project will affect the model used in ABB.</li><li>- A preliminary analysis of the on-going project.</li><li>- No detailed description on the system design and outcomes of ABB.</li></ul></li></ul> |

As shown in Table 2.3, some limitations can be observed from these empirical studies.

- There is a lack of U.K. based study.
- All of the three studies involve single sites.
- All three organisations are in the manufacturing sector.
- There are insufficient details about the outputs of these ABB models/systems (e.g. a functional budget or a process/product cost budget).
- There are also insufficient details about the stages of implementation to reveal factors that may affect implementation processes.
- Two of the three case studies did not specify data collection methods (e.g. interviews)<sup>6</sup>.

The three case studies, although providing some insights into ABB, are rather limited in scope and lack depth in the coverage of ABB experience. Hence a detailed research in exploring various sectors of industry in the U.K. would represent a significant contribution in this aspect.

#### **2.4.4      *Towards Building up a Framework for this ABB Research***

The lack of empirical study has also been recognised by researchers. In their survey, Innes and Mitchell (1995a) called for more case studies that were able to quantify the claims of the beneficial impacts of ABC made by those surveyed companies. They suggested that further case studies will permit a more direct and detailed investigation of the full (positive and negative) effects of ABC (Innes & Mitchell, 1995a, p. 151). Swenson (1995, p.176) also noted that ‘future studies should include firms which have attempted to implement ABC but failed ... look for differences in firm characteristics, or other factors

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<sup>6</sup> This may be attributed to emphasis placed by the authors of these articles as well as the journal/publications which these articles are published. Both case studies of both Block & Carr (1999) and Bojesson (1997) are published in Journal of Cost Management, which is a practitioner based journal where contributors are normally based in practice. The case reported is based on their on-site experiences. The case study of Dahlgren & Holmstrom (2000), which references group of interviewees, is reported in European Accounting conference.

such as management support or commitment, to explain success or failure with activity-based costing.'

Owing to a lack of reported practical experience in ABB, this research goes some way in addressing the important issues associated with ABB by carrying out a comprehensive and comparative multiple-case investigation on ABB practice. An appropriate research framework is needed to provide a consistent description of implementation process and to allow analysis of factors, experiences and comparative studies of cases to be carried out.

A review of ABB literature reveals that appropriate analysis and knowledge of ABC are pre-requisites of an ABB implementation (see Section 2.4.1). An understanding of ABC implementation may provide some useful lessons for an ABB implementation. Some of the prior studies in ABC implementation have also taken a cross-disciplinary approach by combining ABC literature with the innovation and technological diffusion literature (e.g. Anderson, 1995; Cooper & Zmud, 1990; Krumwiede, 1998b; Rogers, 1983; Swenson, 1995). As indicated in Table 2.1, some of these studies have explored implementation issues by using various stages in an attempt to explain information system adoption and examine factors involved with infusion of such an information system. In light of advancement in information technology and inevitable reliance of computer to deal with complex computational problems, an ABB implementation may also need to take account of both IT implementation (e.g. selection of software and system design) and cost accounting (e.g. ABC/ABB literature). In respect of IT implementation literature, Kwon and Zmud (1987) proposed a six-sequential-stage model to categorise implementation process in an attempt to explore various factors involved. These stages include: initiation, adoption, adaptation, acceptance, routinisation and infusion. The first three stages describe the background and initial processes in an implementation, and the last three stages provide indication to the success or failure of an implementation (Ibid.). During the initiation stage, pressure to change, which may arise from internal needs, external demands or competitive threats, initiate a process to search for solutions. Adoption involves the selection of an appropriate solution to achieve desired outcomes, identification of objectives and decision-making in providing necessary resources to sustain the project. During the adaptation stage a prototype model has been implemented. Problems of the prototype system and additional requirements which may have been overlooked in the previous stages are identified. Acceptance of a



system can be measured by the level of use and maintenance requirements to sustain the new technology. Routinisation provides indications on how well the new system fits into the organisation's normal activities. The infusion stage begins when the IT application is routinely used in conjunction with other existing systems to improve work effectiveness and change practices (Cooper & Zmud, 1990). The adoption of Kwon and Zmud (1987)'s stage model in this ABB research may provide a general consistency in comparing different stages of implementation in different case study organisations, and exploring influential factors involved in those ABB implementation processes.

Thus the studies on factors in ABC implementation (as reviewed in Section 2.2.3), together with Kwon and Zmud's stage model, provide a building block for the research framework to investigate an ABB implementation, i.e. stages of implementation, practical knowledge of technical aspects of ABB systems, behavioural factors, organisational factors, and other contextual factors. The factors which are stemmed from budgeting literature in Chapter 3 are to be incorporated as another building block to complete the entire research framework. This building block for the research framework can be demonstrated in Figure 2.7.

**Figure 2.7      A Factor-Stage Model of Information Technology Implementation**  
**Stage Model: Six Stages of Implementation**



**Four Contextual Factors that Have Influences at Each Stage of Implementation**

|                          |
|--------------------------|
| Technical factor         |
| Organisational factors   |
| Behavioural factors      |
| Other contextual factors |

Adapted from: Kwon and Zmud (1987).

The contextual factors that may influence the ABB implementation are listed as follows:

- (i) Technical factors: complexity experienced by users; compatibility with existing organisational structures and systems; and technical improvement relative to existing practices and achievement of strategic objectives.
- (ii) Organisational factors: top management support, resource adequacy, degree of centralised decision-making; degree of functional specialisation (e.g. training, administrative arrangement and structure of organisation); and the existence or establishment of informal communication networks.
- (iii) Behavioural factors: role involvement with the IT solution; resistance; participation.
- (iv) Other contextual factors: heterogeneity of external demands on the organisation (e.g. competition); task uncertainty and variety; size of organisation; and culture.

## **2.5. Summary**

This chapter focuses on the literature review related to the emergence of ABC, the design and implementation of an ABC system, the use of ABC information and ABCM, and a review of existing literature on ABB.

The understanding generated from the design and implementation of an ABC system has provided a foundation to the investigation of an ABB system (due to the relatively limited literature in ABB). Thus a building block for the research framework is established on some of the issues identified from the review of literature on ABC and ABCM, particularly factors affecting the success of implementation. The other building block for the research framework comes from issues based on budgeting literature (see Chapter 3). The whole research framework which consists of these two building blocks is presented at the end of Chapter 3.

## Chapter 3      Literature Review in Budgeting

### 3.1.      Introduction

This and the previous chapters investigate and examine previous research in activity-based paradigms and budgeting. The comprehensive literature review in these two chapters enables an identification of major factors that are deemed to be pertinent for the subsequent empirical study and thus provides a basis on which the structure of the study can be established.

Within the literature of management and management accounting, budgeting has long been a subject for extensive research and comments. A considerable body of theory and a steadily growing volume of empirical research indicate that researchers seek to understand and examine budgeting via a variety of disciplines (e.g. management accounting, organisation theory, social science and psychology) and through the use of a variety of research methods (e.g. case studies, surveys, theory development, and laboratory experiments). Owing to the lack of specific theoretical studies underpinning the emergence of ABB, this chapter examines general budgeting literature in order to clarify the fundamental issues that have direct or indirect bearings in relation to the subsequent ABB empirical research conducted by this study.

The chapter begins with an overview of typical textbook treatment of budgeting. This overview is used to derive four key perspectives on the phenomenon of budgeting as a subject for research: *technical, behavioural, organisational and cultural*. Then an analysis of the research literature is undertaken on the basis of these four perspectives.

The purposes of this chapter are to examine generic budgeting issues by evaluating the principal topics in each of the identified perspectives of budgeting, to establish their relevance to budgeting and to reveal their strengths and shortcomings in relation to the study of ABB. The findings of this chapter justify the theoretical approach adopted in the main study of this research. It is not the purpose of this research to engage with the current debates among the various topics within each perspective. Rather, this chapter is concerned



with the extent to which existing research underpins and raises issues relevant to the study of ABB.

### **3.2. Definition and Purpose of Budgeting**

In management accounting and cost management textbooks, budgeting is often described as a part of organisational planning and control and a process that translates long-range plans into detailed and short-term plans of action. It is thus important in this section to look into the nature of budgeting and the purposes of budgeting for a business organisation.

#### **3.2.1 *Origin and Definition***

A business organisation adopts budgets as a planning and control mechanism to allocate resources based on predictions of future business activities and monitor business operational performance accordingly. The perception of the importance of budgets grows along with the complexity and size of the organisations and the budget becomes an essential part of management tools (Quail, 1997).

The existence of budgets can be traced back at least to Joseph in Egypt at the time of the Pharaohs (Boyns, 1998). The original meaning of the word “budget” was illustrated by Hofstede (1968, p.19-20):

*‘The English word ‘budget’ stems from the French ‘bougette’, a leather bag or large-sized purse, which travellers in former centuries hung on the saddle of their horses. And the meaning of the word ‘budget’ was originally only for governments and, metaphorically, for private persons.’*

A budget is generally regarded as a quantitative expression of an organisational self-imposed commitment to planned activities, resources acquisition and use (or deployment) (Raiborn, et al, 1996). It can cover both financial and non-financial aspects of these plans and acts as a blueprint for the company to follow in the forthcoming period

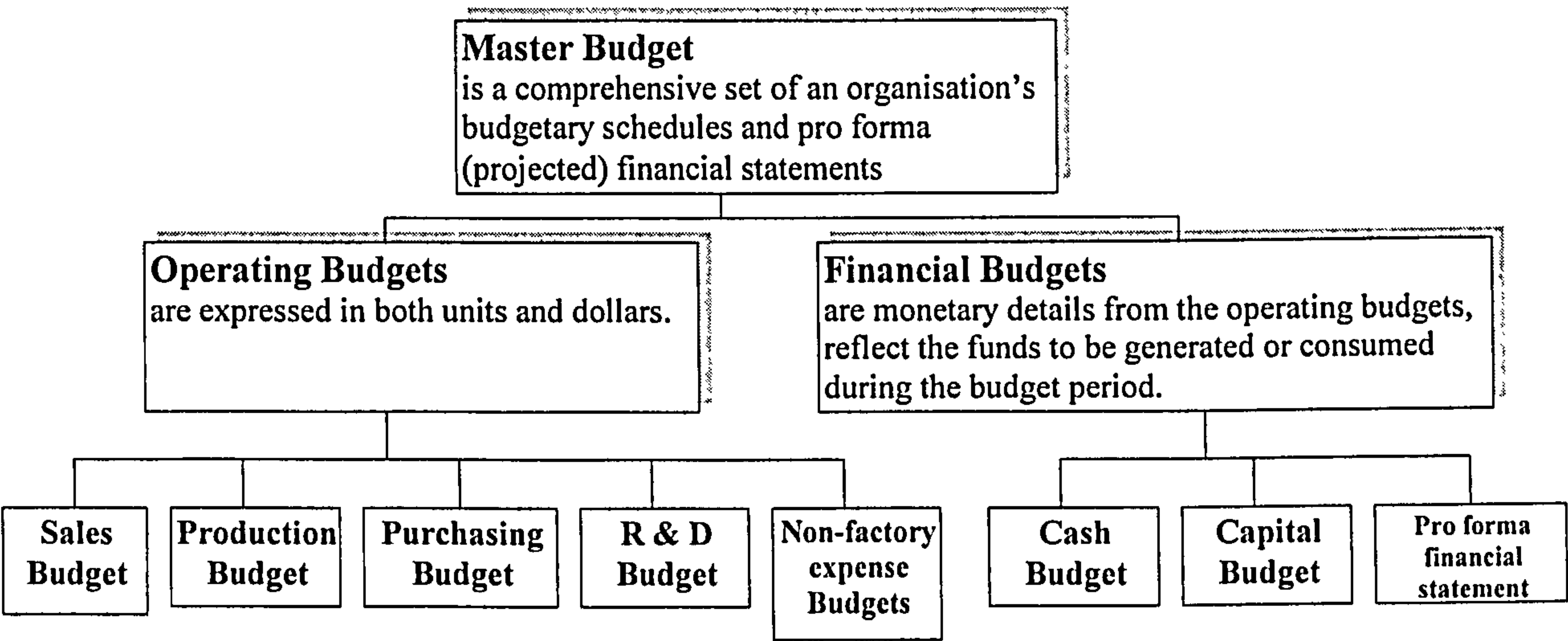
(Horngren, et al, 1999a, p.487). A budget can also be regarded as a quantitative plan of action prepared in advance of a defined period of time (Finney, 1993; Hofstede, 1968). The characteristics of a budget can be summarised as follows (Raiborn, et al, 1996; Drury, 1996):

- It is a quantitative plan,
- It normally involves a series actions and/or activities,
- It is done in advance of the actual events,
- It involves human beings interference and causes inevitable effects.

The purpose of a budgeting process, which can be regarded as a practice of deriving a budget, is to integrate these various interrelated aspects of functional decision making with the overall organisational objectives. A master budget, which consists of a budgeted profit and loss account, a balance sheet and a cash flow statement, is the result of such an integrated budgeting process between all functional departments and their budgets toward achieving organisational objectives.

A master budget is normally built up from both operating and financial budgets<sup>1</sup>, which can then be divided into sales budget, production budget, research and development budget, training budget, capital and cash budget (see Figure 3.1).

Figure 3.1 Organisational Budgets Chart

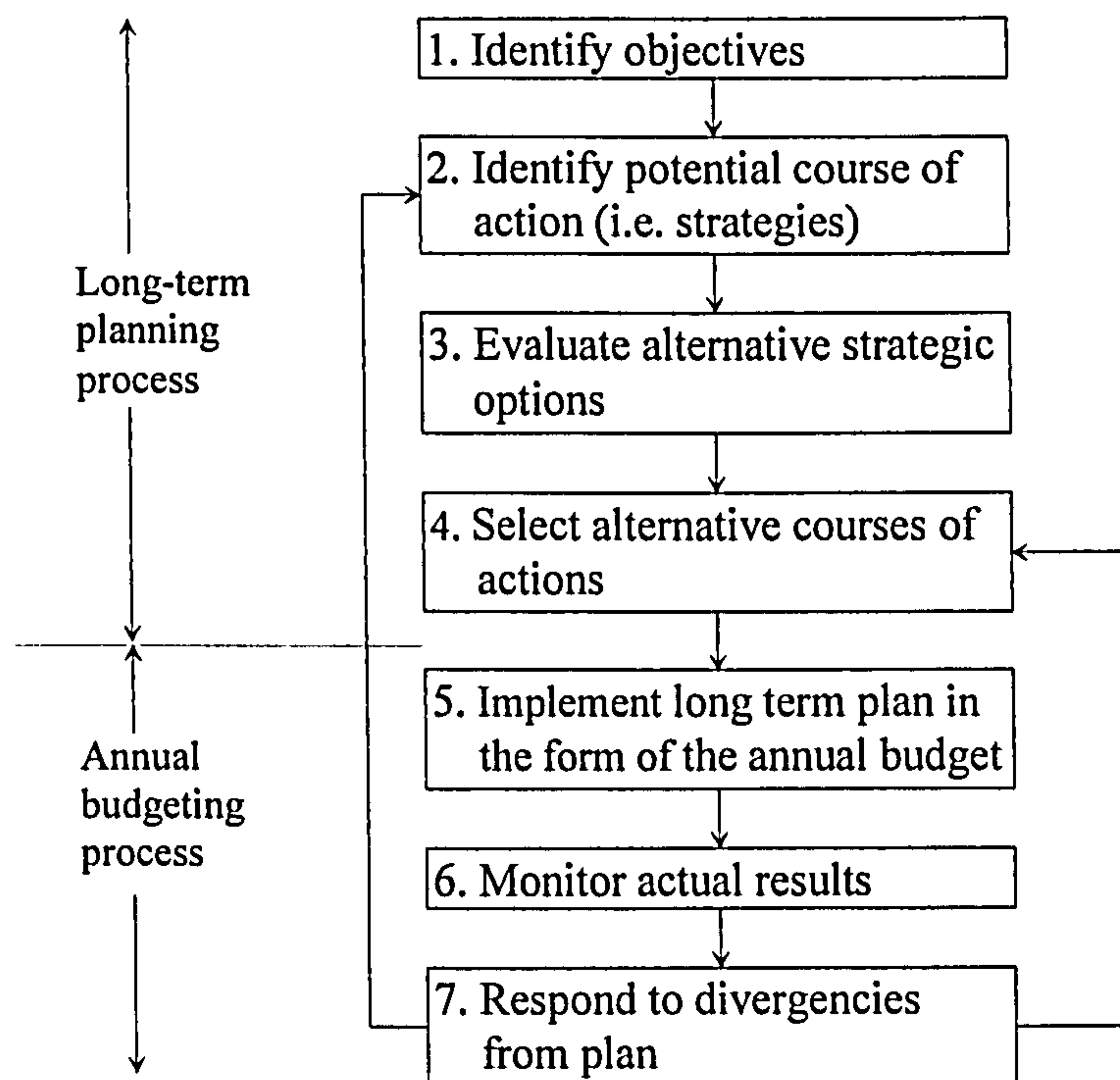


Source from: Raiborn et al., 1996. *Management Accounting: Annotated Instructor's Edition*. West Publishing Organisation, p. 511.

<sup>1</sup> The main focus of this research is on operational aspect of budgeting. The financial budgeting, particularly capital budgeting, which involves with capital projection and investment plans etc, is not the primary focus of this research and therefore is not covered in this study. However, some empirical findings arose from a capital budgeting process, which may be relevant to the study of budgeting, are revealed in the subsequent sections.

From the viewpoint of an overall framework of planning, decision making and control processes, a budgeting process can be viewed as an interrelated part within an overall organisational process (see Figure 3.2).

**Figure 3.2 Role of Budgeting Process within the Planning, Decision-Making and Control Process**



Source from: Drury, C.,1996. *Management and Cost Accounting*, International Thomas Business Press, p. 464.

### 3.2.2 *The Purposes of Budgeting*

In practice, many organisations have adopted budgeting in a variety of forms, e.g. resource allocation, budgetary control and performance measurement (e.g. Bruns & Waterhouse, 1975; Drury, et al, 1993; Govindarajan & Gupta, 1985; Livingstone, 1975; Siegel & Ramanauska-Marconi, 1989). In the U.K, budgeting has been used as a form of control tool for many decades (Scapens, 1991; Boyns, 1998). The main purposes of budgeting can be summarised as follows (Drury, 1996, p.468):

- *To aid the planning of annual operations:* this process provides advance warning of problems and encourages managers to look at existing planned costs, interest



rates, demand for your products and level of competition alongside of routine business (e.g. Sizer, 1989).

- To *co-ordinate the activities of the various parts of the organisation and to ensure that the parts are in harmony with each other*: the crucial aspect of budgeting concerns the selection of preferences on disputable activities and degree to which the selected activities are to be carried out. In light of limited resources, there would naturally be contention for budgetary benefits (e.g. Wildavsky, 1961).
- To *communicate plans to the managers of the various responsibility centres*: a budget allows each manager to see how his area of activities fits in and contributes to the organisational objectives (e.g. Wilson, 1983, p.184).
- To *motivate managers to strive to achieve the organisational goals*: a budget can be a useful device for influencing managerial behaviour and motivating managers to perform inline with the organisational effort. A budget can be seen as a major aid to communication, but will also cause some dysfunctional motivational consequences (e.g. Young, 1988).
- To *control activities*: which is a commonly known purpose of budgeting. However unilateral emphasises on control, regardless thorough understanding on activities of organisations, may lead to serious problems: lack of priorities, low efficiency, rigid cut back, low customers satisfactions (e.g. Armstrong et al, 1996).
- To *evaluate the performance of managers*: the manager's performance is often evaluated by measuring his or her success in meeting the budgets (e.g. Imoisili, 1989; Lyne, 1995).

Different opinions are held on the ability of budgeting to fulfil these purposes (see review in Drury, 1996). Some doubts were held particularly on whether short-term budgets are appropriate to take up the double duty of planning and control (Amey, 1979, p. 19). The advocates of the twin-purposes in budgeting suggest that a budgeting process aims to establish objectives for an entire organisation, devise plans and standards of performance for every area of activity, compare actual results with the planned results, and initiate corrective

actions when significant variations from planned results are found. In their view two important aspects must be considered during the budgeting process (Wilson, 1983, p.185):

- *Budgetary planning* – the predetermination of a course of action in such detail that every responsible unit can be guided by it.
- *Budgetary control* – the converse of planning, by which results are compared with desired standards of performance and any necessary action taken accordingly in relation to significant deviations.

It can be seen from Figure 3.2 that planning and budgeting are interrelated processes. Hence the view that a budget is a planning tool is genuinely accepted. However, when a budget is viewed as “the principal embodiment of business plans – and controls (Amey, 1979, p. 19)”, it raises the potential conflicts. For example, a demanding budget derived from planning may not be appropriately used to motivate performance, or it may be unsuitable for performance evaluation. Indeed, Morris (1968) advocated separation of budget planning from budget control and Amey (1979, p. 4-5) gave the following three reasons to support this proposition:

- Budget controls and plans serve entirely different functions. Budget plans are concerned with the allocation of resources and requirements to resources. Planning is therefore essentially an economic problem, which should be stated in economic terms, but a control budget is not necessarily related to this economic problem. This means that planning is furthering corporate objectives, but control is not.
- A control budget has an element of behavioural consideration, which may be related to motivation and personal aspiration levels of employees, and how they are influenced by the level of control target set and by the form the reward-penalty system. Hence, ‘A good plan does not necessarily yield good control (Stedry, 1960, p. 4).’
- It is asserted that the substantive systems underlying mechanism of planning and control are not identical. Thus, a single budget will be unlikely to prove effective for both planning and control purposes.

Currently, there is still no consensus on this issue. Besides this issue of planning and control, another debate was in the area of integrating accounting information systems.

Some contemporary commentators suggest the use of a timely information system, which can integrate accounting, planning and control functions, in order to react to changes in consumer preferences for products and services in a timely manner (Biggs, et al., 1991). Others have different opinions about this suggestion. For example, Cooper and Kaplan (1998) argued that system integration was not a good choice for organisations. In their view, a planning system should be separated from other management information systems (including budgetary control) in order to retain its long-term objectives and commitment, because “when real-time data need to be considered in the integrated enterprise resource planning systems, the long term objectives may be compromised (Ibid.).” In the domain of government or public services, the explicit different emphasis on planning and control are more likely to be dependent on wealth, predictability, political institutions, elite values and size of a country (Wildavsky, 1975, p. 253). There is an another extreme argument that budgeting, whether for planning or control purpose, ‘through its formalised system of responsibility and accountability, may have the twin effects of establishing and reinforcing structures which emphasise hierarchical and rigid patterns of relationships within the organisation, ... thus may promptly induce inflexible responses with little room for creativity, thus impairing an organisation’s ability to respond adequately to rapidly changing and dynamic environments (Preston, 1995, p. 276).’

Over the years, a considerable amount of literature has developed on various aspects of budgeting. Management accounting textbooks have described many of the *technical* characteristics (e.g. computer-based financial planning models, budgeting and responsibility accounting, static-budget variance, flexible budgeting, performance measurement using variances, variance analysis, and standard costing) and other related components (e.g. product costing, budgeting process and behavioural consideration) of budgetary planning and control systems (Drury, 1996; Horngren, et al, 1999b; Raiborn, et al., 1996). In many textbooks, the emphasis on budgeting is on the rules and calculation procedures by which budgets are formulated and used to provide means for evaluating the adequacy of actual performance. Hence budgets are often portrayed as technical phenomena (Hopwood, 1980). In reality, however, budgeting is intended to serve a variety of roles and purposes within an organisational setting in which it operates.



Firstly, a budgeting process is often described as an *organisational* process that has a close interrelationship with organisational structure (Preston, 1995). A budgeting process affects other organisational processes (e.g. administrative arrangements) and any changes on organisational structures will inevitably have impacts on the budgeting process, and vice versa. In addition, organisational goal and sub-goal development and its consistency or otherwise may interrelate to the way that a budget is formed (e.g. Livingstone, 1975). Thus to investigate the effectiveness of a budgeting process, one needs to take account of an organisational element since organisational factors may have a significant impact on a budgeting process (e.g. an ABB process).

Secondly, a budgeting process may influence the *behaviour* of managerial groups and individuals. Hopwood (1980, p. 223) stated: 'as the technical apparatus becomes intertwined with the activities of a wider array of organisational participants, it can be used to further a diverse and often conflicting array of organisational and personal ends.' In six of the main budgeting purposes as described by Drury (1996), all of them require some forms of human interaction. In that respect, budgets have a direct impact on human behaviour. For example pressure may be felt by managers from a difficult or tight budget, encouragement or restraint may be indirect results of budgetary targets and processes (Siegel & Ramanauskas-Marconi, 1989). These in turn have a series of impacts on budgetary performance of staff members. On the other hand, people interact during a budgeting process (e.g. participation) in an attempt to influence one another. If the message is well understood at both ends, then the desired outcomes will occur (Ouchi, 1979). Thus the behavioural aspect of budgeting is another important element to be investigated in order to examine the cause and effect of budgeting, behaviour and human interaction during a budgeting process.

Finally, the designer of a budgetary system should consider not only the technical aspect but also 'the meanings that people attach to budgets and the way in which they may be integrated into, and gave shape to, the culture of the organisation (Ashton, et al., 1995, p.16).' Simply put it, budgets can help to form a particular set of norms (and/or beliefs) that 'fosters a strong sense of solidarity and commitment towards organisational goals that people can become immersed in the interests of the organisation (Drury, 1996, p.652).' This kind of beliefs or norms is in fact corporate or *organisational culture*, which is a coherent set of assumptions and basic values that distinguish one organisation from another (Gagliardi,

1990; Prestion, 1995). In Drury (1996)'s review of Ouchi's three different approaches (i.e. behavioural, output and clan controls) to cope with problems of control, he suggested that the accounting based control (like budgets) should be placed in a broader framework by relating it to other organisational control systems. Thus, having established the organisational, technical and behavioural perspective, it is necessary to add a hypothesis to relate organisational culture and its impacts on the implementation of an ABB system, if such a system is designed to be part of or incorporated into overall management control systems.

The above textbooks' review yields four perspectives (technical, behavioural, organisational and cultural) as a general framework for the review and discussion of prevailing and emergent literature in budgeting.

The next section briefly introduces an overview on the results of the literature survey, which was conducted by the author as a part of the background reading for undertaking this research in ABB. This is then followed by discussion of the results under the above proposed four perspectives.

### 3.3. Review of Published Work

In order to identify and understand the established theories in the area of budgeting, a survey of published research work is required. As a preliminary step in conducting a literature search on budgeting and its related topics, an index browsing was performed on academic journals (including the recognised top nine journals, Darnill, 1996) for the period 1979-1998. It should be mentioned that three of the journals (JMAR, MAR & FAM) were established within the survey period. The journals surveyed at this stage were:

|  |                  |
|--|------------------|
| <i>Abacus</i>  | 1979-1998        |
| <i>Accounting and Business Research (ABR)</i>        | 1979-1998        |
| <i>Accounting, Organizations and Society (AOS)</i>   | 1980-1998        |
| <i>Accounting Review (AR)</i>                        | 1979-1998        |
| <i>British Accounting Review (BAR)</i>               | 1984-1998        |
| <i>Financial Accountability and Management (FAM)</i> | Vol.1, 1985-1998 |

|  |                   |
|--|-------------------|
| <i>Journal of Accounting Research (JAR)</i>              | 1980-1998         |
| <i>Journal of Accounting Literature (JAL)</i>            | 1993-1997         |
| <i>Journal of Business Finance and Accounting (JBFA)</i> | 1980-1998         |
| <i>Journal of Cost Management (JCM)</i>                  | 1989-1998         |
| <i>Journal of Management Studies (JMS)</i>               | 1980-1998         |
| <i>Management Accounting Research (MAR)</i>              | Vol.1, 1990-1998  |
| <i>Journal of Management Accounting Research (JMAR)</i>  | Vol. 1, 1989-1998 |

The search was for titles that included both the term 'budgeting' and a term indicating a technical, behavioural, organisational or cultural focus. During the initial keyword search, abstracts were also read in order to ascertain the relevance or otherwise of those papers to the area of research. The abstract reading helped to reduce the inadequacy of adopting a keyword search based solely on title content to identify all relevant research.

It is notable that there is a certain degree of specialisation in the selection of journals. The journals selected are mainly in accounting discipline rather than in the social science or other disciplines. The reasons for this specialisation are: firstly, a main area of this study requires to establish the focus of research in budgeting, rather than in the applications of behavioural research or organisational theory to budgeting practices; secondly, researchers from the accounting discipline have already begun cross-disciplinary research (Otley, 1980), it can be shown that a relatively substantial amount of literature from many of the above journals (e.g. AOS, ABR, JMS) are concerned with the study of behavioural, organisational and cultural implications in the area of accounting. Therefore, the selection of accounting journals and the keyword search are considered to be appropriate and adequate for this study.

Each article selected from these journals, that was deemed to be relevant, was read and categorised in accordance to its research methods (theoretical, empirical, methodological or review) (see Table 3.1), and by the major topics (see Table 3.2) that it addressed. In order to achieve a coherent and focused list of classification, this review first classified the publications into main subjects and, where doubt existed, some judgements were required to link the publications to the four proposed perspectives (i.e. technical, behavioural, organisational and cultural) or other perspectives (which falls outside of these



perspectives). For example, topics such as 'the design of budgeting process', 'flexible budgeting', 'Planning, Programming and Budgeting System (PPBS)' and 'Zero-Base Budgeting (ZBB)' were directly categorised under 'technical' perspectives as they focused mainly on mechanics of a budgeting system. Specific considerations were needed to deal with topics such as 'budget control' depending on the emphasis of the articles, which were then duly read in order to determine individual focus. Some of these articles could imply technical aspects, e.g. proposing improved design of budgetary control systems, whilst others could address cross boundary issues, e.g. the impact of a proposed budgetary control system on departmental performance and behaviour. Therefore some judgements were needed in deciding whether to include 'budget control' under 'technical', 'behavioural', 'organisational' or 'cultural' perspective. Terms such as 'participative budgeting' and 'motivation' were categorised under 'behavioural' perspective; 'organisational goals' and 'organisational structure' were under 'organisational' perspective; and terms such as 'organisational culture' and 'culture' were put directly under 'cultural' perspective. This classification required judgement, which was done with as little bias as possible. To achieve this and to ensure consistency with other established research findings, references were also made to previous practice. For example, Drury (1996) discussed 'participation', 'motivation', 'personal performance' under the behavioural aspect and 'change', 'organisational structure' under the organisational aspect.

Although more than 200 publications have been included in the literature survey, the distribution of articles over various topics is somewhat skewed: there are comparatively few publications on topics related to 'the design of budgeting process' such as 'flexible budgeting', 'ZBB', or 'PPBS', whereas significantly more publications were found on topics such as 'budgetary control', 'participative budgeting', or 'budgets in an organisation context' (see Table 3.2). An explanation for this pattern may lie in the shift in research emphasis from a pure accounting to an inter-disciplinary approach, recognising the behavioural, organisational and social context of accounting.

The results of the literature survey, as shown in Table 3.1, also indicate considerable differences in research methods adopted between publications in these leading accounting journals from the last two decades.

Table 3.1 Research Methods Adopted in Articles that Published in Major Accounting Journals

| Journal       | Research methods |       |            |       |                |       |        |       | Total |       |
|---------------|------------------|-------|------------|-------|----------------|-------|--------|-------|-------|-------|
|               | Theoretical      |       | Empirical* |       | Methodological |       | Review |       |       |       |
|               | no.              | %     | no.        | %     | no.            | %     | no.    | %     | no.   | %     |
| <i>Abacus</i> |                  |       | 1          | 0.8   |                |       | 4      | 13.8  | 5     | 2.5   |
| <i>ABR</i>    |                  |       | 11         | 9.1   | 6              | 22.2  | 3      | 10.3  | 20    | 9.9   |
| <i>AOS</i>    | 7                | 28.0  | 38         | 31.4  |                |       | 7      | 24.1  | 52    | 25.7  |
| <i>AR</i>     | 1                | 4.0   | 12         | 9.9   | 4              | 14.8  | 1      | 3.5   | 18    | 8.9   |
| <i>BAR</i>    |                  |       | 4          | 3.3   | 1              | 3.7   |        |       | 5     | 2.5   |
| <i>FAM</i>    |                  |       | 21         | 17.4  |                |       | 1      | 3.5   | 22    | 10.9  |
| <i>JAR</i>    |                  |       | 12         | 9.9   | 7              | 25.9  | 2      | 6.9   | 21    | 10.4  |
| <i>JAL</i>    | 1                | 4.0   |            |       |                |       | 1      | 3.5   | 2     | 1.0   |
| <i>JBFA</i>   | 3                | 12.0  | 2          | 1.7   | 5              | 18.5  | 1      | 3.5   | 11    | 5.5   |
| <i>JCM</i>    |                  |       |            |       | 1              | 3.7   | 1      | 3.5   | 2     | 1.0   |
| <i>JMS</i>    | 8                | 32.0  | 1          | 0.8   | 1              | 3.7   | 1      | 3.5   | 11    | 5.5   |
| <i>MAR</i>    | 3                | 12.0  | 11         | 9.1   |                |       |        |       | 14    | 6.9   |
| <i>JMAR</i>   | 2                | 8.0   | 8          | 6.6   | 2              | 7.4   | 7      | 24.1  | 19    | 9.4   |
| <i>Total</i>  | 25               | 100.0 | 121        | 100.0 | 27             | 100.0 | 29     | 100.0 | 202   | 100.0 |

Note: Empirical method is split further into ‘case studies’, ‘survey’ and ‘experiment’ (see Table 4.1 in Chapter 4).

It is notable that classifications of ‘theoretical’ (theoretical research) and ‘review’ (literature review) methods are relatively straightforward. The ‘methodological’ method refers to the use of mathematical, meta-analytic or computational models to illustrate research results and suggest new approaches. The ‘empirical’ method includes three research approaches: questionnaire survey, experiment, and case study (see Chapter 4 for detailed description of these empirical approaches).

Table 3.2 Source Topics Drawn upon by Published Articles

| Topics                  | Journal |     |     |    |     |     |     |     |      |     |     |     |      | Total |      |
|-------------------------|---------|-----|-----|----|-----|-----|-----|-----|------|-----|-----|-----|------|-------|------|
|                         | Aba     | ABR | AOS | AR | BAR | FAM | JAR | JAL | JBFA | JCM | JMS | MAR | JMAR |       |      |
|                         | cus     |     |     |    |     |     |     |     |      |     |     |     |      | No.   | %    |
| Budgetary control       |         | 5   | 7   | 2  |     | 8   | 2   |     | 2    | 1   |     | 7   |      | 34    | 15.7 |
| Participative budgeting |         | 6   | 16  | 7  | 1   | 1   | 10  | 2   | 1    |     |     | 2   | 2    | 48    | 22.1 |
| Flexible budgeting      | 1       |     |     |    |     |     |     |     | 1    |     |     |     |      | 2     | 0.9  |
| PPBS                    |         |     | 1   |    |     | 1   |     |     |      |     |     |     |      | 2     | 0.9  |
| ZBB                     | 1       |     | 4   |    |     |     |     |     |      |     |     |     |      | 5     | 2.3  |
| Capital budgeting       |         | 3   |     | 1  |     |     | 1   |     | 1    |     |     | 1   | 1    | 8     | 3.7  |

| Topics                                 | Journal |     |     |    |     |     |     |     |      |     |     |     |      | Total |      |
|--|---------|-----|-----|----|-----|-----|-----|-----|------|-----|-----|-----|------|-------|------|
|  | Abacus  | ABR | AOS | AR | BAR | FAM | JAR | JAL | JBFA | JCM | JMS | MAR | JMAR | No.   | %    |
|  |         |     |     |    |     |     |     |     |      |     |     |     |      |       |      |
| Budgeting in an organisational context | 1       |     | 22  | 8  | 3   | 11  | 2   |     | 1    |     |     | 3   | 2    | 53    | 24.4 |
| Budgeting, organisation and culture    |         | 1   |     |    |     |     |     |     |      |     |     | 1   |      | 2     | 0.9  |
| Management Accounting Research         |         |     | 7   |    |     | 1   | 1   |     |      |     | 8   | 3   | 14   | 34    | 15.7 |
| Others                                 | 2       | 5   | 2   | 1  | 1   | 1   | 7   |     | 7    | 1   | 1   | 1   |      | 29    | 13.4 |
| Total                                  | 5       | 19  | 59  | 19 | 5   | 23  | 23  | 2   | 13   | 2   | 10  | 17  | 19   | 217   | 100  |

It can be seen from Table 3.2 that three topics (budgetary control, participative budgeting, and budgeting in an organisational context) were more common than the rest. This may also indicate that the emphasis on accounting research is shifting from methodological work to practical and inter-disciplinary insights. This shift in emphasis may also be observed from the empirical study in participative budgeting. For example, *AOS* has its primary focus on organisation theory, and contributes substantial fieldwork not only from participative budgeting, but also from control, ZBB, PPBS and general management accounting research. The topic of “others” includes a broad collection of papers on socio-accounting and financial aspects, which related indirectly to budgeting.

The findings of this review of budgeting literature reveal pertinent and evolving budgeting issues in accounting research and practice, which is essential for this study in maintaining its relevance to the current ABB research.

3.4. Four Main Perspectives on Budgeting

This section reviews the main prevailing research perspectives in the budgeting literature, i.e. technical, behavioural, organisational and cultural. The budgeting issues deriving from this literature review are drawn from the results of the literature survey and used to form into the framework of this research.



### **3.4.1      *Technical Perspective of Budgeting***

The topics that discussed under the technical perspective of budgeting are: the design of budgeting processes and technical models for budgetary planning and control. The purpose of this section is to generate issues that have been revealed from prior research work in an attempt to draw issues and technical processes that are pertinent to an ABB process.

#### **3.4.1.1.      The Design of Budgeting Processes**

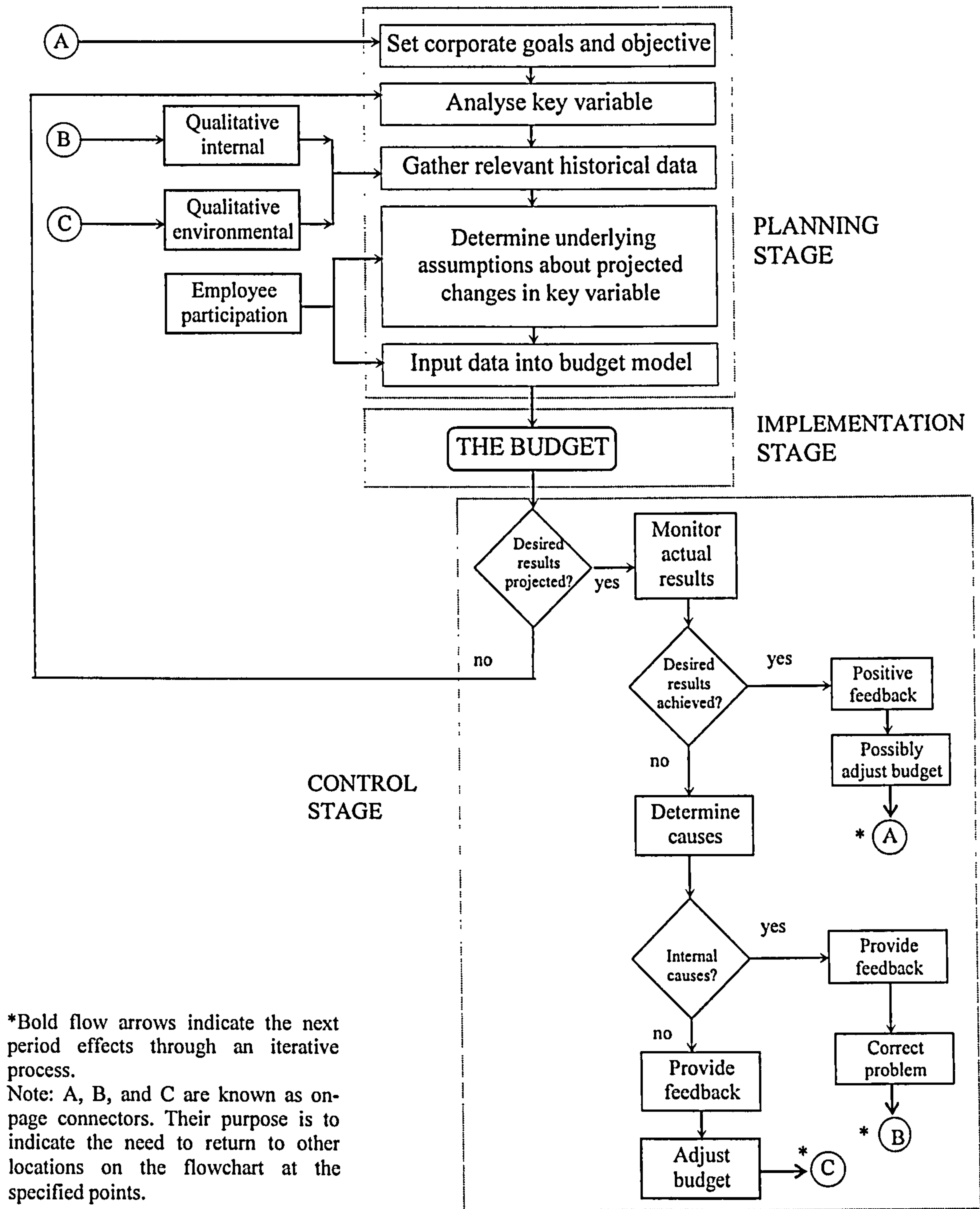
The budgeting process normally involves a number of stages<sup>2</sup> (Drury, 1996, p.471) (an illustration of a budgeting process is illustrated in Figure 3.3):

- (i) Communicating details of budget policy and guidelines to those people responsible for the preparation of budgets.
- (ii) Determining the factor that restricts output.
- (iii) Preparation of the sales budget.
- (iv) Initial preparation of various budgets.
- (v) Negotiation of budgets with superiors.
- (vi) Co-ordination and review of budgets.
- (vii) Final acceptance of budgets.
- (viii) Ongoing review of budgets.

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<sup>2</sup> Refer to Drury (1996, pp. 471-473) for detailed explanation of each stage.

Figure 3.3 The Budgeting Process



Source from: Raiborn, et al, 1996. *Managerial Accounting: Annotated Instructor's Edition*. West Publishing Organisation, p. 496.

The following sub-sections introduce a number of budgeting processes that are currently adopted in practice, namely conventional budgeting processes (i.e. incremental and line-item budgeting) and programme budgeting (i.e. PPBS and ZBB).

#### 3.4.1.1.1. Conventional Budgeting Processes – Incremental and Line Item

Accounting textbooks have introduced two conventional budgeting processes in practice, i.e. incremental budgeting and line-item budgeting. *Incremental budgeting*, is a budgeting method that is concerned mainly with the increment in operations or expenditures that will occur during the budget period (Drury, 1996). For example, the budgeted expenditure may be based on the previous year's actual expenses plus an increase (e.g. national inflation rate) to cover higher prices caused by inflation. Whilst the appropriateness of this method may lie in certain instance, e.g. a budget for office expenses (e.g. rent and rates) may be prepared on the basis of current expenses, plus or minus inflation and rates' price adjustment, the biggest criticism is that it tends to carry forward any past inefficiencies.

In non-profit making organisations, *line item budgeting* is normally the conventional method in use. The budgets built under this type of budgeting are based on historical costs that have been adjusted for anticipated changes in costs and activity levels, but with little explanation of purposes (Ibid., p.483). The comparison between budget and actual expenditures, as shown in Table 3.3, provides some sorts of budgetary control as to whether or not a divisional unit is over- or under- spending. The pitfalls of line item budgets are that it does not link with activities or programme nor provides justification to resources efficiency and effectiveness (Ibid.).

**Table 3.3      An Example of Line Item Budget**

| Cost Items             | Budget<br>1999-2000 | Revised Budget<br>1999-2000 | Actual<br>1999-2000 | Proposed<br>Budget 2000-01 |
|------------------------|---------------------|-----------------------------|---------------------|----------------------------|
| Staff                  | 2,000,000           | 2,100,000                   | 2,125,000           | 2,250,000                  |
| Accommodation          | 11,500,000          | 10,000,500                  | 11,000,000          | 12,000,000                 |
| Travelling subsistence | 880,000             | 720,000                     | 600,600             | 650,000                    |
| Stationery             | 4,000               | 11,000                      | 15,000              | 20,000                     |
| tion charges           | 10,000              | 8,000                       | 6,450               | 7,500                      |
| Miscellaneous          | 1,500               | 2,000                       | 1,425               | 1,600                      |
| Total                  | 14,395,500          | 12,841,500                  | 13,748,475          | 14,929,100                 |

One obvious advantage of conventional budgeting is that the budget can be derived by straightforward computations (via addition and/or subtraction operations) on the basis of the previous year's financial information. The final authorised budgets can then be used to ascertain whether or not the budgeted expenditures have been exceeded (in the case



of line-item budget in not-for-profit organisation) or to justify and control the budget variance (in the case of incremental budget) (Newing, 1994).

One significant disadvantage, however, is that with conventional budgeting one is often unable to link budgets with organisational objectives (Horngren, et. al, 1999a). The conventional methods tend to accumulate past inefficiencies, and often fail to identify the costs of activities and projects (or programme) to be implemented (see also Table 1.1 in Chapter 1) (Hofstede, 1968; Newing, 1994, Prendergast, 1997). Thus, the derived budget gives little indication to the management as to whether or not resources are funded efficiently to carry out the planned activities.

Generally speaking, the conventional budgeting processes are based more on cost items than activities or programmes that an organisation is anticipated to carry out. Its financial information content is predominantly established on the basis of historical expenditures from general ledger and follows the functional structure of an organisation (Drury, 2000; Horngren, et. al., 1999b; Newing, 1994; Prendergast, 1997).

#### 3.4.1.1.2. Programme Budgeting – PPBS and ZBB

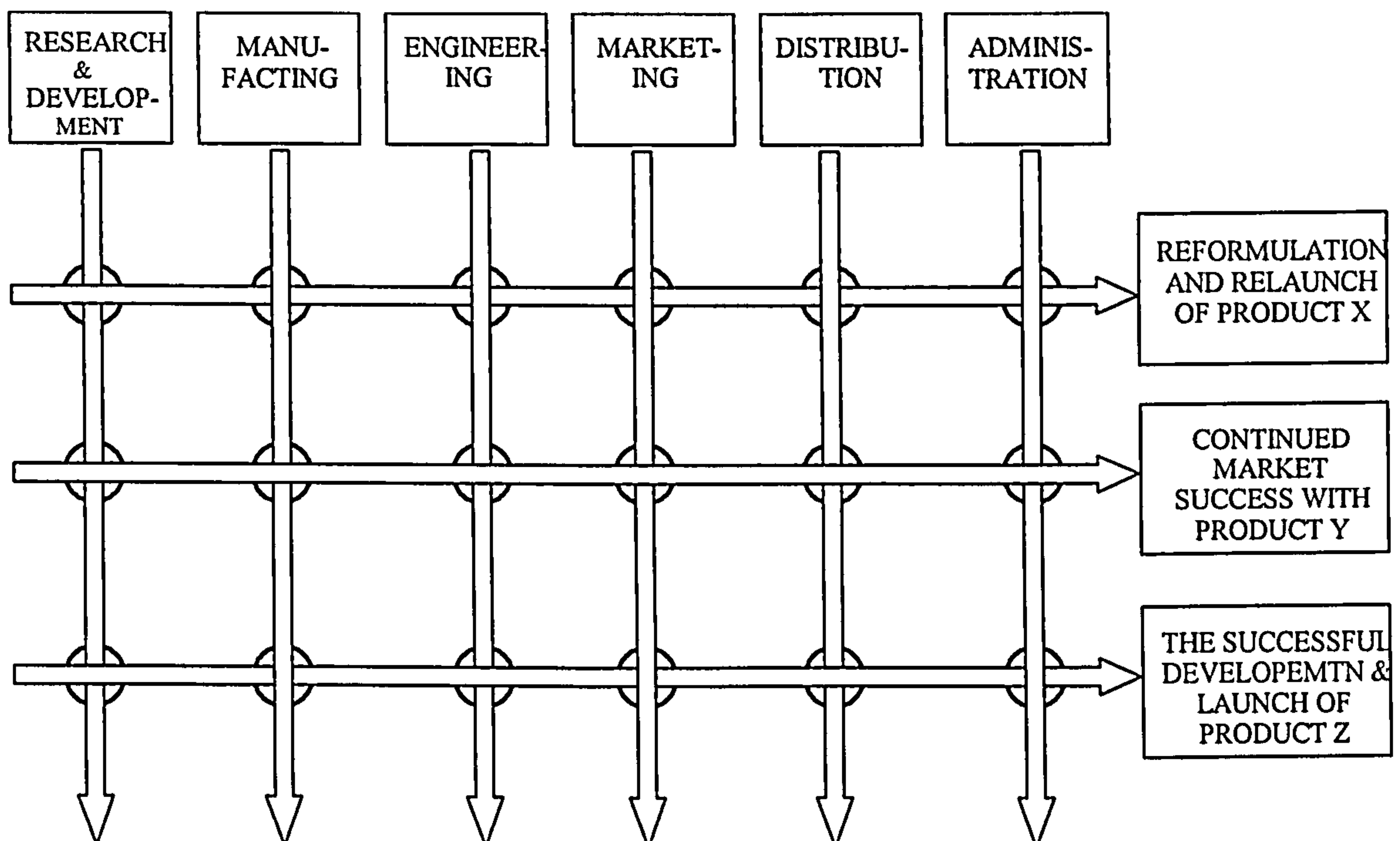
Programme budgeting, which is a generic name given to a budgeting system that aggregates incomes and expenditures across programmes (projects), is formulated with the intention of overcoming the deficiencies found in conventional budgeting. In most cases, aggregation by programme is in addition to, not instead of, aggregation by organisations' functional units. Since the programme structure is unlikely to match an organisation's structure, a particular individual within the organisation must be made responsible to monitor the programme.

There are two specialised programme budgeting systems: PPBS and ZBB. In terms of improvement of conventional budgeting processes, PPBS was designed to overcome the pitfalls of line-item budgets, whilst ZBB was described as an alternative to incremental budgeting (Drury, 1996). In terms of time periods of emergence, PPBS was developed and advocated approximately one decade earlier than ZBB.

PPBS was developed in the late 1960s through the Secretary of Defence Robert McNamara's efforts to deal rationally with the budget of the Department of Defence in the

United States (Lee, 1973; Sytsma, 1998). It is basically a planning, implementing, and control system oriented to identifying and integrating planning, programming and budgeting projects that will maximise the achievement of the organisation's long-term goals (Shehane, 1994). The system focuses on funding those projects that will bring the greatest progress towards the achievement of organisational goals with the least cost (Lee, 1973; Novick, 1965). The primary focus of PPBS is to take a long-range look at an organisation's operation (the design of PPBS is illustrated in Figure 3.4). PPBS also needs the articulation of the objectives to be accomplished over a three to five year period so that specific programmes of action that would enable the organisations to accomplish those objectives can be laid out.

**Figure 3.4 A Simplified Design Illustration of PPBS**



Source from: Wilson, R M S (1983). *Cost Control Handbook*. Gower Press Ltd, p.211.

PPBS aims to reinforce the linkage between budgets with objectives, activities, functions or programmes and evaluation. It addresses the importance of the specification of goals, alternative programmes, the measurement of costs, performance and the effects of different programmes in the public sector (Czamiawska--Joerges & Jacobsson, 1989).

Although the philosophy behind the design of PPBS was to overcome the deficiencies of line-item budgets, the attempt was abandoned in the early 1970s (Wilhelmi &

Kleiner, 1995). A main reason for its unpopularity was due to the structural design of the PPBS system in which the programme structure was likely to be different from the organisation's structure. In PPBS programmatic analysis could be conducted by looking along the programme structure horizontally through the organisational tumblers rather than vertically into them (see Figure 3.4). The programme structure, therefore, needs to be carefully designed in order to enable it to be run in parallel with the organisational structure (Dennison, 1975; Jager, 1973). In many organisations in which the organisation structures are not predominated and influenced by the way programmes are presented and analysed in the budget, the labour intensity of implementing and maintaining such PPBS systems soon highlights the likelihood of discontinuing such an attempt.

Apart from the technical design which did not fit the organisational realities, practical difficulties, which were linked to behavioural and organisational perspectives, would also explain the demise of PPBS. In his study of PPBS in higher education, Delong (1973) suggested that PPBS, which required people to serve the group objectives and programmes, might not suit people who were highly educated. He found that people like academicians, who were accustomed to doing their own things and had not been closely aligned with departmental programmes and purposes, might find PPBS difficult to design and implement. In addition, he also pointed that the seemingly accurate results derived from PPBS might mislead the budget makers when the allocated resources were measured against results achieved. Because the criteria for performance measurement of people in higher education were usually relatively more elusive and often could not be measured by a single budgetary measure, as advocated by PPBS.

In this research literature survey, only one publication on the empirical study of PPBS was found. Bellamy and Kluvers (1995) concluded by suggesting the following reasons for not using PPBS in a local Australian government:

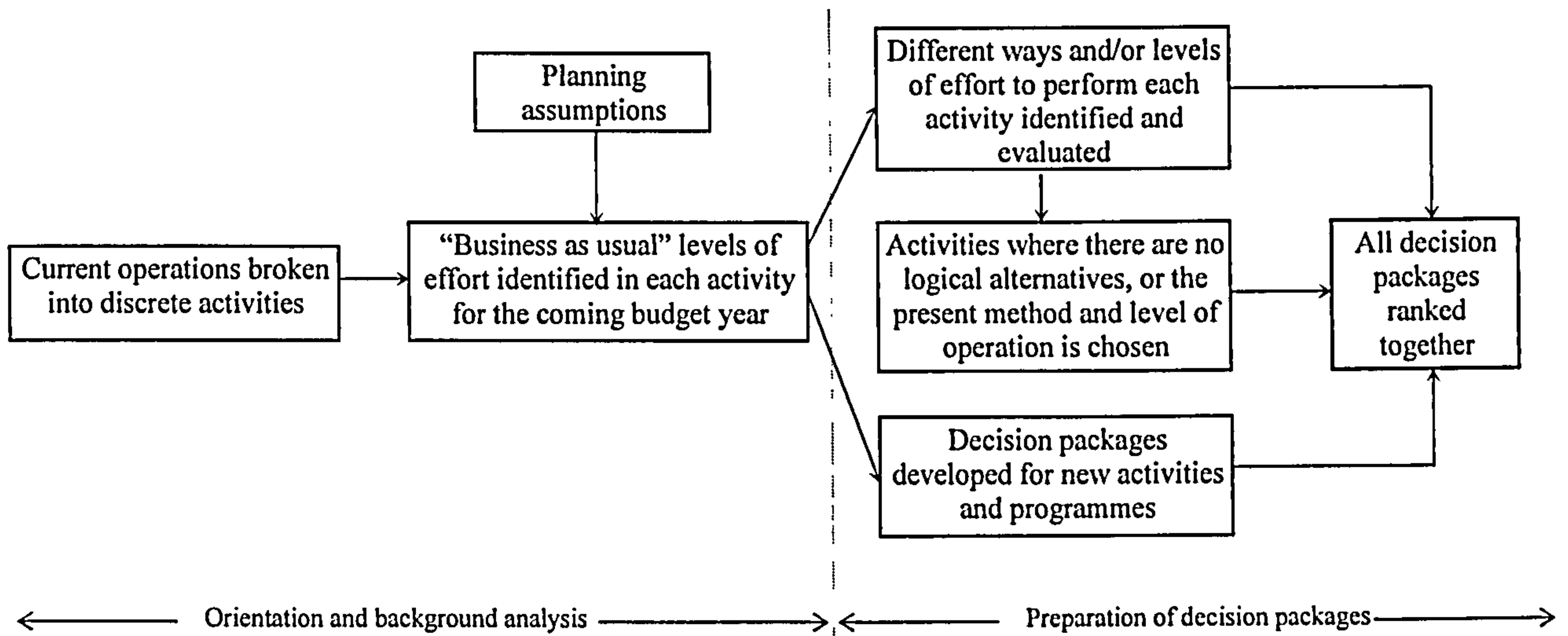
- Users were more familiar with the traditional budgeting system, and resentful to change to other systems.
- The functions carried out in this local government were relatively small, and would not be considered cost-effective when comparing with the effort, in terms of resources and time, to implement and use a PPBS approach



- Some information which were provided by conventional budgeting methods were not available in the PPBS system.
- The established strong local network formed a 'barrier' to implement a new system which was perceived to attempt to break this sort of network (a demonstration of corporate culture to change).

*ZBB*, which emerged in early 1970s, was another attempt to rectify shortcomings in the conventional budgeting processes, in particular incremental budgeting (Drury, 1996). According to advocates of *ZBB*, it is applicable to all business organisations, especially in the support and service areas where non-monetary measures of performance are available. Development and ranking of a 'decision package', which includes an analysis of costs, purposes, alternative courses of action, measures of performance, consequences of not performing the activity, and benefits, for each activity or operation, are the core process in *ZBB* (Horngren, et. al., 1999a). The *ZBB* process requires each manager to justify his/her entire budget request in detail, and puts the burden of proof on him/her to justify why he/she should spend any amount of money. *ZBB* requires that managers identify different levels of effort for performing each activity. They must identify a minimum level of spending – often about 75% of their current operating level – and then identify in separate decision packages about the costs and benefits of additional levels of spending for that activity. This analysis forces every manager to consider and evaluate a level of spending lower than his current operating level; gives top management the alternative of eliminating an activity or choosing from several levels of effort; and allows tremendous trade-offs and shifts in expenditure levels among organisational units (Horngren, et. al., 1999a; Phyrr, 1973).

The analysis of alternatives as required by a *ZBB* approach is perceived to be the major difference between typical budgeting techniques and *ZBB* (Phyrr, 1973). A *ZBB* process can be shown in Figure 3.5:

**Figure 3.5 The Basic Formulation Process**

Source from: Phyr, 1973. *Zero-Base Budgeting: A Practical Management Tool for Evaluation Expense*, John Wiley & Son, p. 13.

General requirements for the successful implementation of ZBB were put forward as follows (Wilhelmi & Kleiner, 1995):

- (i) Support from top management.
- (ii) Effective design of the system to meet the needs of the user organisations.
- (iii) Effective management of the system.

The potential advantages of ZBB over conventional methods are:

- ZBB provides top management with detailed information concerning the money needed to accomplish desired objectives. It highlights redundancies and duplication of efforts among departments, and focuses on financial resources needed for programmes rather than on the percentage increase (or decrease) from the previous year, specifies priorities within and among departments and divisions, allows comparisons across these organisational lines as to the respective priorities funded, and allows a performance audit to determine whether each activity or operation performed as planned (Phyr, 1973).
- In the long run, the most significant impact from ZBB will occur in the middle and lower levels of management, where managers will have to evaluate in detail their planning, operations, efficiency, and cost effectiveness on a continuous basis. In industry, corporate profits should be improved because higher priority

new programmes will be funded in part by improved efficiency and elimination or reduction of those current activities of lesser importance to the organisation. If ZBB is applied by the government, the taxpayer should benefit because higher priority new programmes can be funded at the expense of obsolete or redundant programmes without significant reductions in most of the service (Barkman, 1997).

- The major benefits of ZBB are that managers tend to focus on identifying non-value-added activities and work to reduce items that cause financial resource to be spent unnecessarily or ineffectively. As for a manager, ZBB fosters creativity and commitment because it requires the manager to state what he is going to achieve and what he will need in the way of resources to achieve it. He is not likely to forget that he developed the objectives and won the resources needed to achieve them as he works toward the results he said he could attain. ZBB also gives managers more decision making power. ZBB provides feedback to the manager on the results of his decisions in a timely manner (Austin, 1977).

In theory, ZBB is a genuine system that can be successfully adapted to fit the needs of dissimilar activities and organisations (Grasso, 1997). In reality, ZBB suffers from a significantly strong opposition and enjoys relatively little support from the people who, for one reason or another, must supply the data for the analyses. This may be attributed to the fact that ZBB requires a great amount of commitment from top management and effective design and management of the system (Haider, 1977). Problems occur in terms of time required for ranking all the 'decision packages' used in ZBB and time for all the analyses. Managers may still play games in terms of leaving slack in their budgets, although some organisations addressed this issue by including how well a manager followed the ZBB "rules" in his/her performance evaluation. Particularly in the public sphere, entrenched ways of doing things may work against the required changes imposed upon an organisation (Barkman, 1997). Other reasons often mentioned about ZBB difficulties include: the vast amount of paperwork required, resistance to change, inadequate training for preparers and evaluators of 'decision package' used in the ZBB process, improper implementation techniques, lack of support, and lack of accurate data in a suitable format so that programme activities and missions can be clearly focussed.



Limited material related to practical implications of ZBB has been found from this literature survey. Williams (1981) proposed that ZBB was a destabilising<sup>3</sup> process that might co-exist in the future with traditional budgeting system to form a 'semi-confusing' information system. Horngren, et. al (1999a, p.582) endorsed this view that owing to the amount of work a ZBB implementation required, ZBB was used on a less regular basis alongside of ordinary or priority incremental budgets. Based on Thompson (1967)'s analysis and Hirst (1983)'s model, Hayes and Cron (1988) found that ZBB was able to predict dysfunctional behaviour using the configuration of performance evaluation measures and task uncertainty. By studying 153 managers from an organisation in private sector, Williams et al. (1985) tested the integration of ZBB with Management-By-Objectives (MBO). He found that effort to implement ZBB was not supported by both lower and upper level management in an organisation that has a MBO system. These results led to a conclusion that managerial responses to the implementation of a new budgeting system were not dependent solely on the internal technical or hierarchical organisational structure, nor by the technical specifications of the new system and its control system, but were attributed by a combination of these factors (Williams & Hinings, 1988). Drawing on an empirical study on ZBB implementation, Gordon et al. (1984) suggested that an organisation could use certain strategies to lessen the likelihood of an unsuccessful implementation of ZBB resulting from over zealous information processing requirements that significantly exceeded the existing information processing capacity.

It can be concluded that ZBB provides a means to evaluate simultaneously existing and alternative ways of achieving some specified goals by establishing priorities amongst them (Wilson, 1983, p. 206). This evaluation naturally leads to trade-offs between existing and new activities in which one may need to sacrifice some activities in order to improve others (Ibid.). Moreover, ZBB's philosophy has its credit in reviewing and justifying programmes and ongoing activities from a starting point (Horngren, et. al., 1999a). It may also be introduced as an one-off and destabilising process to review the existing business processes. Although the ZBB approach is logical and has much to be commended

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<sup>3</sup> The implementation of ZBB, like any reform process, is to introduce a new way of approaching existing processes and thinkings. Such process normally involves changes to stable organisational conditions, in a way, is destabilising the normal/routine processes.

in relation to discretionary outlays, it is generally not regarded as a cost-effective means of project budget control in practice (Barkman, 1997; Grasso, 1997).

#### 3.4.1.1.3. Implications to ABB from the Experiences in Conventional Budgeting, PPBS & ZBB

From the above literature review, it can be seen that certain similarities exist between the PPBS, ZBB and ABB processes. The general process in a typical PPBS (see Figure 3.4) bears certain resemblance to an ABB approach. The PPBS process runs in parallel with the organisational structure and focuses on measuring outputs (e.g. products or services). To calculate ABB product cost budgets an ABB approach also requires the calculations to link activities across all functional units and run horizontally across them.

Some publications have addressed the similarities between ZBB and ABB. (Consortio, 1998; Kaplan & Cooper, 1998), in that both budgeting methods emphasise the analysis of activities and the computation of the activity costs. The subtle difference is that the 'decision packages' in ZBB place more emphasis on the justification of proposed different levels of effort for each activities, whereas ABB focuses on justification of outputs and activities (Kaplan & Cooper, 1998).

Whether or not the similarities are found in practice, as a new budgeting method, an ABB implementation process may share the similar experiences as those experienced in PPBS or ZBB implementations. As a result certain implementation issues (e.g. top management support, effective design to meet the users' needs, suitability to organisational structure requirement and administrative arrangements and effective management of the system) or problems (e.g. complexity to implement; resentment owing to users' familiarity to conventional budgeting system, insufficient information to meet users' needs, cultural barriers to change), as revealed in this section, are worth noting in the ABB study.

### 3.4.1.2. Technical Perspectives of Budgetary Planning and Control Systems

#### 3.4.1.2.1. *Technical Perspectives of Budgetary Planning Systems*

Budgetary planning is an integrated process that incorporates budgeting in an overall long-term planning process with aims to reduce uncertainty and to translate objectives into measurable actions (e.g. Drury, 1996/2000; Wilson, 1983). Various techniques are used in budgetary planning systems to fulfil these aims. These techniques include computer simulations, decision trees analysis, risk analysis, application of probability theory, input-output matrices, and increasing use of computer data-banks as sources of information used in budget planning process (Reekie & Crook, 1995). To reduce the influence of uncertainty, Amey (1979) has proposed a computational 'dynamic planning model' (to succeed the 'multi-period Linear Programming (LP) technique') as a means to demonstrate some real-life planning situations which often have both linear and non-linear factors.

In terms of techniques required in a planning process, they normally include elements, such as intuitive forecasting, experience, and market trend analysis. It should be emphasised that all these planning techniques are intended to complement rather than replace the intuitive forecasting which are routinely used by managers as a complement to their expertise and 'gut feeling' (Jones, 1986; Rhyne, 1987). For example, Jones (1986) has revealed that many relatively advanced planning theories were not used in practice. He found that in some U.K. organisations many managers often used certain 'less advanced' planning approaches when dealing with uncertain and difficult situations. Some empirical investigations also led to suggest an overall pattern of planning in successful firms, in that these firms paid close attention to current markets, had effective control on operating costs and were very clear in regard to the actions and results expected (Rhyne, 1987).

#### 3.4.1.2.2. *Technical Perspectives of Budgetary Control Systems*

In this perspective, budgetary control, as a part of management control system, can be regarded as a computational decision-making process that maximises the goals of an organisation and the results can be measured in quantitative terms. Many technical models of management control systems assume that alternatives are mutually exclusive, separated



and can be easily identified (Anthony, 1965). Thus, these models often deal with unitary goals, identify a range of possible options together with their likely consequences, and select alternatives that tend to maximise the goals of the organisation (Anthony, 1965; Horngren, 1977; Ijiri, 1965).

In a budgetary control process, budgets are used as a control mechanism to compare the planned actions with actual results. Management accounting textbooks have introduced a series of financial computational methods (e.g. standard costing) and other methods (e.g. flexible budgeting, responsibility accounting, variance analysis and non-financial performance measures), which aim to enhance controllability and effectiveness of budget control systems.

Two publications from this literature survey discuss optimal computation models of flexible budgeting (Chung, 1993; Dhavale & Sounderpandian, 1993). Dhavale and Sounderpandian (1993) used an optimisation computation model to calculate the flexibility required in Just-In-Time (JIT) within cellular manufacturing systems. Chung (1993) found that the optimal output of a firm with production flexibility is less than that of the firm without *ex post* adjustment capability. He is also of the opinion that the management should be more aggressive in output planning when the interest rate is higher and if the demand for the firm's output is uncertain. The optimisation computational technique has also been used in capital budget projection to reduce the influence of uncertainty (Lee, 1988).

However, complex theoretical budgetary control models are not extensively used in practice. Investigation of business practices has revealed some insights of the usefulness of budgetary control systems. For example, Skousen (1990) suggested that budgetary control practices were not used as perfectly as it could be. Armstrong et al. (1996) did not find evidence to support textbooks' claims that budgetary control practices were extensively used in local governments, apart from the deployment budgetary control to achieve labour control. A study of Swedish companies has also revealed that budgetary control played passive roles in these companies and the use of budgetary control was limited to responsibility control whereas more emphasis was put on budgetary planning (Arwidi & Samuelson, 1993).

Most of the budgetary control research surveyed appeared to view it from different perspectives, such as organisational and behavioural. This different view may be

attributed to the realisation of weaknesses in the technical model of budgetary control in the early 1980s, as the technical model, or functional view to management (budgetary) control system, tends to ignore the wider social, economic and political context in which organisations operate (Covaleski & Dirsmith, 1983; Hopper, 1987; Hopper, et. al. 1987; Hopwood, 1983; Otley, 1984/87). In addition, technical models for budgetary control fail to assess the effect of individual values, beliefs, organisational conflicts and the divergence of goals in the organisation upon decisions which cannot solely be measured in accounting terms (Hopper & Powell, 1985; Otley, 1985/95). These extended views of budgetary control systems are examined in the following sections (see Section 3.4.2-3).

Although the study of capital budgeting is not the main emphasis in this research, some findings are worth noting. For example, Pike (1983) found, in his survey of 200 U.K. organisations, that sophisticated techniques of capital budgeting are not popular in use. Haka, et. al. (1985) found, through personal interviews with 30 firms, sufficient evidence to support Pike (1983)'s findings. He suggested that there is a short-term positive effect when a firm adopts sophisticated capital budgeting selection procedures but these procedures may not result in superior firm performance. There are evidences to support the claims that advances in computing techniques have encouraged the adoption of sophisticated methods in the areas of risk analysis and control and evaluation of large capital projects (Pike, 1988). Ho and Pike (1991) conducted a survey to study the application of risk analysis methods in capital budgeting within 350 organisations. They found that in practice relatively simple risk adjustment and sensitivity analysis were often used as a primary focus, while more advanced risk analysis tools were more likely to be utilised by larger organisations to deal with higher market risk projects.

From the above review, it can be deduced that relatively sophisticated techniques are not popular in practice in the areas of budgetary planning, control and capital budgeting. In particular attention to budgetary control takes a diverse approach to incorporate a wider consideration relating to organisational and social (or cultural) factors. Budgetary planning appears to be more closely linked to markets, costs control and explicit prediction of actions and expected results. The limited extent of budgetary control in practice is also worth noting in the ABB study.

### **3.4.2      *Behavioural Perspective of Budgeting***

A budgeting process naturally involves extensive human interactions. In the case of an ABB system, the desired outcomes (e.g. effective management planning and control) may be achieved through the identification of linkage between activities, functions and resources which promotes human interactions, hence behavioural consideration is an essential part of system design and implementation (e.g. Drury, 2000; Hopwood, 1980).

Argyris presented the first study on possible impact of the use of impersonal budgetary control systems on potentially vulnerable individuals (Argyris, 1952). This was followed by another study designed to investigate how budgets, and particularly the level at which they were set, could be optimally used to motivate managers (Argyris, 1953). Participative budgeting (discussed in section 3.4.2.2.) stemmed from these studies described above and gradually became one of the research topics in its own right (see the amount of publications as presented in Table 3.2).

#### **3.4.2.1.      Human Behaviour and Budgetary Control**

Through studies of behavioural impacts on general budgetary control processes, issues (e.g. gamesmanship and leadership style) have been revealed so that certain patterns of behavioural responses can be understood. Some issues have also been revealed in studies on human behaviour during decision making on capital budgets. These issues are related to managers' positions, educational background, and relationship between capital budgeting practices and the transition of manufacturing process.

Researchers have identified a variety of behavioural issues arising from budgetary control processes, such as gamesmanship, leadership style and managerial responses to organisational circumstances. For example, the gamesmanship issue was revealed by Hofstede (1968) in his investigation to budgetary control processes. He detailed the nature of games and described how subordinates may react negatively to budget-related pressures, which could also be associated with aggression, conflicts, operational inefficiency and staff-line clashes. A recent case study revealed the emergence of gamesmanship behaviour in Norwegian hospitals when centralised budgetary control was disintegrated from service



productions (Pettersen, 1995). The result was a systematic de-coupling of budgets and actual results, and also led to obstructing the processes of learning and evaluation of performance. This gamesmanship behaviour was also observed by Christiansen & Skarbak in their study of a Theatre (Christiansen & Skarbak, 1997). They showed that the realisation of the existence of budget games could provide some useful insights so that structural and process changes could be introduced during the implementation of budgetary control systems. This realisation has also helped to prevent the occurrence of this phenomenon.

The influences of a budgetary control system on budgetees' behaviour, such as leadership style, have been observed by Arwidi and Samuelson (1993). Managers often expressed their own styles of leadership, often quite unconsciously, through budget control systems (Decoster & Fertakis, 1968; Macintosh & Williams, 1992). Budgets are also used by managers as responses to prevailing organisational and environmental circumstances (Otley, 1978; William, et. al., 1990) (see Section 3.4.3 for further discussion).

Studies of behavioural impacts on capital budgeting may also shed some lights to the study of human behaviour in budgetary control. During an experiment of capital budgeting decision making with a group of managers, Zanibbi and Pike (1996) found that the differences in managers' judgemental behaviour were linked to those managers' organisational positions and levels and educational backgrounds. Miller and O'Leary (1997) found in Caterpillar Inc. that complementary relations existed between capital budgeting practices and the transition from conventional to modern manufacturing processes, but these relationships were associated with the design of those (manufacturing) processes and mechanisms rather than outcomes and implementation processes.

#### **3.4.2.2. Participative Budgeting**

Participative budgeting is generally regarded as a budgeting practice that has been developed through a process of joint decision making by top management and operating personnel (Raiborn, et. al., 1996). The degree to which lower-level operating management is allowed to participate in budget development usually depends on two factors: top management's awareness of the advantages of the participation process and its confidence in those advantages (Ibid.).

There is a considerable amount of publication in the literature during the span of past two decades. This review focuses on different issues in participative budgeting and approaches taken based on the following four areas:

- (i) Generally accepted conclusions.
- (ii) Studies that explore contingent or intervening variables.
- (iii) Other issues related to budget participation.
- (iv) Weakness on the studies of participative budgeting.

#### 3.4.2.2.1. Generally Accepted Conclusions

Among the first to comment on participation in budgeting is Argyris (1952). After describing many of the dysfunctional consequences of authoritarian budgeting systems which tended to produce pressure and stress on employees, Argyris strongly advocated a change to a more participative style of budgeting approach as a remedy to eliminate any undesirable behaviour which he had observed. Other writers endorsed this proposition that participation brings benefits to the organisations, including improved managerial and organisational performance (Chenhall & Brownell, 1988; Mia, 1988), although the latter was questioned by Brownell and McInnes (1986) through differences in results arose from their survey finding (see section 3.4.2.4). Through theoretical research it was suggested that participation adds to a general level of understanding to the role of information in budget-setting and this enables the achievement of an equilibrium bargaining process (Pope, 1984).

A number of issues which have been identified by most publications in this literature survey suggested some consistent views in the budgeting literature:

- *Job Satisfaction:* the positive association between satisfaction of subordinates and the degree to which they were permitted an opportunity in making decision was discovered and stated by Vroom (1964). This finding received supports from a number of studies throughout the years. Steers (1976) found the existence of a strong positive relationship between participation and job satisfaction. Brownell (1982) also found support for this relationship by suggesting that the impact of supervisory evaluative style on performance should be moderated by budgetary participation, which in turn, exerts a substantial positive influence on

performance. Dunk (1992) supported this relation with an additional finding on interaction from different managerial levels, based on his survey of 30 manufacturing organisations from Northern Britain.

- *Reduced Job Tension:* there is little evidence to the contrary and much to support the proposition that participation will reduce job tension. The basis for the comments by Argyris (1952) is that participation will reduce the tension caused by the authoritarian system that he had observed. This proposition was deemed to be relevant to such factors as task uncertainty, individual performance and budget emphasis. Hirst (1983) found that the relationship between reliance on accounting performance measures and reported tension was dependent on task uncertainty. Brownell & Hirst (1986) extended this finding and suggested in their three-way interaction test (which involved performance measures, job tension and performance) that a compatible combination of participation and budget emphasis were relatively more effective in reducing job tension in low task uncertain activities as opposed to high ones. Dunk (1993b) confirmed that budget participation generally reduced job tension and increased managerial performance.

The above discussion assumes that job tension is undesirable for some reasons and thus it would be beneficial to reduce it. However, some research suggested that an increased participation might also cause considerably high job-tension, which was not necessarily considered to be a negative influence. Some researchers argued that a certain level of job-tension was desirable to boost managerial performance (Mia, 1989). Through a study conducted in New Zealand to investigate job difficulty and related factors, Mia (1989) found that a relatively high level of managerial performance was expected in cases where perceived participation was commensurate with the perceived level of job difficulty. While it is debatable the relationship between job tension and difficulty, the studies are exceptions to the general conclusion given above.

- *Job Attitudes:* a number of different attitudes are encompassed within this heading. Hofstede (1968) found that participation was an important feature in improving attitudes towards the budget system. Brownell & McInnes (1986)



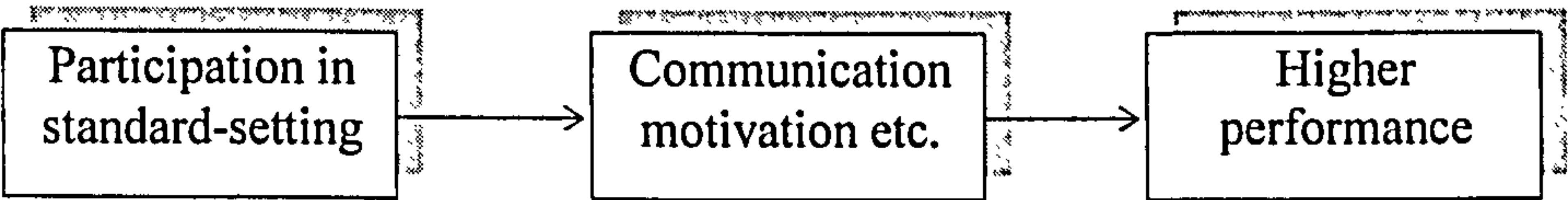
confirmed that budget participation had a positive effect on motivation. Mia (1988) found that managers’ participation in the budgeting process developed a relatively favourable attitude or motivation and resulted in improved performance. An experimental study done by Kim (1992), using some 81 undergraduates majoring in accounting as surrogate, indicated that risk attitude (preference) was a function of the combined effect of context and disposition between risk seeking and risk adverse groups.

It is clear from the literature that it is rather difficult to establish a formal relationship between participation and performance, since the relationships between participation and various attributes (e.g. job satisfaction, job tension and job attitudes) are in nature a multivariate problem, which is still not clearly understood within existing research.

3.4.2.2.2. □ Studies that Explore Contingent or Intervening Variables

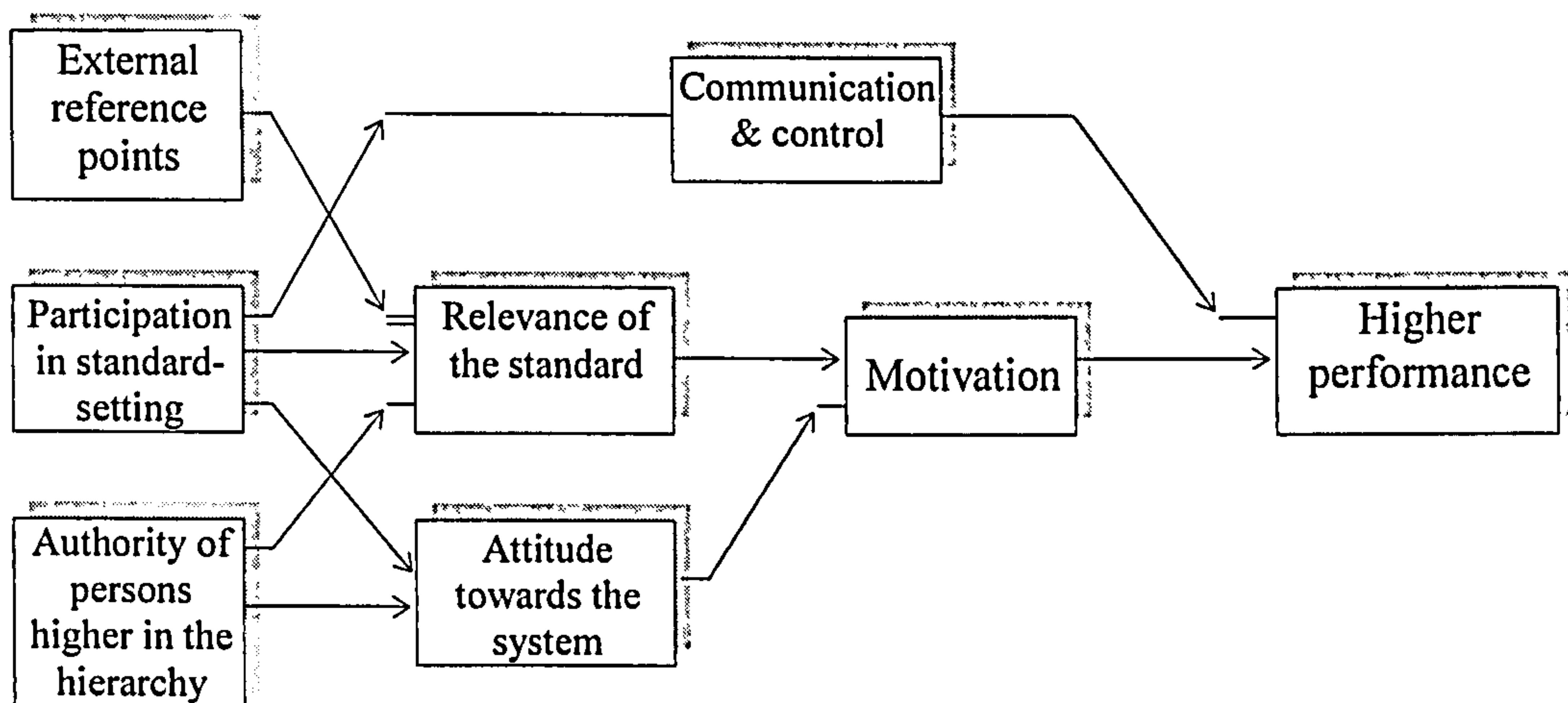
The general proposition (which suggests the existence of a direct relationship between participation and performance) can be illustrated with the following diagram (Figure 3.6).

**Figure 3.6     The Universal Proposition Regarding Participation and Performance**



Source from: Hofstede, 1968. *The Game of Budget Control*, Tavistock Publication, London , p.178.

As a result of Hofstede’s study, a more complex form of relationship through the use of, namely “an improved model”, was proposed. This is a move away from the universal to a more contingent view in which there are more variables to be considered and where an increase in participation, depending on certain conditions, may or may not lead to better performance. The improved model is shown in Figure 3.7.

**Figure 3.7 An Improved Model of the Effect of Participation on Standard Setting**

Source from: Hofstede, 1968. *The Game of Budget Control*, Tavistock Publication, London , p.178.

The variables shown in Figure 3.7 are regarded as possible contingent or intervening variables, these variables are identified in an attempt to model the complex relationship that exists between participation and performance. The possible interactions of these variables can be used to explain the apparent inconsistency in results suggested by Argris (1952) and Brownell and McInnes (1986). According to Hofstede (1968), these contingent variables are involved in the tests described earlier and in some of the tests they were unintentionally compatible, and thus a positive relationship between participation and performance was found. Whereas, in other tests they were incompatible and thus no relationship was found.

These variables generally refer to (i) personality types, (ii) propensity to create budget slack, (iii) organisational attitude, (iv) uncertainty, (v) motivation, (vi) role ambiguity, (vii) information asymmetries and (viii) agency theory, which are briefly described as follows:

- i) Personality Types was the first variable to be noticed and tested (Lyne, 1995). Vroom (1959) found that participation produced improved performance when those involved were “low authoritarian persons with highly independence needs”. These two variables were highly correlated and thus both characteristics were frequently found in the same people. He also found that there was no

improvement in performance for persons with the opposite characteristics. Tests conducted by Searfoss and Monczha (1973) produced a similar result.

While testing the possibility of predicting budget system characteristics with an aid of personality variables, Seiler and Bartlett (1982) concluded that authoritarian persons (who tend to be inflexible) with highly independent needs would be found in non-participative budgetary systems and vice versa.

It is worthy to note here that Vroom found participation and high independence needs were compatible whereas Seiler & Bartlett found participation and low independence needs produced better performance. There appears to be no obvious reconciliation of this contradiction. On the basis of their results, Seiler and Bartlett recommend that all changes in budget systems should be evolutionary as the current state is likely to reflect the personality characteristics of the current staff and such characteristics cannot be changed rapidly.

In conjunction with the study of the personality variable, which ‘measures the extent to which individuals exercise control over the reinforcements that occur relative to behaviour (Licata et al, 1986, p. 112)’, a form of ‘locus of control’ appears to exist, as shown in Figure 3.8.

Figure 3.8 Locus of Control and Participation

|        |                            | LOCUS OF CONTROL                       |  |
|--------|----------------------------|--|--|
|        |                            | Internal                               | External                               |
| SOURCE | High<br>(Participative)    | CONGRUENCE<br><i>High Performance</i>  | INCONGRUENCE<br><i>Low Performance</i> |
|        | Low<br>(Non-Participative) | INCONGRUENCE<br><i>Low Performance</i> | CONGRUENCE<br><i>High Performance</i>  |

Source from: Brownell, P., 1981. Participation in Budgeting, Locus of Control and Organisational Effectiveness, *Accounting Review*, pp. 840-860.

In Figure 3.8, ‘Internals’ refers to those individuals who feel their rewards and punishments are determined by their own actions, and ‘Externals’ to those who feel that the force which yields rewards or punishment is beyond their control.

Brownell (1981) examined the hypothesis that the level of performance would be higher when locus of control and participation were congruent. The laboratory-based test was



carried out on samples of students and managers and in both cases the predicted relationship was established.

Licata et al (1986) took another approach of examining the effects of the locus of control variables on the superior manager, whereas Brownell and others had looked at the effects in subordinate managers. The hypothesis that ‘internals would allow a greater degree of participation than externals’ was tested by means of a laboratory experiment by Licata et al. The result supported the hypothesis that personality variable and locus of control may be related with the extent which superiors were willing to accept the input of subordinates in the participation process. This finding formed an interesting counterpart to the Brownell’s (1981) results described above.

The results of these tests suggested that for a consideration of personality types, particularly in respect of locus of control and degree of authoritarianism, there are considerable differences in the relationship within the participation model. Participation can be associated with increased performance in certain predictable personality types.

- ii) Propensity to Create Budget Slack. The existence of slack in a budgeting process is caused by the intensity of the budgetary control, the design of the budgeting process, and participation. The effect of a budget slack can be related to performance. Two motivational factors – organisational commitment and job involvement – can explain managers’ propensities to create slack (Nouri, 1994; Nouri & Parker, 1998). It was proposed that a ratchet could be an alternative method to reduce budgetary slack when past information was made available (Chow et al., 1991). Some other factors such as tight budget and use of technology might also suggest the propensity to create slack (Merchant, 1985). Dunk (1993a) found the budgetary slack would exist even though participation was in present if the budgets were a matter of conjecture.
- iii) Organisational Attitudes inherently include a range of attitudes that may also be described as “cohesiveness”, “morale” or “attitudes towards the firm” (Lyne, 1995). The hypothesis that has been examined is that unless these attitudes are positive, participation will not have a beneficial effect on performance, and it may even be detrimental. Becker and Green (1962) examined this issue in a theoretical manner and proposed that only where the attitudes within the

organisation (to other members and to the objectives) are positive, would participation produce benefits in performance. Mia (1988) tested a similar hypothesis, i.e. "Managers whose budget participation is congruent with their attitude will demonstrate improved performance, while managers whose budget participation is incongruent with their attitude will demonstrate hampered performance". This hypothesis was tested on a sample of 83 managers from a large manufacturing company and could not be rejected at a 2% significance level.

Thus the evidence suggested that organisational attitudes are important features in the relationship between participation and improved performance. Without positive attitudes, performance will not be improved by participation. However, there is a possible problem of logic circularity here. In section 3.4.2.2.1, it is seen that participation will result in improved job attitudes, which assumes leading towards improved organisational attitude, and in this section participation may be dependent upon good organisational attitudes. This circularity has not been noted in the literature and thus its importance has not been evaluated. It is the opinion of the author that organisational attitudes may not be important causal variables, but are better considered as contingent variables on participation which in the right condition can produce improved performance. In an environment which is conducive to effective participation there will be good organisational attitudes and such attitudes will also be strengthened by positive participation.

- iv) Uncertainty: different forms of uncertainty have been examined. Galbraith (1973, p. 47) wrote: 'it is hypothesised that in order to be effective, organisations will utilise these forms [i.e. participative lateral relations] in proportion to the amount of task uncertainty.' He found evidence for this hypothesis in a number of large organisations. Brownell and Hirst (1986) tested the interaction of three variables, one of which was task uncertainty, with participation and performance. Their evidence did not support the hypothesis made by Galbraith above, although they had expected to be able to confirm it. Govindarajan (1986) proposed a formal contingency approach to the explanation of participation and tested environmental uncertainty as one of the two key contingent variables. His

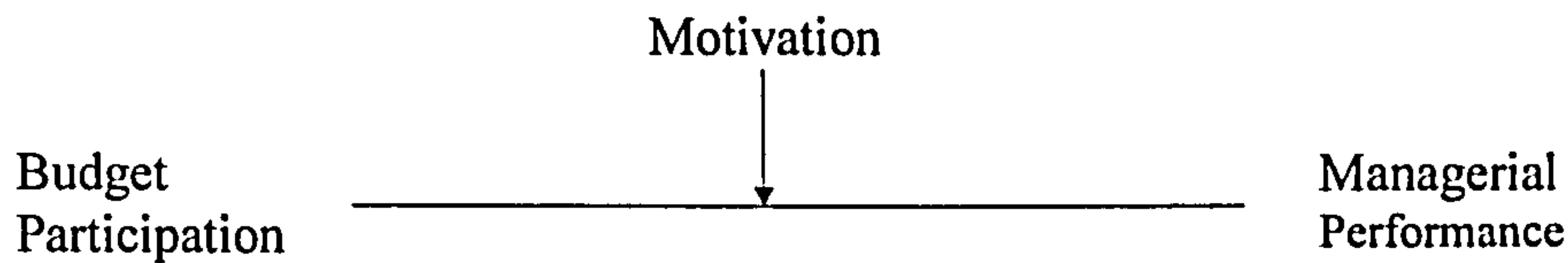
straightforward hypothesis that “the greater the environmental uncertainty, the greater the positive impact of participation in the budgetary process on managerial performance” was tested using a sample of 77 managers from a large business organisation. The results gave “clear and strong support” for this hypothesis.

The general impression from the papers surveyed is that the presence of uncertainty, either from task or environmental, is a potential intervening or contingent variable which can be used to explain the relationship between participation and performance.

- v) Motivation has been examined as the primary cause of link between participation and the improved performance (Hofstede, 1968). Brownell (1983) and Brownell and McInnes (1986) attempted to show that such cause was by means of improved motivation, a view which had been already advocated by many researchers (e.g. from Argris (1952) and Becker & Green (1962) onwards). An expectancy theory approach was adopted in both of the Brownell’s studies (1983/86) to the measurement of motivation and the tests of hypothesis among middle-level managers using questionnaires. The result of the studies, on the contrary, failed to find support for the intervening effect of motivation, and Brownell & McInnes found one of the key relationships to be opposite to that predicted by the hypothesis, where a strong positive relationship between participation and performance was found, but “only a small proportion of this was accounted for by the path through motivation” (Brownell & McInnes, 1986, p.597).

This proposition was also examined by Mia (1988). Based on his hypothesis that if participation and motivation are congruent then improved managerial performance would result, Mia examined the potential of motivation as a construct moderating the relationship between budget participation and performance (Ibid.). The relationship between these variables can be shown in Figure 3.9, which indicated that motivation was related to neither participation nor performance but acted in a moderator role.



**Figure 3.9 Moderating Potential of Motivation**

Source from: Mia, L., 1988. Managerial Attitude, Motivation and the Effectiveness of Budget Participation, *Accounting, Organizations and Society*, Vol. 13, No. 5, p. 467.

The results of Mia (1988)'s study strongly supported the moderating effect of motivation and that congruence between participation, motivation and their associations with improved performance.

Thus, although the interaction between motivation and the participation-performance relationship has been discussed for many years, it appears to be more complex than what was originally envisaged. Some earlier tests have failed to confirm simpler hypotheses but these tests supported a more complex hypothesis formulated by Mia.

- vi) Role Ambiguity. Chenhall and Brownell (1988) examined the assumption that the effects of participation on budgeting were equivocal. They explored other possible intervening variables in the relationship between managerial performance and job satisfaction. Their result indicated that role ambiguity acts as an intervening variable in the influence of budget participation to job satisfaction and performance. O'Connor (1995) illustrated a more complex picture of intervening variables in the study of relationship between budget participation and the role of ambiguity. He observed that where budget emphasis could moderate the usefulness of budget participation and the subsequent usefulness of performance evaluation, a decrease in the level of role ambiguity was likely to be found. As a result an improved relationship between superior and subordinate could also be observed (Ibid.).
- vii) Information asymmetries. Pope (1984) suggested that information, whether it be public information, owner (autocratic) or managers (complete delegation), would eventually reach equilibrium via a bargaining process established in budget participation. Young (1985) found, in an experiment involving 40 MBA students as surrogates, that the information asymmetry, particularly in favour of the subordinate manager, would result in dysfunctional behaviour and poorer

performance. His result revealed part of the bargaining process described by Pope (1984), but was not supported in general since a very diverse behaviour might be observed when the subjects had private information.

- viii) Agency theory. agency theory, which is developed within the context of capitalist social formation, is concerned with contractual human relationship within a firm when applied to management accounting problems. The base of agency model is build upon the assumption that agents have more information than principals and that this information asymmetry adversely affects the principals' ability to monitor effectively whether their interests are being properly served by agents. The most widely used application of the agency models is on the relationship between the principal (or superior) and an agent (or subordinate) (Scapens, 1984). Most studies on participative budgeting in this literature survey implicitly reflect the implications of agency models. Apart from them, only one paper by Young (1985) indicated explicitly the use of agency model to help understanding of the effects of private information (e.g. self report) about productive capability, risk preferences, and participation in relation to existence of budget slack.

#### 3.4.2.2.3. Other Issues Related to Budget Participation

Two other types of variables have been suggested to enhance the understanding of budgetary participation. First, Daroca (1984) examined a form of group effects in a participative budgeting setting. Many of the other studies have included these effects implicitly because they have questioned managers about their practices which include some group loyalties and other group effects. Daroca conducted an experiment, which involved 120 undergraduate students, to examine these specific effects. He found that participation in a group setting produced some interesting results, including:

- (i) The group may encourage the sharing of information and thus increases the total information available. This is one of the advantages that is frequently put forward in support of participation.

- (ii) Certain types of information may be inhibited by the group process, particularly information which is contrary to the initial or generally held position.
- (iii) A budget developed by a group may not be internalised by the individuals as the result is seen as “only an artifice of the group”. This is contrary to the typical advantages of participation advocated in textbooks.

The second type of variable is concerned with culture perspective. Parker (1979) examined the institutional influences on participation and surveyed the prospects for increased participation. His findings, which suggested the differences between countries and the effects of institutions (e.g. the legal system and the trade unions), put the results outlined above in a wider perspective. A cross national examination of participative budgeting between Singapore and Australia has revealed some effects of cultural differences on participation, i.e. a low budget emphasis in nation with high individualism culture and high budget emphasis in nation with low individualism culture (Harrison, 1992). Another examination, which was demonstrated by O'Connor (1995), investigated the effects of differences in organisational culture which exists in local and foreign manufacturing firms within a nation, in his case is in Singapore which has a high power distance culture, on budget participation. He found out that organisational culture, or power distance culture which tends to work in a highly hierarchical manner and less participation in budgeting, has the effect of moderating the usefulness of participation in budgetary processes and performance evaluation. This finding which concerns the effect of culture differences on participative budgeting among different nations may carry implications for the cross-national transferability of the design characteristics of a management (budgetary) control system.

#### 3.4.2.2.4. Weaknesses in the Studies of Participative Budgeting

Despite its contribution to the understanding of participative budgeting, the behaviour approach has its weaknesses. Firstly, the studies of budgeting from a human behavioural perspective are unable to produce consistent results (e.g. Brownell and McInnes (1986) failed to confirm that participative budgeting, through its effect on motivation in order to enhance managerial performance whereas others such as Argris (1952) and Becker and Green (1962) supported this view). Secondly, by adopting scientific methods (e.g.



structured questionnaires, experiment, and computational and statistical models), many of these studies may fail to take account of the importance of individual's background, understanding, values and culture, which may influence his/her budgeting behaviour. Finally, the focus in the research of behavioural perspective is on the individual, therefore, the results so obtained may not be able to explain the social and organisational setting in which the individual was based, the socio-economical and cultural contexts in which budgeting systems operate.

### **3.4.3      *Organisational Perspectives in Budgeting***

The previous two sections discuss the various budgeting issues related to technical and behavioural perspectives. To understand fully the role of budgeting systems, it is necessary to extend the examination to an organisational dimension (i.e. the interaction of budgeting systems with other organisational systems). The issues revealed by prior research work may shed some lights on the ABB study, e.g. effectiveness of an ABB system in comparison to other systems in an organisation, and the impacts of organisational structure and changes on the implementation of an ABB system.

In comparison to the study of technical aspect of a budgeting system (which have been developed over the years) and the behavioural interests (which began in the early 1950s), a systematic study of the organisational influence on design and use of accounting systems, in particular budgeting systems, began in a period between the late 1960s and the early 1970s (Burns & Waterhouse, 1975; Hayes, 1977; Hofstede, 1968; Hopwood, 1972; Murray, 1970; Watson, 1975; Wildavsky, 1975). When reviewing the research publications that viewed budgeting from an organisational perspective, one would find it relatively difficult to define a clear boundary for this area of study. The different approaches chosen (e.g. from organisational control, information flows within organisations, decision making process, or the various purpose aspects) and different field of study (e.g. organisational

psychology, organisational sociology, organisational management) resulted in a diversity of issues being raised. Otley (1984, p. 97)<sup>4</sup> stated in his review that:

*'... it must be clearly stated at this stage that there is not a coherent body of knowledge, under the title of organisation theory or organisational behaviour, that exists waiting to be discovered and applied by accounting researchers in their studies.'*

Over the past two decades, a total of 53 published papers were found in relation to the research of budgeting in the organisational context (see Table 3.2) within this literature survey. Using the theoretical base established by Otley (1984), this section reviews these publications in accordance to following strands:

- Performance evaluation.
- Contingency theory.
- Control systems.
- Decision-making process.
- Other works.

#### **3.4.3.1. Performance Evaluation**

One of the main purposes of budgeting is to use a budget as a standard to evaluate actual managerial performance throughout a budgeted period, since individual managerial performance contributes to organisational performance. Hence organisations need to rely on managers' performance to optimise organisational performance. In order to control the outcome and steer it towards organisational objectives, organisational goals and targets are usually incorporated into budgets and the subsequent budgets are then used to measure how well managers performed in achieving these targets (i.e. performance measurement).

Much of the early research on performance evaluation focused on human behaviour as a result of perception to the use of a budgetary control system. For example, Hofstede (1968) found that although budgets were often used as a means of performance

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<sup>4</sup> Otley (1984) had attempted to provide a clearer picture of this area of study via an extensive review of the development of organisation theory and its relationship with management accounting in the period between the year of 1972 to 1981.

evaluation, budgets were often associated with many dysfunctional consequences in many U.S. organisations, whereas budgets were positively evaluated by European organisations but they are rarely effectively used. Using rational economic behaviour in relation to individuals, Lowe and Shaw (1968) explained that the formation of budgetary bias or 'budget padding' (Prendergast, 1997) was partially a result of manipulation by managers who were evaluated by a budgetary control system in order to gain some personal benefits.

The research of individual and organisational performance evaluation, according to Otley (1984), was also implicitly identified by other researchers (e.g. Hopwood, 1972; Livingstone, 1975). For example, Livingstone (1975) suggested that organisational goal development, sub-goal specification, resource allocation, budgeting, effectiveness measurement and performance evaluation were all interactive and interdependent processes. Researchers also adopted different approaches in this area of research. For example Otley (1978) and Imoisili (1989) suggested that a contingent approach was required to reach some forms of reconciliation in their research findings, in that a variety of factors (e.g. size of an organisation, decision making styles and functional differentiation), as revealed by different research findings, may indeed intersect with each other (see Section 3.4.3.2 for details),

Another approach of performance evaluation is taken from the link between information suppliers and the budgeting systems, termed 'information inductance' by Otley (1984). This approach, which attempts to characterise the type of deliberately biased behaviours and information manipulation occurring in a wide range of situations, can be illustrated by using a framework of formal and informal information flows developed by Earl and Hopwood (1981) (see Figure 3.10). Information, either formal or informal, can be utilised by managers at all level to help them to manage, present or justify their performances.



**Figure 3.10 The Formal and Informal Information Used by Managers**

|                   | Routine   | Non-routine   |
|-------------------|---|---|
| <b>Official</b>   | <ul style="list-style-type: none"> <li>▪ Standard cost accounting systems</li> <li>▪ Production control systems</li> <li>▪ Bank transaction processing systems</li> </ul> | <ul style="list-style-type: none"> <li>▪ Capital budgeting systems</li> <li>▪ Product profitability analysis (direct and indirect full costing)</li> <li>▪ Task forces and liaison roles</li> </ul> |
| <b>Unofficial</b> | <ul style="list-style-type: none"> <li>▪ 'Just-in-case' files</li> <li>▪ Block books</li> <li>▪ Self-designed protection systems</li> </ul>                               | <ul style="list-style-type: none"> <li>▪ Grapevine</li> <li>▪ Business lunches</li> <li>▪ Encounters in the hall</li> </ul>   |

Adapted from: Drury, 1996. Management and Cost Accounting, Thomson Business Press, p. 658.

Research in this area, however, is not found from the publications within this literature survey. This may be attributed to two reasons: (1) the focus taken by this survey is on budgeting from an organisational perspective; (2) researchers chose to focus on contingency theory in the area of budgeting (which is discussed in Section 3.4.3.2).

According to Otley (1984, p. 126), *'the development of the accounting literature on performance evaluation can thus be viewed as an example of the construction of grounded theory (Glaser & Strauss, 1967), albeit by different researchers. One path led to the generalised concept of information inductance; another led to the development of contingency theory.'*

### 3.4.3.2. Contingency Theory

The emergence of contingency theory was based on the idea that there was no universally acceptable model of an organisation that explains the diversity of organisational design. The contingency theory suggests that an organisational design depends on the contingent factors relevant to given situations. The initial work carried out by some researchers (e.g. Burns & Stalker, 1961; Chandler, 1962; Lawrence & Lorsch, 1967; Pugh & Hickson, 1976; Thompson, 1967; Woodward, 1965) in realising the effect of relevant contingent variables led to the development of the contingency theory in organisational contexts.

Early studies have tried to establish factors that shaped the general management accounting systems in organisations. As a result, a range of variables implicated in the design and use of accounting and control processes in organisations has been identified. For example, Hofstede (1968) suggested that budgetary control systems were influenced by the organisation's culture, technology and market. Some researchers suggested a list of variables that influence management accounting systems.

These variables include:

- The size of an organisation, its technology and structure (Bruns & Waterhouse, 1975; Khandwalla, 1972; Waterhouse & Tiessen, 1978).
- Decision making styles (Gordon & Miller, 1976).
- Personality and the styles of management in the organisation (Caplan & Champoux, 1978).
- Organisational values and motivation (Young, 1979).
- Management aspiration for profit growth (Piper, 1980).
- Relationships between different forms of the decision-making under uncertainty (Earl & Hopwood, 1979).
- Different types of information systems and individual attitudinal factors (Rahman & McCosh, 1976; Swieringa & Moncur, 1972).
- Investigation of varying accounting practice under different circumstances and factors influencing the design and functionality of accounting and control systems in organisations (Daft & Macintosh, 1978; Piper, 1980).
- The effects of organisational structure to the ways in which management accounting systems function (Baulmer, 1971; Hopwood, 1973; Otley, 1978).
- Relationships between reporting systems in different sub-units and their interrelationships with environments (Hayes, 1977 by adopting the study of categorisations of organisational activities from Thompson's (1967)).

Recent studies have attempted to extend the earlier research based on the argument of the contingency theory that various situations influence the way control system operates, thus finding an appropriate match or relationship between those variables could potentially lead to higher organisational performance (Govindarajan & Gupta, 1985; Govindarajan, 1988). Empirical studies had been conducted by Merchant (1981, 1984)

using various proposed contingent variables that may influence on budgeting. Finding from his study conducted in 1981, which involved 19 organisations in the electronics industry, Merchant suggested that larger organisations tend to make more use of formal administrative style to conduct budgeting and other means of control whereas smaller organisations tend to control through relatively informal and interpersonal style. Using the same industry, Merchant conducted a case study in 1984 by interviewing 201 manufacturing managers in these 19 organisations. He suggested that budgeting is related to departmental size, functional differentiation and degree of automation of production processes, but not the products' stage in the product life cycle or the company's strength of market position (Merchant, 1984). Chong (1996) found from a survey to senior managers in Western Australia that the extent of use of broad scope information obtained from management accounting systems can lead to effective managerial decisions and hence improved managerial performance. Gordon and Narayanan (1984), however, did not find support of the perceived significant relationship between organisational information systems (including budgeting systems) and organisational structure based on their case study of 34 U.S. organisations.

The results of contingency research do not provide conclusive and coherent views, the complex interactions of contingency variables appear to vary according to specific circumstances or situations in which an organisation operates. Indeed Otley (1980) concluded that 'there is no universally *best* design for a management control system, but that *it depends* upon situational and contextual factors.'

Criticisms on the empirical research methods used in the contingency theory research were also expressed on the basis of deficiencies in sound theoretical background and methodological assumptions of this approach (e.g. Otley, 1984; Cooper, 1981; Child, 1977; Hopper & Powell, 1985). For example, Otley (1984) outlined that a main intention of some empirical work is to set up an '*a priori*' theory, but the theory thus obtained may not be sound since such test results are less representative to explain the variations found from the collected data, and the use of dimension-generating techniques (e.g. factor analysis) often produce results which are incommensurable with results from other studies. On the basis of highly technical view of organisational choice, Hopper and Powell (1985, p. 441) argued that:



*Contingency theory thus represents a holistic apotheosis of the functional approach than a major new departure.*

Finally contingency theory failed to relate the performance evaluation issue to the wider context of the organisations (see also Cooper, 1981; Dunk, 1989; Schreyogg, 1980; Wood, 1979). For example, Dunk (1989) found in his literature survey that there was a gap in management accounting research which did not address the linkage between organisational administrative structure and technological innovation.

#### **3.4.3.3. Control Systems**

Management accounting systems can be regarded as having both a management (from the management control system viewpoint) and an organisational (from the organisational control viewpoint) emphasis (Otley, 1984). Budgetary control systems, which are part of management control systems, have been reviewed in Section 3.4.1.2.2. The studies in this section focused essentially on functional aspects of control and treated the social world as an objective (Hopper & Powell, 1985). Many researchers (e.g., Bourne, et al., 1982; Chua, 1988; Colville, 1981; Willmott, 1983) have questioned the relevance of these research applications to practice in terms of economic rationality and organisational context. It has been argued that a technical approach to control excludes the importance of the organisational, social and political contexts in which the system operates (Covaleski & Dirsmith, 1983). This section focuses on the viewpoint of organisational control.

Various approaches have been used with an attempt to gain an understanding of organisational control systems. McNally (1980) illustrated the hierarchical distribution of control from the responsibility accounting perspective. Using theory of cybernetics (i.e. the study of control in/of systems) with lower level systems (e.g. mechanical or organic systems), Otley and Berry (1980) argued that discussion of accounting control tended to take place against a back-drop of incomplete organisational information together with simplistic and authoritarian concepts of controls. They suggested that cybernetics theory could be gainfully applied to more complex systems (e.g. organisations). Das (1986) found from his experiment with 180 Canadian students that people working in mechanistic organisations chose significantly different control tactics than those working in organic organisations and

the controller were likely to choose extrinsically (not intrinsically) motivating controls in situations requiring important decision making.

By utilising a computational model, Mookherjee and Reichelstein (1997) were able to demonstrate an optimal model of budgeting in hierarchical organisations. By 'down-up-down' setting (i.e. two budgeting processes -- bottom-up and top-down), they found that a particular budget mechanism was optimal in terms of the incentives it created and the co-ordination it achieved.

A wider variety of viewpoints (e.g., human behaviour, information systems, psychological-technical systems and open systems) have been included in Otley's (1984) study to examine control systems approach in relation to organisation theory. He also addressed the weakness of control systems, which is associated with the role of management accounting information as part of an overall organisational control package, is the 'tendency to use theoretical constructs of control based on possibly inappropriate analogies (for example, mechanical system, organisms) to model organisational control processes in an uncritical manner (Otley, 1984, p. 131).'

#### **3.4.3.4. Decision Making Process**

Various studies have been carried out to look at information flows within organisations in order to examine the relationship between accounting information and decision making process. The use of information for decision making was first reflected as a chaotic organisational process (Bruns & McKinnon, 1993; Cohen, et al, 1972), then segregated between the use of formal (including accounting) and informal information (Earl & Hopwood, 1981). The use of information, either formal or informal was often placed in relation to uncertainty (e.g. specific and difficult budget goals) (Abernethy & Stoelwinder, 1991; Hirst, 1987; Samuelson, 1986). The political role of budgeting was also revealed in decision making process (Czarniawska-Joerges & Jacobsson, 1989; Livingstone, 1975).

A 'garbage can' model of decision-making processes, developed by Cohen, et. al. (1972) based on earlier work of Simon (1957) and March and Simon (1958), demonstrated the problematic nature in organisational life and revealed that decisions are made often as a result of the relatively random interaction of problems, solutions, participants and choice

opportunities. Although management accountants would like to believe that the information they produce is useful for decision making processes, Bruns and McKinnon (1993) found that much of the information managers used for decision making does not appear to come from the management accounting systems.

Earl and Hopwood (1981), who had developed a framework that included both formal and informal information (see Figure 3.11), explained the critical role of accounting information as a major element in a decision making process. They suggested that formal information is used by managers to perform routine functions and *ad hoc* studies, whereas informal information (e.g. managers' self-designed records, corridor talks, business lunches) are also being used by managers to access their own situation, convey information quickly and influence other managers.

Depending on the level of uncertainty about objectives, cause and effect of organisational action, the accounting information can play an important role during a decision making process in various situations (see Figure 3.11)<sup>5</sup>.

Figure 3.11 The Role of Information and Uncertainty Decision-Making

|                                 |      | Uncertainty about Objectives  |  |
|---------------------------------|------|---|--|
|                                 |      | Low   | High   |
| Uncertainty of Cause and Effect | Low  | <ul style="list-style-type: none"><li>▪ Formal and Routine Information Systems</li><li>▪ Decision by computation<br/><i>Answer Machines</i></li></ul>   | <ul style="list-style-type: none"><li>▪ Formal and non-routine Information Systems</li><li>▪ Decision by compromise<br/><i>Dialogue Machines</i></li></ul> |
|                                 | High | <ul style="list-style-type: none"><li>▪ Informal and Routine Information Systems</li><li>▪ Decision by Judgement<br/><i>Learning Machines</i></li></ul> | <ul style="list-style-type: none"><li>▪ Informal and non-routine Information Systems</li><li>▪ Decision by inspiration<br/><i>Idea Machines</i></li></ul>  |

Adapted from: Drury, 1996. Management and Cost Accounting, ThomsonBusiness Press, pp. 658-659.

In the case of budgeting, Samuelson (1986) expressed the role of budgeting in four categories: planning, responsibility control, influencing the behaviour of the budgetees and passive purposes. He found that the articulated planning role was impersonal and was different from the role of intended and real responsibility control. No correlation was found

<sup>5</sup> Detailed explanation can be seen in Drury (1996).



from the different roles to contribute to the negative attitudes expressed toward budgetary control systems (Ibid.).

Hirst (1987) found that the need to set specific and difficult budget goals on task was linked with the level of task uncertainty: i.e., difficult budgets and objectives are often set with an attempt to offset the effect or influence of higher level of uncertainty. The availability of accurate accounting information would provide managers with information to quantify the likelihood of success or failure towards achieving some objectives, and hence tends to reduce the influence of uncertainty. Abernethy and Stoelwinder (1991) found, from their survey involving 203 sub-unit managers in Australia that a unifying set of organisational goals could help to reduce the perceived level of uncertainty and to direct individual behaviour towards the achievement of these goals.

The attainability of consolidated organisational goals and budgetary targets may be perceived differently by top management and sub-unit managers. Using a computational model, Shih (1998) explained that setting relatively difficult sub-unit goals would produce little chances of success at consolidated level. If budgetary targets are challenging (but not impossible), management team will be motivated to put on consistent effort to achieve them (Merchant & Manzoni, 1989). The motivation might not be only limited to financial incentives and promotion but also personal satisfaction (Collins, 1982).

The role of budgeting in decision-making processes can also be portrayed as symbolic or political. In a study in the area of budgeting within a Swedish context, Czarniawska-Joerges and Jacobsson (1989) suggested that budgeting can be treated as a symbolic (e.g. language and values) performance index rather than a group decision making process. This view is supported by another study which stated that politics, bargaining and power play may be observed during a budgeting process (Livingstone, 1975).

Changes that are made in budgeting processes (which is an important part of decision making processes), whether were triggered by influences from external environment or initiated internally to meet some needs, can have a significant impact on an organisation (Forrester & Adams, 1997). Reformation in budgeting processes (e.g. ZBB and PPBS) can be perceived as a manifestation of destabilising processes with an aim to change the traditional processes (Brunsson, 1995; Glynn et al, 1992; Williams, 1981; Xavier, 1996). The implementation of ABB systems (from the initial design to the final implementation) as

a budgetary reformation process may also be initiated in the face of external pressure and thus may produce a similar impact (which may be manifested via destabilising effect or other forms) on other organisational processes. Other organisational processes, such as the development of a unifying set of goals (including goals and sub-goals development) and the use of formal and informal information in the decision making process, may have influences on the adoption of an ABB system in the organisational norms.

#### 3.4.3.5. Other Work

The previous sections cover most of the main applications of budgeting within an organisational setting. This section attempts to review other publications that relate budgeting to organisational settings which are extended from the “core” budgeting issues (e.g. budgetary control & participative budgeting) to a wide range of contextual issues, namely, social, cultural, political and environmental. Apart from the cultural perspective, which is to be discussed in details in Section 3.4.4, other contextual factors are reviewed by engaging through prior empirical studies in order to demonstrate that a budgeting process is a game of power play, political struggle as well as uncertainty and conditions which depend on external actors (Alam, 1997; Colville, 1989; Covaleski & Dirsmith, 1986; Ezzamel & Bourn, 1995).

A substantial number of these publications are empirical studies. For example, following Hofstede (1968)’s illustration of the game nature (which was demonstrated by people’s behaviour in a budgeting process), Covaleski & Dirsmith (1986) adopted an emergent theory<sup>6</sup> to explain the power and politics that existed in the budgeting processes of hospitals in the U.S. Colville (1989) found that in the UK police authority, the calculation method in its incremental process of budgeting became significantly influenced by the relationship between participants due to the existence of power play, individual participants’ social achievements and strategic intentions. Ezzamel and Bourn (1995) found that a combination of workload and power proxies tended to produce a very high proportion of budget allocations. They also suggested that incremental budgeting would be ideal when an organisation has abundant resources, and that power proxies have relatively little impact

when resources are scarce. Alam (1997) found that in conditions with relatively high level of uncertainty, budgeting was more oriented towards the management of external relationships with significant institutional actors than with the management of the organisation itself. In some instances, rather than viewing a budgeting process as a game of power play and politics struggle, a budgeting process was viewed as the hereditary nature of organisational culture (e.g. Goddard, 1997; see 3.4.4 for detailed discussions on the cultural issues in relation with budgeting).

A mixed picture was drawn in an attempt to link budgeting processes with contingency frameworks, decision making and uncertainty, and the results were presented through a series of empirical investigations. Merchant (1984)<sup>7</sup> found that the characteristics of budgeting can be related to departmental size, functional differentiation and degree of automation of production processes, but not the products' stage in the product life cycle or the company's strength in market places. Otley (1978)'s frameworks suggested that when managers face high levels of interdependency or uncertainty, a high emphasis on budget data in performance evaluation may be dysfunctional for managerial performance. However, by testing the effectiveness of using budget data in performance evaluation and reward in task contexts characterised by high or low levels of interdependency or uncertainty, using his questionnaire survey to cost centre managers in 3 business organisations, Imoisili (1989) found no evidence to support Otley's hypotheses.

It should be mentioned that as in any field of research, there are always differences in opinions. The research methods adopted in budgeting related literature were criticised by Briers and Hirst (1990). They revealed that there were instances of selective referencing and an uncritical acceptance of theory statements, moreover, they claimed that the use of accounting information in performance evaluation was neither a simple nor inevitable consequence of its availability.

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<sup>6</sup> This theory viewed the budgeting systems from a political and power-play viewpoints, in that the theory is formed to explain that the budgeting systems may be constitute of reality. The budgeting systems are integral part of the politics and power of organisational life and are used to legitimise action.

<sup>7</sup> Otley (1984) criticised the empirical grounding of Merchant's earlier work as being weak.



### 3.4.4 Cultural Perspective in Budgeting

*'Drawing on contemporary research on budgeting, the social constructionist perspective is seen to shed a different light upon the process of budgeting in organisations. Budgets are seen to be part of, and give shape to, the shared meanings, beliefs, values and distribution of power within the organisation. (Preston, 1995, p. 273)'*

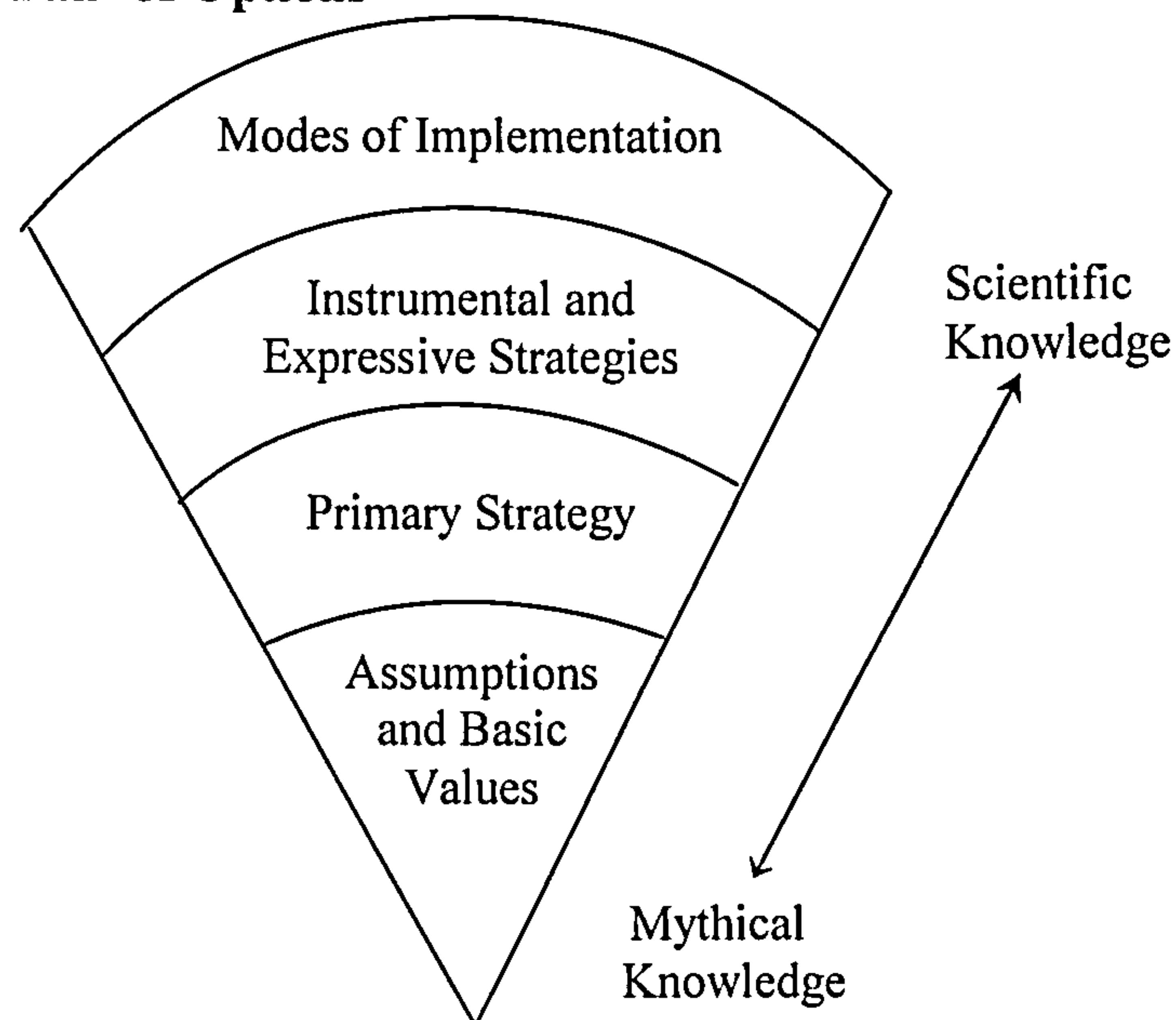
On the basis of the above Preston's statement, the linkage between budgets (e.g. budget formulation and characteristics involved in budgeting processes) and organisational culture may suggest a potential cultural influence in an ABB process. Thus the understanding of culture issues from prior research may help to draw relevant issues in the research of ABB.

The term culture normally refers to shared meanings, beliefs, values and distribution of power within the organisation (Gagliardi, 1990; Hofstede, 1986; Preston, 1995). A gradual understanding of culture has grown through the studies of organisational behaviour over the years among social scientists, management consultants and academics (Hofstede, 1986; Gagliardi, 1990; Verbeke et al., 1998; Willmott, 1997). Culture is seen as 'a coherent system of assumptions and basic values and beliefs which distinguish one group from another and orient its choices is, of its very nature, a tenacious and unalterable phenomenon (Gagliardi, 1990, p. 287).' The embodiment of culture often contains symbols, ideologies, languages, belief, rituals, and myth, created deliberately by an enterprise (Pettigrew, 1979). This enterprise can be a society, a country or an organisation.

Different definitions of organisational culture have been proposed from social, psychological and managerial studies. Some researchers interpreted the development of organisational culture from a viewpoint of the role of organisational leadership, which was formed through a leader's scope for action and an organisational process of acquiring the organisational values to become an institution (Peters, 1978; Pinch et al, 1989; Schein, 1983; Selznick, 1957). Gagliardi (1990) looked at organisational culture from the identification of four hierarchical levels in the organisation's lines of action. According to Gagliardi (Ibid, p. 293), *'primary strategy, which was the maintenance of its cultural identity, is linked to the organisation's basic values, which is the root cause of culture. ... Secondary strategies were*

*concerned with the choice of territory and methods of competition. At the final level of specificity secondary strategies become the organisation's implementation modes, i.e. perceivable forms of behaviour and operations.'* He then used the following figure (Figure 3.12) to illustrate that *'any coherent cultural system has a potential for action which is expressed by the range of its options.'*

**Figure 3.12 The 'Fan' of Options**



Source from: Gagliardi, P., 1990. The Creation and Change of Organizational Cultures: A Conceptual Framework, (in) Tosi, H. L. (eds), *Organizational Behaviour and Management: A Contingency Approach*, PWS-KENT Publishing Company: Boston. p. 295.

In Figure 3.12, 'instrumental strategies' are mainly of operational nature and are measurable, whilst 'expressive strategies' operate in the symbolic field and seek to protect the stability and coherence of shared meanings. Basic values and assumptions are the 'mythical knowledge' that are accumulated throughout the growth of organisations or the 'way how the organisation historically run'. 'Scientific knowledge' and mythical knowledge are linked to each other (Ibid., p. 295-6).

Besides the above views (i.e. role of leader and lines of actions), the concept of organisational culture, according to Smircich (1983), can be viewed differently from 'organisation' and 'culture' viewpoints. She discerned two main research approaches among the studies of organisational culture (Ibid., p. 247): the first approach treated culture as a 'critical variable' (i.e. culture as something which an organisation *has*) and the second

approach used a 'root metaphor' to study the organisational culture (i.e. culture as something which an organisation *is*). In a contemporary review by Allaire and Firsirotu (1984), they found three interrelated concepts in practice: (1) a *socio-structural* system composed of the perceived functioning of formal structures, strategies, policies and management processes; (2) a *cultural* system that embodies the organisation's myths, values, and ideology; and (3) the *individual* actors, with their particular endowments, experience, and personality.

In an attempt to enrich the underpinning theoretical knowledge in this new area of research, two structured empirical analyses were reported in the Journal of Management Studies in 1986. Reynolds (1986) attempted to draw relevance between organisational performance and the existence of different organisational culture. He designed a questionnaire that was drawn on the basis of literature on various aspects of culture as discussed by Ansoff (1979), Deal and Kennedy (1982), Harrison (1972, 1978), Hofstede (1980) and Peters and Waterman (1982). He surveyed three U.S. organisations and found that different categories (i.e. job positions) of employees within the same organisation held different 'cultures', and he called for more precision as to what 'culture' is meant if the term is used. His finding also indicated that there were no relationships between the 'measurement of culture' and classification of organisations (e.g. 'excellent' organisations, according to Peters and Waterman (1982)'s criteria, and less excellent competing organisations). Amsa (1986), through a case study from the Indian textile city of Ahmedabad, linked the perception of textile plant culture with the workers' sub-cultures, and found that the existence of sub-cultures (e.g. team of workers) did affect the plant's productivity.

To steer an organisation towards some pre-determined goals, various types of control systems are used, which may in turn have interference with the existence of an organisational culture. Researchers have thus explored the relationship between organisational culture and the design and operation of organisational control systems from a variety of aspects. Ouchi (1977) observed that 'clans' (i.e. culture) was an important factor in achieving organisational control in situations where measurement of performance is difficult. From a theoretical perspective, Flamholtz (1980) argued that culture can be seen as an important contingent variable in the design of a successful management accounting system. However, such theoretical arguments were unfavourably commented by Hayes



(1980) on the basis of the existence of weak links between sound organisational theory and empirical evidences.

Organisational control systems have an important element of human involvement, which is closely related to the formation of organisational culture (Goddard, 1997). Based on a questionnaire which incorporated Reynolds (1986)'s culture questionnaire, and Bruns and Waterhouse (1975) and William et al (1990)'s budgetary behaviour questionnaires, Goddard (1997) examined managers' perceptions of organisational culture and their correlation with budget-related behaviour in a local government organisation in the U.K. His finding implied particularly that 'budgetary control systems will only be really effective if they are designed to complement organisational culture (Ibid., p. 120).'

From the above review, it is clear that organisational culture has an explicit influence in the way an organisation evolves, adapts or struggles in the face of uncertainty. *'It seems reasonable to hypothesise that an organisation's core beliefs will be reflected in the budget-related behaviour associated with its financial control system (Goddard, 1997).'* It is reasonable, therefore, to suggest that organisational culture can be seen as an important factor towards the introduction of an ABB system, which is seen as an uncertain and, somewhat 'influential' device to an organisational culture. This can in turn be hypothesised that the flexibility to adapt the ABB in an organisation will be dependent on the flexibility of its culture in its dealing with changing business practice, management styles, and fundamental business philosophy.

#### **3.4.5      *Summary of Review on Four Perspectives in Budgeting Literature***

There has been a considerable volume of research work done in many aspects of budgeting. These include issues such as budgetary control, budget slack, participative budgeting, and flexible budgeting. The nature of budgeting, which is not only oriented towards management accounting but also based on organisation theory, supports a wide range of interests. These interests vary from theoretical and methodological research to socio-scientific and psychological investigation.

It is generally agreed that budgeting can be seen as a major aid to communication. Through a budget, top management communicates its expectations to lower level management and can therefore co-ordinate their activities to attain them. In this survey of budgeting literature, it can be seen that relatively little attention is paid by researchers in addressing budgeting as a direct aid to communication. However, on the basis of research work in the area of participative budgeting, one of the issues is that participation in budgeting can facilitate effective communication process within an organisation's hierarchy.

Through the research on participative budgeting done from the 1980's to the 1990's, the results have revealed that participative budgeting can increase job satisfaction, reduce job-related tension, reduce slack, improve manager's performance and reduce uncertainty, etc. However, when one deals with the effect of participation on standard settings, complications arise because of the existence of other factors which can be expressed as contingent variables (i.e. external reference points, authority of persons higher in the hierarchy, relevance of the standard, attitude towards the system).

This survey also found evidence to support motivation purpose of budgeting, in that a budget may motivate managers to perform within planned targets. The research on participative budgeting tends to confirm that there is a certain degree of interaction between budget participation, motivation and improved performance, but the relationships are not straightforward. Some researchers suggested that congruence between participation and motivation could have strong impacts on improved performance.

As for the use of budgeting as a planning and control mechanism, several aspects were revealed: formal planning and control systems are vital elements when an organisation reaches the stages of "mature" growth; budgetary control carried more weight in developed countries and the exercise of budgetary control may vary from organisations to organisations. When one links budgeting exercise with organisation theory, it can be stated that budgetary control has long been recognised as a major function for management and organisation as a whole.

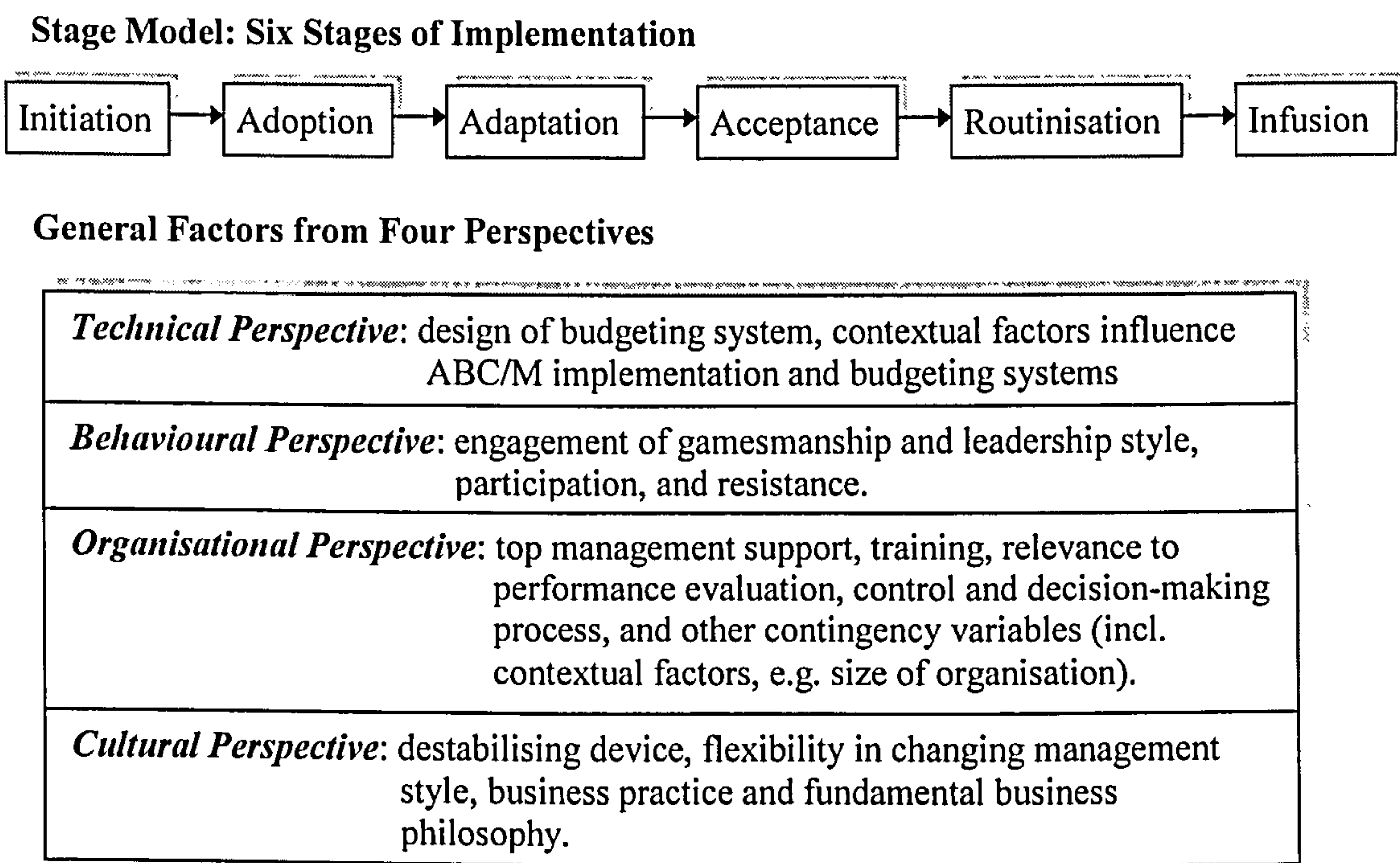
On the basis of relatively limited publications related to the research investigation in implementation processes of budgeting systems and associated implementation issues, the results suggested that implementation a new budgeting process should overcome institutional

actions towards ‘old’ and familiar existing procedures and labour intensity involved in the new system.

3.5. Research Framework

On the basis of the established theoretical foundation from the literature review in this and previous chapters, a research framework is developed by incorporating the four perspectives derived from this chapter with the building block developed in Chapter 2 (see Figure 2.4 in Chapter 2). These generic budgeting issues from the four perspectives in budgeting literature and contextual factors in activity-based literature form as general factors pertinent to the research of ABB (see Figure 3.13).

Figure 3.13 Research Framework



Referring to Figure 3.13, the research framework aims to:

- □ □ Understand the issues associated with the implementation stages and the experiences associated with the implementation process. There is much to be



learned from personnel who are directly involved in the actual development and implementation process of ABB systems.

- Explore the users' experiences and perceptions as to the practicality and usability of ABB systems using enquiries to people who are involved in the implementation process as end-users at various levels.
- Cross examine the data collected in the area of ABB with that from generic budgeting issues addressed in the literature review by referring to the four perspectives, which would facilitate the rationalisation of the root causes of some observed problems associated with ABB systems and implementation processes.

### **3.6. Summary**

From the above discussion it is clear that both traditional and emergent theories of budgeting can help to increase the understanding of the ABB processes. The theoretical approach adopted for this study draws on a variety of sources with various perspectives on budgeting, these are discussed in this chapter and the previous chapters.

The analysis in this chapter reviews the existing theories on budgeting from technical, behavioural, and organisational and cultural perspectives, as these theories provide useful insights for the understanding of the complex issues involved with a budgeting process. Owing to a variety of limitations, each of these perspectives alone is inadequate to draw a clear picture of the pertinent issues related to ABB. Thus, a hybrid approach using a combination of these perspectives would be appropriate in the study of the ABB process and its implication to the organisations. The framework of the empirical study can thus be formed on the basis of the followings:

Firstly, using the literature from technical perspective in budgeting to interpret and analyse this study's empirical data collected, this study attempts to explain the motivation for an organisation to develop an ABB system, the development and implementation processes of ABB systems and the applications of ABB systems in decision-making processes.

Secondly, by adopting a behavioural perspective, this study attempts to explain the extent to which ABB systems affect and are affected by individual managers' behaviour and attitudes, and to explore the human's perception in relation to the adoption and implementation of ABB systems.

Thirdly, from the organisational and cultural perspective, this study attempts to demonstrate how various organisational contingent variables influence the shape and potential of ABB implementation.

Finally, this study attempts to focus on the influence of naturally occurring situations (the encounters that people have in the normal course of events), which in this case is the ABB implementation processes. The intention is to produce descriptions and explanations appropriate to the way in which people actually behaved during the ABB implementation processes. The direction of this level of analysis is to be oriented towards the discovery of participants' interpretations and subjectivity in the phenomena observed. This alternative procedure which is concerned with participants' perceptions, interpretations and beliefs concerning the organisational process has been labelled 'interpretative approaches'.

## **Chapter 4            Methodology**

### **4.1.            Introduction**

The two main purposes of this chapter are: firstly, to discuss the methodological issues underpinning this research; and secondly, to outline the research procedures. This chapter first describes the methodological and philosophical assumptions upon which case study strategy for this research is based and justifies the adopted case study approach. It is followed by a discussion of the ‘triangulation’ approach in developing the research database. On the basis of these theoretical foundations, a description of the selection procedure of the research sites is then presented. This is then followed by descriptions of an outline of the case study methods used to collect the empirical evidence and the techniques of multi-source data collection and data validation. Finally, limitations of this research and conclusions are presented.

### **4.2.            Research Strategy: A Case Study Approach**

The choice of an appropriate research strategy relies principally on the research in question and the circumstances surrounding the research. The rationale for the choice of a particular research strategy is grounded in the core assumptions regarding ontology, human nature and epistemology (Allison, et al, 1996; Burrell & Morgan, 1979; Morgan, 1980/83; Zikmund, 1997). These assumptions provide a rationale as to *why* research should be carried out in a particular way and *how* the strategy can be implemented in practice (Morgan, 1983).

Various classifications of research methodologies have been given by many researchers (Allison, et al, 1996; Alvesson, 2000; Cahoon, 1987; Haslam, 1998; Newman, 1998; Ryan, 1992; Tashakkori, 1998; Weimer, 1979; Zikmund, 1997). For example, Allison et al (1996) indicated the existence of 7 principal methodologies (i.e. research subscribing to the scientific method, philosophical research, historical research,



descriptive research, experimental research, phenomenological research and practical research) and emphasised that ‘while most research projects adopt one of these methodologies as a main form of enquiry, they invariably draw upon the other methodologies as essential parts of the enquiry (Allison, 1996, p. 10).’ This statement mirrors the research strategy that is being adapted in this research (see Section 4.3).

A main aim of this research study is to define ABB in both theoretical and practical terms. Therefore a descriptive research, which involves a clear statement of ‘what is’ and then sets out to seek accurate and adequate descriptions for activities, objects, processes and persons in an attempt to paint a clear picture of a concept or an object, is considered as the most appropriate approach in this case. Descriptive research falls into the following categories: surveys, case studies, casual-comparative studies, correlational studies, developmental studies and trend studies (Allison, et al., 1996). From the literature survey of published work (see Chapter 3), the resultant empirical methods used in preceding budgeting research fall under two of the above-mentioned descriptive research categories, i.e. surveys and case studies (see Table 4.1)<sup>1</sup>. It can be seen from Table 4.1 that a survey is the most commonly utilised method, particularly in the studies of participative budgeting, whereas a case study is mainly employed in research studies of the budgeting process such as ZBB, PPBS, flexible budgeting, and process design for ‘budgetary control’. The reason for the differences in the application of the empirical methods may be attributed to the required distinct strategies for the research of participative budgeting and the budgeting process. The research of participative budgeting usually requires formulation of research hypotheses and a relatively large-sized sample in order to obtain substantial and credible evidence. In addition the behavioural variables involved in this topics need to be quantified so that generalisation and appropriate numerical conclusions can be drawn. The research of budgeting processes, on the other hand, needs to learn details and issues of these processes within their different organisational contexts. These details and issues can be relatively better described via a case study approach, such as interviews with people involved in the processes to describe the details of the processes, observation of the processes in real-life context, and so on.

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<sup>1</sup> As shown in Table 4.1, experiment, which is not included in the descriptive research categories will be described, is another empirical method used in budgeting research. The nature and differences between survey, case study and experiment are to be discuss in Section 4.2.1.

Table 4.1 Empirical Methods Drawn upon by Published Articles

| Topics                  | Empirical Methods    |            |            | Total |
|-------------------------|----------------------|------------|------------|-------|
|                         | Questionnaire survey | Experiment | Case study |       |
| Budgetary Control       | 9                    | 2          | 13         | 24    |
| Participative Budgeting | 32                   | 6          | 2          | 40    |
| Flexible Budgeting      |                      |            | 1          | 1     |
| ZBB                     |                      |            | 2          | 2     |
| PPBS                    |                      |            | 1          | 1     |
| Total                   | 41                   | 8          | 19         | 68    |

The results shown in Table 4.1 are consistent with those preceding reviews of empirical methods in management accounting research. The findings from previous reviews indicate that field research<sup>2</sup>, experiment and survey are the most commonly used research methods (Birnberg & Sadhu, 1986; Merchant & Simons, 1986; Scapens & Arnold, 1986; Shields, 1988; Swieringa & Weick, 1982; Walker, 1985; Young, 1988). In particular, many researchers in the accounting discipline (e.g. Berry, et al, 1985; Brownell, 1995; Hopper, et al, 1986; Merchant, 1985; Otley & Berry, 1994; Ouibrahim & Scapens, 1989; Scapens, 1990/1992; Tomkins, et al., 1980) have shown that a case study approach provides a relatively useful basis to ascertain the extent to which accounting theories are being applied to business practices, the areas of applications and their effects on business operations.

It is therefore necessary to discuss the differences between these empirical research methods in order to establish an appropriate strategy for this research. Hence the following sub-sections discuss: the deduction of a case study approach for this research via a comparison of differences between survey, experiment and case study, the limitations of a case study approach and the resultant adoption of multiple case studies to compensate the limitation of a single case study.

<sup>2</sup> There are some overlaps between the field research, case study and experimentation. In the earlier development of naturalism study, field research is defined as research occurs in natural settings that are not created for the sole or primary focus of conducting research (Cook & Campbell, 1979; Tunell, 1979). In management accounting research, according to Brinberg, et al. (1990), field research includes case studies, field studies and field experiments. Yin argued about the use of word ‘field’ might misimplicate the data collection methods used for a case study.

#### 4.2.1 *Differences between Experiment, Survey and Case Study*

An experiment is a scientific test that can be used to assess the validity of a theory or hypothesis (Cooper & Schindler, 1998). It involves the manipulation of a number of independent variables and the observation of their effects on a list of dependent variables (Birnberg, et al, 1990). There are two ways of classifying experiments: one is based on the method of selecting sample units (i.e. true experiment and quasi-experiment)<sup>3</sup>, and the other is in a simulated setting (i.e. laboratory experiment and field experiment (Ibid.)). The purpose of an experiment is to establish the cause-and-effect relationships within a controlled condition. The experiments that are carried out to assess and evaluate some theories in management accounting tend to take place in universities, using students as surrogate<sup>4</sup> to conduct certain tasks. Within the management accounting research, experiments are not a widely used method (see also the results indicated in Table 4.1, as only 8 of 68, or 12% of the surveyed publications adopted experiments as the empirical method). One reason for this may be attributed to the belief of poor generalisability in experiments, especially those using student subjects (Brownell, 1995). Another reason is that although certain behavioural issues can be generated in a laboratory environment, the experiment can only offer limited views towards the actual complex and uncertain business environment. Thus the existence of a relatively large gap between theory and practice tends to render this method less valid as a basis for drawing any real world conclusions.

Both surveys and case studies are relatively common empirical methods in management accounting research, however, the assumptions underpinning these two methods are quite different.

A survey is a research technique in which information is gathered from a sample consisting of a number of people by the use of a questionnaire (Zikmund, 1997). Within business research methods, the most common method of generating primary data is through a survey. Although this method is commonly used, it is not suitable for some

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<sup>3</sup> Brownell (1995) demonstrated how to utilise the experimental methods in management accounting research, and evaluated the obstacles and opportunities when utilising these methods within the framework of internal and external validity.

<sup>4</sup> While questioning the representiveness of using students as surrogate to test certain factors, Ashton and Karmer (1980) argued that students could be surrogated in accounting research to investigate casual factors in a controlled condition since students had the same characteristics in certain aspects as employees had in a working environment.



studies in management accounting research. For example, Scapens argued that the survey method was not suitable for the study of management accounting practices (where an understanding of practice was the objective) because '*it could give only a very superficial view of management practice* (Scapens, 1990, p.259)'. Drury and Tayles (1995) advanced this argument by suggesting that questionnaire surveys were appropriate to provide a broad overview of existing practice which underpinned issues and/or claims suggested in accounting theories, as well as to be used as a means to identify areas that required more in-depth case study research. For example, when using survey results that identified significant changes to management accounting systems (MAS) (e.g. implementation of ABC, use of JIT and flexible manufacturing systems) in practice, they suggested that further field study research were required to provide a detailed description and evaluation of these new systems and the factors that influenced changes, with possible adoption of cross-disciplinary research (e.g. neo-classical economic, organisational and social literature) (Ibid, pp. 276-278).

Case studies<sup>5</sup> are in-depth studies of particular events, circumstances or situations that offer the prospect of revealing understandings of a kind that may escape broader surveys (Allison, et al. 1996, p.15). Interests in the use of this empirical method have been increasing in the study of management accounting practice (Ahrens & Dent, 1998; Drury & Tayles, 1995; Kaplan, 1993; Scapens, 1990; Spicer, 1992; Yin, 1984/1994). A case study is regarded as the preferred strategy in situations (a) when "how" or "why" questions can be posed; (b) when the investigator has little control over events; and (c) when the focus is on a contemporary phenomenon within some real-life context (Yin, 1994, p.1).

The rationale of adopting a case study is when the phenomenon under study is not readily distinguishable from its context and therefore is best studied and examined using a carefully selected sub-set of individuals who are actually involved in such phenomenon (Yin, 1993). A phenomenon may be a project or programme in an evaluation study. Sometimes the definition of this project or programme may be problematic, as in determining chronological starting and ending points of some interdependent activities – an example of a complex interaction between a phenomenon and its (temporal) context (Yin, 1994). Other examples of such complex interaction

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<sup>5</sup> Birnberg et al. (1990) distinguished case studies with field studies. According to Birnber et al (1990, p.34), a field study was 'similar to a case study except that it involves the investigation of two or more organisations.'

abound – covering such varied situations as micro-computer implementation and advanced technologies utilisation in an organisational context, urban high schools and community organisations dealing with events, representation of inter-organisational partnerships, and changes to management information systems and subsequent influential factors (Yin, 1993, p. 3). The case study approach adopted in the study of ZBB, PPBS and flexible budgeting met the above requirements for the case study based research. Since a definition of each of these topics was problematic, determination by in-depth investigations using a case study approach could reveal the complex interaction within the situations (e.g., factory, government, and health services).

The lack of reported successful implementation of ABB in business practices, observed from the preliminary investigation of this research (see Table 1.2 in Chapter 1), suggests clearly that there is a potential problem in the concept of ABB or in the realm of applied or practical knowledge of ABB systems. From the review of literature described in the previous two chapters, it can be argued that, theoretically speaking, ABB is apparently a technique with great practical relevance, but in reality little practical evidence exists to endorse this view. The literature survey on the studies of budgeting (Chapter 3) shows that research in the area of budgeting is gradually moving from narrow theoretical and methodological accounting research to a broader and cross-disciplinary research (i.e. behavioural, organisational and cultural) (see Table 3.1 in Chapter 3). This research therefore reflects a trend of attempts in obtaining a broader perspective on budgeting, in that the examination of the ABB systems is conducted via not only the consideration of their technical designs, but also the investigation of the influences and effects of behavioural, organisational and cultural aspects of such ABB processes in organisational contexts.

An appropriate style of research required for this purpose is thus an open-ended one, involving the use of intensive field research in the ‘interpretative’, ‘ethnographic’<sup>6</sup> tradition (Hopper & Powell, 1985; Morgan, 1983). It is evident, from Table 4.1, that many accounting researchers (e.g. Appleyard, et al, 1991; Chow, et al., 1996; Goddard, 1997; Gordon & Naraynan, 1984; Imoisili, 1989; Merchant & Manzoni, 1989; Scapens & Roberts, 1993; Todd & Ramanathan, 1994; Walker & McClelland, 1991; Williams, et al, 1990) have shown that a case study approach is particularly useful

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<sup>6</sup> Yin (1994, p. 12) distinguished the case studies with ethnographies as data collection methods in case studies had a series of technical methods from not only ethnographic method, or participant-observation, but also other qualitative and quantitative methods.



for the investigation of factors that have prompted an organisation to adopt a particular type of budgetary control system or budgeting process, the actual areas of applications of an adopted system and the specific circumstances influencing its use and effects on the organisation. In addition, there is some strong evidence from the research review presented in Chapter 3 to suggest the existence of a link between generic budgeting issues, stemming from technical, behavioural, organisational and cultural perspectives, and the process of implementing and using ABB. So far, relatively limited insights into the practical use of the technique have been revealed in the ABB literature.

Despite repeated calls by some accounting scholars for more case studies in management accounting, this type of research has only progressed slowly (e.g. Birnberg, et al. 1983; Hopwood, 1983; Otley & Berry, 1994, Scapens, 1990) in the study of budgeting processes. One possible reason may be attributed to a lack of understanding of methodological foundation that underpins a case study approach.

Three epistemological stances, i.e. positivism, functionalism and phenomenism or 'insight stances', have been suggested by Otley and Berry (1994) to understand the methodological foundation of a case study approach.

Positivism is principally based on positive facts and observable phenomena (Allison, et al., 1996, p. 7). Typically, a positivist approach to knowledge might be seen as the design of carefully bounded experiments to test a particular theory (Otley & Berry, 1994). There are numerous variants and different interpretations of positivism and positive theory (e.g. Ryan, et al., 1992). In a review of contribution of the positive theory to conventional management accounting research, Scapens (1992) argued that the explanation provided by the positive accounting theory tends to be relatively limited as the interference of personal belief and values of the researcher would potentially introduce bias into the value-free system by introducing an experimental setting, and thus 'explain' the observation with assumptions in a positivism view. Otley and Berry (1994) also questioned the adequacy of experimental control during a quasi positivist study involving several variables, in particular 'with respect to changes in the study organisations before, during and after the period of studies (p. 49).'

Functionalism attempts to explain phenomena in relation to the function served by the phenomena in support of the purposes of an organisation (Otley & Berry, 1994, p. 49). Earlier research in accounting tended to view accounting systems from a functionalist stand (Drury, 1996) with little reference to issues related to behavioural or organisational perspectives. Case studies, written in the functionalist tradition, tend to



have self-referencing characteristics, either in producing interpretations of accounting in relation to the purposes of organisations or of accounting, or replaying organisation theory rather than establishing a theory through work (Otley & Berry, 1994).

Phenomenalism is principally concerned with the description and classification of phenomena (Allison, et al., 1996, p. 7). In the philosophy dictionary, phenomenism is referred to as the belief that the immediate objects of sensation provide no evidence for the existence of anything beyond themselves. Taken together with basic principles of empiricism, this entails that what are usually described as physical objects have no reality apart from an individual's private perceptual experiences. Otley and Berry (1994, p. 50) pointed out 'when the researcher's interest was the rationales or theories in use by the actors in the case study, such studies offered considerable insight and understanding.'

Case studies, from phenomenism stance, can thus be used to demonstrate the deep complexity of accounting and control in organisations. This is because they can avoid the theory-testing processes of positivism and the self-referencing characteristics of functionalism (Otley & Berry, 1994; Scapens, 1992) and can therefore lead towards the development of an in-depth knowledge about a subject (Lapsley & Mitchell, 1994).

In addition, the distinction between case studies and field studies needs to be clarified here. According to Birnberg, et al. (1990, p. 34), 'a field study is similar to a case study except that it involves the investigation of two or more organisations.' Some researchers do not distinguish them and expanded the variations within case studies into single or multiple-case studies (Kerlinger, 1986; Yin, 1994). In fact, Yin (1994) emphasised the misleading of using the term 'field' work or study as its tendency to address a certain way of data collection technique but 'omitting any further discussion of case studies (p.12).' Because in case studies, both quantitative and qualitative information including archival data, interviews, informant reports, direct observations or participant-observation will be used to describe the phenomena of interest (Burgess, 1984; Cooper & Schindler, 1998; Filstead, 1970; Schatzman & Strauss, 1973; Scott, 1965; Tesch, 1990; Zikmund, 1997). This research adopts a multi-case studies approach to examine the phenomena surrounding ABB by investigating 3 chosen organisations that have experiences in the development and implementation of ABB systems.

In this research, preliminary investigations had been undertaken in an attempt to gain understandings of the use of ABB in practice (see Chapter 1). The results of these investigations revealed that some difficulties have been encountered by business

organisations, which were pioneering the introduction of ABB, and suggested that the implementation of ABB systems is more complex than that has been suggested by academic and consultants. This research thus seeks to study the practicality of ABB, its engagement with organisational actors and its impacts on organisations' planning and control processes. The focus is placed on understanding the design of an ABB process, assessing whether or not ABB suits individual organisational needs in a variety of areas (e.g. the use of an ABB system as an complementary aid to an organisation's planning and control system; the users' actual experience in the use of an ABB system in accomplishing their tasks; and users' perceptions concerning the ABB system). It is suggested that an ABB system, or in fact any given budgeting system, can be viewed as an interactive system which needs the involvement of users, not only through their own creative activities, but through common experience and interaction with others (e.g. Hopper & Powell, 1985; Tomkins & Grove, 1983). Taking this view, an ABB system can also be seen as a socially constructed system and therefore behavioural, organisational and cultural issues are also inseparable properties of the system. The literature survey has also revealed that to gain an in-depth understanding of budgeting processes one needs to take into account such factors as: the technical design, the behaviour of participants, and organisational and cultural issues.

Subsequently, an in-depth examination of business practices needs to be undertaken in order to gain an understanding of the interrelationship between the technicalities of an ABB system and generic budgeting issues that arise from behavioural, organisational and cultural considerations which influence the use of an ABB system in practice. These basic requirements are met by adopting a case study approach to carry out the research on ABB that involves a number of organisations that have various experiences on ABB implementation.

#### 4.2.2 *Limitations of the Case Study Approach*

The case study approach, however, has its weaknesses. Firstly, a case study is normally conducted in a single organisation embedded in a larger population. It is difficult to draw boundaries for area of study with respect to exploring larger systems. Secondly, the interpretation of the social reality raises the problem of possible biases, because the researcher in this context cannot be regarded as an independent observer.

Finally, assurances of confidentiality for gaining access to the organisations raises problems in writing case reports. This may prevent the researcher from checking the validity of evidence through feedback to the subjects (Otley & Berry, 1994; Scapens, 1990).

Other weaknesses of case study approaches are: firstly, a case study requires intensive amount of data (i.e., a large number of variables) about a small number or single units of analysis (the “case”) and will normally be a time consuming exercise (Yin, 1994); secondly, this strategy is commonly believed to provide little basis for scientific generalisation (Yin, 1994); and finally little clarity of such work due to the way of written-up may prevent the maximum benefit to be gained from such strategy (Otley & Berry, 1994). Scapens (1990, p. 278) comments:

*In comparison with more traditional forms of accounting research, it is important to recognise that case studies are concerned with explanation rather than prediction. Researchers should avoid the temptation of thinking of case studies only in terms of statistical generalisation ... researchers who see generalisations only in this sense will either reject case study methods or not fully exploit their potential.*

It is notable from this research on ABB that the two major difficulties are (1) the identification and selection of suitable organisations which have experiences on ABB, and (2) the difficulty of getting the necessary permission to allow an organisation to participate in the research (Yin, 1994).

#### 4.2.3 *Advantages of Multiple Case Studies Approach*

In light of the limitation of a single case study and the particular difficulties experienced in the ABB research (as mentioned in Section 4.2.2), it is appropriate for this research to adopt a multiple-case-studies approach. The adoption of a multi-case study basis is beneficial to this research in the following ways:

- (i) To obtain a detailed description of ABB processes with viewpoints from various organisational settings, and to investigate how the processes affected participants in practices, via multiple sources of evidence, such as document analysis, informants and respondents interviewing, participant observations, observation of management meetings, and questionnaire survey.



- (ii) To analyse the strengths and weaknesses of processes reported by the people interviewed.
- (iii) To observe and gather opinions on their cultural perspectives and make comparison amongst three case organisations (if the data collected from them are sufficient enough to permit such comparative analysis).
- (iv) To include the human behavioural perspective (i.e. the experiences, feelings, attitudes and value judgement of the participants in the organisations) in the research questions.
- (v) To capture individual differences or variations in perceptions of the 'real-world' ABB practice.
- (vi) The adoption of a multi-case study approach tends to reduce the biases and other shortcomings of the case study method.

### **4.3. The Use of Multiple Sources of Evidence in the Case Study: the Role of 'Triangulation' Approach**

As mentioned in the previous section, case studies can be conducted by using qualitative and/or quantitative evidence (Yin, 1993/4). The use of multiple sources of evidence in case studies allows an investigation to address a relatively broader range of historical, attitudinal, and behavioural issues (Yin, 1994). The findings through a process of triangulation, which is developed to converge lines of inquiry, is 'likely to be much more convincing and accurate if it is based on several different sources of information, following a corroboratory mode (Ibid., p. 92).'

The assumptions made in the qualitative and quantitative methodologies and their implications for the study of ABB are first described. This is followed with a description of the triangulation approach adopted by this research.

#### **4.3.1 *Qualitative and Quantitative Methodologies***

Qualitative and quantitative studies contain the same basic elements but use different assumptions and approaches to answer questions about a phenomenon. The

distinction between quantitative and qualitative methodology is made not only in social science (e.g. Brophy, 1995; Hathaway, 1995), and psychology particularly, but also in organisational studies (e.g. Evered & Lewis, 1981; Van Maanen, 1979) and accounting research (e.g. Tomkins & Groves, 1983; Willmott, 1983).

Quantitative research involves the collection of numerical data in an attempt to answer questions about some phenomenon (e.g. the use of questionnaire survey to study weekly food expenditure of an identified group of people on and the types of food they usually purchase, or the administration of cognitive tests to estimate how well people remember under certain conditions, etc.) (Yin, 1993). Statistical calculations are usually applied to the collected data sample in order to summarise the findings and to enable the researcher to generalise the findings to a wider population from which the sample is drawn (Ibid.).

Qualitative research is used for situations where the phenomenon in question does not lend itself easily to be measured via a quantifiable 'variable' (e.g., size, length, amount, or any other quantities). Some scholars do not like the term 'qualitative' firstly because it seemingly opposes the quantitative research tradition and secondly it misleads people to relate qualitative research with 'high quality' or 'being excellent' (Tesch, 1990). They would rather tend to use synonymous terms such as 'descriptive', 'interpretative', 'naturalistic', 'ethnographic' or 'field/case study' instead of 'qualitative'. In contrast with 'hard' and 'truly scientific' quantitative research, qualitative research is often regarded as 'being soft', being associated with social science, interested in 'mushy' processes, and dealing with inadequate evidence (Yin, 1993, p. 57). The last two, of course, are somewhat unsubstantial criticism.

Comparing to the qualitative methodology, the following aspects of quantitative methodology are often subjected to criticism (Guba & Lincoln, 1994, p. 105):

- *Neglecting to account for the context ('context stripping'):* Quantitative methods are oriented around consciously selected subsets of variables and use certain prerequisites (random selection and experimental controls) which often require the simplifying assumption that the effect of all other variables can be ignored. In contrast, qualitative methods encompass specific contextual knowledge to a full extent and aim at generating theories from contextual information.
- *Exclusion of meaning and purpose:* Human Behaviour, unlike that of physical objects, cannot be understood without reference to the meaning and purpose

with which human actors associate with their activities. Qualitative data can take these into account better than quantitative research.

- *Disjunction between grand theories and local contexts:* This goes along with the difference 'etic' and 'emic' theory. The etic theory is that of an outsider who is uninvolved and removed from his study object. Such a perspective has, hence, little or no significance with the emic (insider) view of the individuals, groups, societies or cultures being studied. The advantage of qualitative research procedures is that, in contrast, it helps to uncover emic perspectives and theories.
- *Inapplicability of general data to individual cases:* This problem is also considered to be the difference between generalisable and idiographic description. It holds the generalisations, even if they happen to be statistically meaningful, may often have no applicability for the individual case. Even a statistically significant finding is not a concrete statement about the individual case; it is always possible that the respective case is the very one for which the derived rule does not apply. More significant for such cases is, in contrast, the qualitative process of case reconstruction.
- *Exclusion of the discovery dimension in inquiry:* Empirical research emphasises the verification of theories but places no scientific value on their discovery. In contrast to this, qualitative research gives strong emphasis to the process of generating meaningful theories.

The notion of the adequacy of adopting quantitative approaches to the study of accounting and control systems is also being criticised by several accounting scholars (e.g. Hopper & Powell, 1985; Tomkins & Groves, 1983; Tinker, et al, 1982; Willmott, 1983). They argued that quantitative approaches were lack of adequate epistemological foundation (Scapens, 1992; Tinker, et al., 1982; Tomkins & Groves, 1983). The empirical paradigms of assuming a positivistic stance of knowledge on which quantitative approach is based are only appropriate to those variables that are regarded or perceived to be 'stable' (Greene, 1994; Gubrium & Holstein, 1997). However, this assumption is gradually found to be illusive in accounting research because neither accounting systems nor organisations can be value-free or socially neutral (Hopper, et al., 1987; Otley & Berry, 1994; Scapens, 1992; Tinker, et al., 1982).

The use of qualitative methodology in accounting research, on the other hand, is perceived to be relatively appropriate to examine the subjective nature of the business



practices. A clear trend of the adoption of a qualitative approach in accounting research can be observed since the 1980s (e.g. Covalleski & Dirsmith, 1990; Hopper & Powell, 1985; Kaplan, 1983/1984/1986; Otley, 1984; Scapens, 1990). Some of these researchers argued that the use of qualitative approach helped them to understand how accounting systems were being designed and utilised in an organisational context.

It is suggested that qualitative research methods can provide rich descriptions of the social world, particularly the meanings attached to action in the language of its participants (Archer & Otley, 1991; Covalleski & Dirsmith, 1990). Qualitative methodology ideally makes the accounting researchers feel so close to the phenomena that he/she has little difficulty in formulating hypotheses and theories about the processes in practice (Archer & Otley, 1991).

Despite the strengths of qualitative methodology, reservations on the use of this methodology have been put forward (e.g. Covalleski & Dirsmith, 1990; Otley & Berry, 1994; Patton, 1987; Van Maanen, 1979). Covalleski and Dirsmith (1990, p. 544) argued that 'qualitative methods tended to be time intensive and problematic as to multiple interpretations when more than one researcher is involved; underdeveloped analysis and interpretation; and problematic as to the meanings attributed to the ideas of reliability, validity and researcher's detachment by the scientific community.' Other limitations of qualitative approach have been noted as follows: (1) high risk strategy as no control over the emergence of expected theory; (2) difficulty in handling and analysing the large amount of data in both organised and non-standard format; and (3) lack of reference to written-up as less scope for publication of the qualitative results in contrast to scientific investigation (Das, 1983; Otley & Berry, 1994).

It is not yet possible to put an end to the question of whether or not 'quantitative' is better than 'qualitative' research or *vice versa*. In fact, by referring back the suggestion made at the beginning of Section 4.2, 'the rationale of the choice of a particular research strategy is grounded in the core assumptions regarding ontology, human nature and epistemology', it can be drawn that the selection of a research methodology depends upon what the researcher believes and which tools are perceived to be appropriate to rectify his/her belief (Allison, et al, 1996; Morgan 1980/83; Tesch, 1990).

This research uses multiple techniques in collecting both qualitative and quantitative data to minimise the problems arising from the use of either qualitative or

quantitative approach alone. Thus, the multiple approaches ('triangulation')<sup>7</sup> adopted for this research provide useful insights and foundations to make sense of 'what went on' in the organisations which have experiences with ABB.

#### 4.3.2 *The Use of 'Triangulation' Approach in this Research*

Many researchers see qualitative and quantitative methodologies as components rather than opponents (e.g. Birnberg, et al., 1990; Sieber, 1973; Smith, 1975; Webb, et al., 1966). A strategy of using a variety of research evidence was termed as 'triangulation' by Webb, et al. (1966). Triangulation was defined as 'building checks and balances into a design through multiple data collection strategies (Patton, 1987, p. 60).' Triangulation is therefore an ideal approach to address the potential problems of constructing validity since the multiple sources of evidence provide multiple measures of the same phenomenon (Yin, 1994).

Patton (1987), as quoted by Yin (1994, p. 92), discusses four types of triangulation in data evaluation:

- (i) *Data-triangulation*: the use of a variety of data sources in a study, for instance, interviewing people in different status positions or with different points-of-view;
- (ii) *Investigator-triangulation*: the use of several different evaluators or social scientists;
- (iii) *Theory-triangulation*: the use of multiple perspectives to interpret a single set of data;
- (iv) *Methodological-triangulation*: the use of multiple methods to study a single problem or phenomenon, such as interviews, observations, questionnaires, and documents.

This research covers three of the above-mentioned triangulation types (i.e. data, theory and methodological triangulations, apart from the investigator-

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<sup>7</sup> The original derivation of the concept of 'triangulation', according to Yin (1993, p.69), is from 'a point in geometric space may be definitively established by specifying the intersection of three vectors (not one or two; further, four would be redundant). This concept has been borrowed for dealing with social science evidence: the most robust fact may be considered to have been established if three (or more) sources all coincide.'

triangulation<sup>8</sup>). Firstly, the review of activity-based literature (i.e. ABC, ABCM and ABB) and extensive literature survey on budgeting represents the theory-triangulation, in that it provides a framework of multiple perspectives (i.e. technical, behavioural, organisational and cultural) to examine the single research question (i.e. ABB). Secondly, the framework of four perspectives helps to formulate research questions in relation to relevant theories in these perspectives (see Appendix 1 -- 'Cross Reference List'). Finally, the data collection methods involved in empirical study represented data and methodological triangulation approaches.

During the three phrases undertaken in this research (i.e. initial enquiry, preliminary investigation, and the main study), the data-triangulation approach can be evident in the main study. It includes the interviews of people in different positions (i.e. managers at various hierarchical levels, management accountants and finance analysts), at different status (i.e. user and implementers of ABB systems, budgeters and budgetees), and with different opinions (e.g. some support ABB systems and activity-based approaches, but others hold resentment to the systems).

The methodological triangulation approach can be seen in all the three phrases of this research:

- (i) At initial enquiries phrase, it engaged with telephone enquiries (to participants who had attended CIMA's national-wide ABM workshops in 1996-1997 and several management consultants) and documents analysis (i.e. the quantitative analysis to questionnaires collected from CIMA's ABM workshops to identify rate of ABB adoption among participant organisations);
- (ii) At preliminary investigation phrase, it adopted the use of interviews (to members of the key personnel who are directly involved with development of ABB systems);
- (iii) At the main study phrase, it adopted the use of interviews (to members of personnel at different managerial levels and positions in the three short-listed organisations, i.e. Scottish Courage Brewing (SCB), BG Transco (Transco),

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<sup>8</sup> It may suggest that there is an element of 'investigator-triangulation' because of the involvement of the researcher's supervisors. In particular during the preliminary investigation stage one of the supervisor was involved with interviews to organisations. However there is a difference between an 'investigator' and a 'supervisor'. The former is someone who engages and participates throughout the research actively as the researcher does, as a result, can provide a set of opinions independent to the researcher's. The supervisor is to oversee the whole research process, provide guidance and opinion/suggestions in light of evidence presented by the researcher, in other words, who is not actively involved in the research. Thus generally speaking this research does not engage the investigator-triangulation.



and Crown Prosecution Services (CPS) (see the Section 4.4 for the details)), observation of management and budget setting meetings; shadowing; document analysis. In addition, quantitative analysis was conducted through the use of quantifiable questions to gather opinions of interviewees in respect of before and after the utilisation of the ABB systems. These quantifiable questions include length of budgeting process, the level of management's involvement, achievement of budgeting purposes, benefits of different budgeting systems. In addition, questionnaires were also used to quantify cultural difference within an organisation and between organisations.

The use of multiple techniques and instruments thus helps this research to generate a relatively rich and comprehensive picture of the ABB systems in three organisational settings. Triangulation methods provide powerful solutions to offset the problems of relying too much on any single source of data and objectivity, thereby increase the validity and credibility of the findings in this research.

#### **4.4. Selection of Research Sites and Access to Data**

This research adopts a three-phase method to better understand various stages of implementation of ABB in the U.K. practice. The initial enquiry phase involves making inquiries to the participants who had attended CIMA's nation-wide ABM workshops and several management consultants. Using the database of CIMA's workshops participants and contacts to management consultants, letters were sent out to invite short-listed organisations to participate in this research. The aim of the first phase is two-folded: one is to investigate whether or not those organisations who had participated in ABM workshops have progressed to consider the implementation of ABB; the other is to gather views from business practices and management consultants to understand their interpretation of the scopes and views towards ABB applications.

During the second (i.e. preliminary investigation) phase semi-structured interviews were conducted. A concise set of questions was sent to short-listed respondents prior to the interviews (see Table 4.2). On the basis of this investigation five potential case organisations from both private and public sectors were identified. During the process of investigation, two of the five organisations (one is in financial service

industry and the other is in public carrier service) decided not to participate in this research. The organisation in financial service industry was uncomfortable about the possible disclosure of confidential information owing to the pressure from the fierce competition in its particular market; the organisation withdrew its participation despite the assurance of confidentiality on disclosure of data from this research. During the course of this investigation the public carrier organisation was experiencing a major restructuring exercise that had resulted in substantial discrepancy of its basic assumptions used in its ABB system. It was decided that priority was to be given to the restructuring operation, although the modification of its ABB model would not be taken place during the period of this investigation. As a result, it is not viable to involve this organisation in this research. It is clear that accessibility and permission by the case organisations are crucial to the case studies (Yin, 1994).

Table 4.2 Schedules of Preliminary Investigation with Respondents

| Respondents   | Date     | Summary of Outcome   |
|---|----------|--|
| Principal Consultant<br>Price Waterhouse Cooper<br>Newcastle upon Tyne                    | 26/02/99 | Consulting budgeting projects to health and education sector   |
| Financial Controller<br>Private Manufacturing Organisation<br>Cramlington, Northumberland | 30/04/99 | Not using ABB. So called 'Zero base' adopted in conventional budgeting process.  |
| Financial Analyst<br>British Gas Transco plc<br>Solihull, Birmingham                      | 07/05/99 | Tried to implement 3 years ago, but failed. Attempt to implement ABB in this year for the budget for 2000 (see Chapter 6)                    |
| Accountant<br>Public Services<br>County Durham  | 04/07/99 | Interested in ABC and ABB implementation, but yet to put into practice. Organisational restructuring is the most priority.                   |
| Cost & System Manager<br>Public Carrier Services *<br>Milton Keynes                       | 27/07/99 | Have sophisticated ABC model and ABM experiences. ABB implementation attempted but brought to a halt since the organisational restructuring. |
| Financial Controller<br>Public Services<br>Chesterfield                                   | 25/08/99 | Attempted to implement ABC model, but experienced technical and behavioural problems. No further attempt to implement ABB.                   |
| ABM Co-ordinator / Management Accountant<br>Scottish Courage Brewing Ltd.<br>Manchester   | 27/08/99 | Developed a customised ABB software but the implementation was halted due to various reasons (see chapter 5).                                |
| Financial Controller<br>Financial Services *  |          | Sophisticated ABM model with the capability of conducting ABB at strategic   |

| Respondents   | Date     | Summary of Outcome  |
|---|----------|---|
| London  | 01/09/99 | level.  |
| Principal Consultant<br>KPMG<br>Leeds                 | 17/09/99 | ABB is a sound application but no successful implementation has yet been observed.  |
| ABM Team Leader<br>Crown Prosecution Services<br>York | 11/10/99 | ABB has been implemented for two years. The diffusion of ABB to the whole organisation has taken place during the course of this research (see Chapter 7) |

\* represents the two organisations which were initially identified but later dropped from the case study.

At the main study phase, the necessary permissions to gain access to the three organisations were sought. The permission to access a comprehensive range of information was only granted from CPS. A pilot study in one of its area offices, which included the Area Business Manager (AreaBM) and one branch manager (BCP), was conducted to ensure that suitable terms were used and to ascertain the appropriateness of the design of questions (Brownell, 1995). During the pilot study, the researcher found it difficult both to question and observe the culture of the organisation. Therefore, a questionnaire based on 14 criteria, which was established by Reynolds (1986), was developed and utilised in order to quantify factors from a cultural perspective, and to incorporate observation and questions related to budgeting (see Section 4.5.4).

The profile of the three organisations involved in the final phase of this research are (see Table 4.2): a brewing manufacturing organisation in private sector (SCB), a public sector organisation in utility industry (Transco), a government agency (CPS).

These three organisations are chosen for the following reasons:

- (i) *Experience on ABB:* due to the limited experience in the case of ABB, organisations that have experiences on development and implementation of ABB systems are relatively limited in number. The experiences of the three organisations are: SCB attempted but failed to achieve a full implementation of its ABB system, Transco implemented its ABB only at a strategic level, CPS has developed and is in the process of implementing ABB throughout all the units of the whole organisation.
- (ii) *Accessibility and degree of commitment:* it is crucial to gain access to the organisations in the course of this research. The difficulty involved in gaining access can be seen from the examples of the withdrawal of the two



potential organisations, and from the limited scale of permission granted by SCB and Transco. On the other hand, it is also crucial for this study to be completed with a relatively clear picture of ABB which includes the design and development of ABB systems and influential factors arisen from the identified four perspectives, i.e. the theoretical framework established from the reviews in Chapter 2 and 3.

Although the three case study organisations were initially chosen on the basis of their ABB experiences, the different level of permitted accessibility tends to limit the depth of study within them. Thus, this research is able to examine the detailed technical perspective across the three organisations, behavioural perspective in CPS (with limited exploration in SCB and Transco), and organisational and cultural perspectives in Transco and CPS (with limited exploration in SCB).

Formal permission to gain access to organisation's data was sought via the contact persons in respective organisations during the preliminary investigation. Since the preliminary investigation utilised the database of participants of the CIMA's ABM workshops, these contacted people were usually those who were and had involved with the implementation of ABM and generally possessed adequate financial knowledge. There are advantages and disadvantage in using these contacts. The advantage is that it is relatively easy to communicate with them since many of them have accounting background and they usually have hand-on experiences with the implementation of systems. The disadvantage is that if the systems are not perceived to be successful the contact person would tend to delay/deny permission /assistance that may be required by this research.

#### **4.5. The Multiple-Source Data Collection Processes**

This research utilises a variety of methods to collect data during the three phases in order to obtain a better understanding of ABB. The initial enquiry and preliminary investigation took seven months to complete (February 1999 to September 1999). In main study, a pilot study was undertaken to formulate the relevance of questions to be used in the main study. The pilot study took one month (October 1999), whereas the main study took five months to complete (March 2000 to July 2000).

As discussed in Section 4.3.2, a ‘triangulation’ approach was adopted in the three research phrases, including: interviews; participant observations; observations of management meetings; shadowing; document/archival records analysis; examination of external sources of information (e.g. newspaper, web sources, and external reports), and questionnaires. The processes and techniques of collecting, recording and analysing these empirical data in this research are discussed in the following sub-sections.

#### **4.5.1 Interviews**

To obtain the detailed descriptions about design and implementation processes of ABB systems, the opinions, feelings and behaviours of practising managers towards the use of ABB systems, it is necessary to spend a considerable length of time talking to managers in the field (Yin, 1994; Patton, 1987). In this research, this was achieved by interviewing them individually and by developing cordial relations with managers involved in the practice. Thus, interviews with key informants in the organisations were the fundamental source of empirical evidence to understand how interviewed participants viewed the ABB processes. Information regarding the rules, procedures, and ABB technical design were also extracted from relevant documents to complement the interview data.

The following discussion covers the population sampled for interviews, the techniques of interviews, and a discussion of the processes of noting and recording data.

##### **4.5.1.1. Sampling Method and Size**

Due to the different degree of data accessibility to the three organisations, considerable differences existed in the sampling size involved in the interviews. For example, only one person who was in charge of SCB’s ABB implementation process had been interviewed, whereas seven people who were involved in Transco’s ABB process had been interviewed (they are from both management accounting departments at various sites and operational departments). Interviews to CPS were conducted during on-site visits to 5 area offices and involved a total of 24 people from both headquarters and five branches.

#### 4.5.1.1.1. *Sampling Method*

Because of the need to yield results that can be generalised and validated across the entire population, sampling issues in a given case study have often been a subject of debate (Yin, 1994). In some cases, even when a large sample is obtained, it may not be representative of the population. The ideal case of using a large size sample (to achieve the ideal condition stipulated by the central limit theory which states that the sample result's probable density distribution is near normal, i.e. the result will not be biased) is often not possible to realise. In many case studies, credibility of the results can be maintained through careful selections of a relatively small number of sampling points (i.e. participants). Even when a case study faces to availability of only a few samples (as the one interviewee in SCB and 7 interviewees in Transco), the result may still be used if it confirms a general trend proposed by other study results.

In view of this limitation, the quality rather than the quantity of the sample is of paramount importance to this research. For example, the interviewees from CPS were chosen across a wide spectrum of people who were involved with its budgeting process: a chief executive, a financial director, a manager in charge of budget allocation of internal resource, and managers in charge of professional and managerial operations in five branches across the U.K. The interviewees from Transco were chosen from 3 different sites (i.e. South, North and West) and 2 business units (i.e. Operations and Asset Management) and those who were involved in the development and implementation ABB processes and/or used its ABB system.

Proposals of sampling an ideal size and spectrum of personnel were put forward to the three organisations respectively. In light of their individual situations during the main study, SCB granted one interviewee, Transco granted seven (including management accountants and operational managers) by taking partial account of this proposal (i.e. the involvement of different sites and different managerial positions), whereas CPS granted 20 by taking full account of the proposal.

The sampling method adopted in CPS is discussed here. CPS's headquarters are located at both London and York with a total of 42 area offices scattered across the country. It is not viable to conduct interview in all of its 42 area offices within the period allowed in this research. A sampling size of 5 branches, i.e. an approximately 12 %, sample size in terms of geographical distribution and budgetary significance (e.g. its proportion in the overall budget and number of employees in the area offices) is thus



chosen. Although less stringent in terms of sampling size and methods are imposed on qualitative research, a recommendation of sample size had been made by Gay (1987) based on the type of research chosen. He suggested that a 10% sample size (or population) for descriptive research (i.e. the type of this research) is considered representative.

Moreover, it can be seen (in Section 8.2.1 in Chapter 8) that some of the generic trends of the findings from CPS are consistent with those from SCB and Transco studies. In the absence of other ABB case studies (which is the current state of study in ABB implementation), the result of this research can be regarded to be of significant value to both academics and practitioners.

4.5.1.1.2. List of Levels of Interviewed Personnel

The distribution of personnel involved for case study interviews is summarised in Table 4.3.

Table 4.3      Distribution of the Population Sampled for Case Study Interviews

|                              | Level of Interviewees  | Number of persons interviewed |            |               |
|------------------------------|--|-------------------------------|------------|---------------|
|                              |  | Pilot Study                   | Main Study | Total         |
| Scottish Courage Brewing Ltd | ABM Co-ordinator<br>(Management Accountant)<br><i>Sub-total</i>      |                               | 1          | 1<br><i>1</i> |
| British Gas Transco plc      | <u>Head Quarter:</u><br><i>Financial Analyst</i>                     | <i>1</i>                      |            | <i>1</i>      |
|                              | <i>ABC management accountant</i>                                     | <i>1</i>                      |            | <i>1</i>      |
|                              | <u>Operation:</u><br><u>Head Quarter</u><br>Business finance analyst |                               | 1          | 1             |
|                              | <u>Zone Office</u><br>System Accountant                              |                               | 1          | 1             |
|                              | Accountant   |                               | 2          | 2             |
|                              | Line Manager   |                               | 2          | 2             |
|                              | <u>Assets:</u><br>Accounts and Cost Budget Staff                     |                               | 1          | 1             |
|                              | <i>Sub-total</i>   | <i>2</i>                      | <i>7</i>   | <i>9</i>      |
| Crown Prosecution Services   | <u>Head Quarters:</u><br>Chief Executive                             |                               | 1          | 1             |
|                              | Finance Director   |                               | 1          | 1             |
|                              | Internal Resource Manager  |                               | 1          | 1             |
|                              | Internal Resource Staff  |                               | 2          | 2             |
|                              | ABM Team members   | 2                             |            | 2             |
|                              | <u>Area Offices:</u><br>Area Chief Crown                             |                               |            |               |
|                              |  |                               |            |               |

|              | Level of Interviewees    | Number of persons interviewed |            |           |
|--------------|--------------------------|-------------------------------|------------|-----------|
|              |                          | Pilot Study                   | Main Study | Total     |
|              | Prosecutors              |                               | 5          | 5         |
|              | Area Business Managers   | 1                             | 5          | 6         |
|              | Branch Crown Prosecutors | 1                             | 5          | 6         |
|              | <i>Sub-total</i>         | <i>4</i>                      | <i>22</i>  | <i>24</i> |
| <b>Total</b> |                          |                               |            | <b>33</b> |

From the Table 4.3, the involvement of these interviewees in relation to the research is explained as follows: the two interviewees in Transco (i.e. the financial analyst and ABC management accountant at Transco Headquarters) and the two ABCM team members from CPS helped to provide detailed description on the design and implementation processes of respective ABB systems and give some views about factors involved in the four perspectives; the two members of staff in CPS (i.e. a AreaBM and a BCP in the pilot study) were used to help formulation of the relevant questions for the main study); and the use of the interviewees in the main study was aimed to gather opinions about the use of respective ABB systems and reveal influential factors with reference to the four perspectives.

4.5.1.2. Interview Technique

A set of guideline questions was developed with reference to the established theoretical framework (i.e. technical, behavioural, organisational and cultural aspect of ABB) established as a result of literature review. The cultural perspective was approached by the use of a questionnaire (see Section 4.5.4).

The set of guideline questions served several purposes: introducing the purpose of the research; emphasising the importance placed on the views of the respondent; stressing the confidentiality and anonymity of the information provided; and being used as a basic checklist during the interview to make sure that all relevant topics were covered (Alam, 1990; Otley & Berry, 1994). Thus the set of guideline questions helped the researcher to conduct the interviews in a systematic and comprehensive manner.

Semi-structured interviews, with reference to a list for open-ended interview questions, were used to gather the data during the preliminary investigation and pilot study conducted in CPS (see Appendix 2). As a result of the preliminary investigation

and pilot study, the guideline set of questions was developed to conduct interviews in the main study (see Appendix 3). Wordings for the questions were slightly altered to ensure the familiarity of terms used during the interviews to CPS (Brownell, 1995). A different set of guideline questions was used in Transco (it was slightly modified with reference to the guideline questions used in CPS case and the preliminary investigation to Transco).

Most of the questions were asked in an open-ended manner. This permitted the interviewees to respond in his or her own terms. Thus, a variety of dimensions, themes, images or words people used to describe their perceptions, opinions and experiences about ABB systems could be obtained. A limited number of questions which were designed with certain quantifiable measures was used to generate some quantifiable responses to support particular research questions (see Section 4.3.2).

It was suggested that a considerable preparation was needed to decide: what questions to ask; how to sequence the various questions; how much detail to solicit; how long the interview to last; and how to phrase the actual questions (Brownell, 1995; Patton, 1987). These were all measurement questions affecting the quality of interview responses. Some questions were straightforward for every interviewee. Some needed to be made clear, for example, the possible differences in terms of boundary (i.e. what should ABB include) and terminology (e.g. some organisations did not use the term 'ABB' to describe their activity based budgeting systems) implied that questions related to these need to be made absolutely clear.

A flexible pattern was adopted during the interview. If an interviewee wished to develop certain issues of interest to him or her, he or she was allowed and encouraged to elaborate on the issues. If on the other hand, he or she appeared to show a lack of interest or was uneasy about certain questions then these questions were dropped. Owing to the time constraint for certain top management and professional personnel, a concise sub-set of selected key questions or issues were explored in depth to optimise the use of the relatively short interview sessions. This was also because that other detailed questions which were in operational nature were to be answered by the business managers who assist the routine business operation and management to these professional personnel.

During the preliminary investigation, interview meetings were held with the personnel who participated at the CIMA's ABM workshops. They then became the key contact persons in gaining access to the three organisations. Further relevant contacts were given by these key contact persons based on the level of commitment of individual



organisations. Interview schedules were always arranged prior to the actual visits. Two or more interviews on a single day were arranged where possible to economise the travelling and time over-runs. A time slot of one and half-hours for the interview sessions was agreed by interviewees before the actual commencement of a meeting to allow them to arrange their work-related schedule. However, some interview sessions took longer than the anticipated duration as some interviewees wished to extend the discussion to include other issues of concern to them.

Although the majority of the interview meetings were held at some formal venues, usually at interviewees' offices or meeting rooms, informal discussion over lunch and drinks after the meetings had also taken place during the main study. This helped the researcher to gather feelings and opinions that could not be easily expressed during the formal meetings.

Assurances of anonymity and confidentiality were particularly emphasised at the beginning of each meeting, in addition to the written assurances that were given to the interviewees prior to the commencement of these meetings. This helped to capture opinions, attitudes and perceptions of practising managers about the organisations and their ABB systems.

Two basic ways of recording the interview data were adopted to help to capture the interview data: note taking and tape recording.

#### *4.5.1.2.1. Field Notes*

An important task of the case study research is to take field notes (Brownell, 1995; Patton, 1987; Yin, 1984/1994). The purpose of interviews is to understand the perspectives and experiences of the people being interviewed. The raw data of interviews consists of actual words spoken by interviewees. Consequently, there is no substitute for this data.

In this research, notes were taken during each interview session. Copies of documentation deemed to be relevant was obtained simultaneously. Field notes served four purposes in this research:

- (i) To keep a record of something that had been said to form a brief written account of the interview.
- (ii) To capture jargons that are being used in individual organisations.
- (iii) To clarify process flows which were being described.

- (iv) To help form a database on what was being said during the interview.

The techniques used in taking field notes in this research are as follows: first, field notes were dated and recorded, noting the venue of the interview, the participants present, the physical setting of the interview, the social interactions that had occurred, and the activities that had taken place; second, the field notes contained a transcript of what had been said during the interview meetings; and, finally, the field notes contained the interviewer's own observations, feelings, reactions to the experiences and reflections about the meaning and significance of interviewee's actions and reactions during the meetings (Patton, 1987).

A brief report for each interview was written, usually immediately after the meeting to form a basis on which a database can be built to answer the following questions:

- What did people say?
- How did they feel?
- What did they think?
- What were the main themes, issues, problems, and questions that people perceived during this interview?
- Which questions did the interviewees concentrate on?

Thus, the data can then be classified accordingly during the data collection phase. This helps the researcher to iterate between the process of thinking about the existing data and formulating appropriate strategies for collecting better quality data for the subsequent meetings.

#### 4.5.1.2.2. *Audio Recording*

Besides taking notes during interview meetings, an audio recording device was used with permission to capture interviewees' actual words used during the interview so that the researcher can rely on the recording for further analysis after the interview meetings (Miles & Huberman, 1984). Each audio-tape for the interview was labelled and its content transferred into a written transcript to form a unified record of interview meetings. The process of developing transcripts allows the researcher to mentally 'step-through' the various answers from the interviewees.

The use of an audio recording device has its advantages and disadvantages. The advantages are: it will be possible to capture all that is said, the use of an audio

recording device also helps the interviewer to be more attentive to the interviewee, without the burden of taking detailed written responses the interviewer is able to concentrate on the responses and to encourage more interactions during the interview, the latent meaning that interviewees may attach to responses can be discovered and explored.

Although no interviewee had objected to the use of an audio recording device during the interview, some drawbacks of using such a device could be readily observed. One of the drawbacks is the interruption caused by tape changeover. This, in particular, would affect interviewees’ train of thought in giving responses and obstruct the flow of meeting dialogue. The behaviour and responses of an interviewee may also be affected by the presence of an audio recording device. In one or two cases, respondents may be cautious about giving answers which were perceived to be confidential or sensitive issues. Reassurance of confidentiality of the recorded tape was then given to help reduce such concern to a minimum level.

4.5.2 Documents

Another important method of gathering physical evidence adopted by this research was the collection of relevant documents (Brownell, 1995). Upon the preliminary investigation, documents were given by the interviewees voluntarily whenever they thought as relevant. The request put to the organisations was in the form of a list of relevant generic documents from various levels of management, it was then attached to the copy of guideline questions sent to the organisations (see Appendix 3). During the on-site visits, interviewees generally provided the researcher with documents when requested, provided that they were assured with sole research purpose. On the basis of pilot study in CPS, documents requested from both the head office and area office (or line management) levels are shown in Table 4.4:

Table 4.4 List of Documents Requested

|             | Documents  |
|-------------|--|
| Head Office | <div>1. Organisation chart.</div> <div>2. Mission statement.</div> <div>3. Sample of budget manual and budget process flow chart.</div> <div>4. Sample of budget related statements and reports.</div> <div>5. Sample of budgets (including initial submitted budget proposals and</div> |



|                                    | Documents  |
|------------------------------------|--|
|                                    | <div>final agreed budget).</div> <div>6. Sample of monthly control reports.</div> <div>7. Sample of key performance indicators and performance reports (and benchmarking reports or 'performance league tables').</div> <div>8. Sample of budget reports before introducing 'activity timing', and/or 'should take'/'did take' as part of budget elements.</div> <div>9. Internal non-financial information (e.g. Newsletters, wallpapers, activity/process map).</div>  |
| Area Office/<br>Line<br>Management | <div>1. Departmental budget manual and budgeting process flow chart.</div> <div>2. Samples of budget-related statements/reports.</div> <div>3. Sample of budgets, including initial submitted budget proposals and final agreed budget.</div> <div>4. Sample of monthly control reports.</div> <div>5. Sample of reports that indicate performance in comparison to budgeted performances (e.g. Benchmarking reports or league table).</div> <div>6. Sample of budget reports before introducing 'activity timing' and/or 'should take'/'did take' as a part of budget elements.</div> <div>7. Internal non-financial information, e.g. Newsletters, wallpapers, activity/process map.</div> |

This list was also used as a checklist during on-site visits. It is found to be useful by the interviewees as they could prepare the required documents before the commencement of the meeting so that time could be saved from searching and photocopying during the meeting.

4.5.3 *Observation of Management Meetings*

It has been argued that no single method could capture all the relevant features in empirical management accounting research (Birnberg et. al., 1990). Indeed, many researchers (e.g. Bogdan & Taylor, 1975; Denzin, 1970; Jick, 1979; Lewis et. al., 1983; Miles & Huberman, 1984; Payne et. al., 1978) have used a multi-trait-multi-method matrix approach, which was developed by Campbell and Fiske (1959, according to Birnberg, et al. (1990)), in a number of disciplines.

Therefore beyond interviews and document analysis, the attendance of some relevant management meetings are deemed to be useful in this research for the understanding of the various issues regarding the application of ABB systems in organisations. Observations made at some management meetings allow the researcher to

explore phenomena as they emerged during the course of important meetings (Yin, 1994). Owing to the limited access granted by SCB and Transco, permission to attend some key management meetings, such as annual budget allocation meetings, management steering committee meetings, and business meetings, was only granted by CPS. The observations made during these meetings were valuable to the enrichment of this research. Although concerns were raised in regard to the presence of an 'outsider' would affect the normal conduct of the meetings, the experience of the researcher was that her presence had caused no apparently adverse effect, as indicated by the meeting minutes circulated internally after the meetings. This may be viewed as a support to the suggestion of the changing organisational culture as observed in CPS (see Chapter 7 for details).

#### 4.5.4 *The Quantitative Evidence in this Research*

As stated earlier a guideline of questions used in the interview contained some quantitative questions to allow a certain degree of quantitative data to be collected for later analysis. In order to quantify some aspects of the cultural perspective, a questionnaire was also developed based on Reynolds' (1986) cultural criteria (see Appendix 3). Within the culture questionnaire, a Likert scaling<sup>9</sup> was used in an attempt to quantify interviewees' view to their organisational culture individually and comparatively (see Chapters 6 & 7 from individual analysis and Chapter 8 for comparative analysis).

This cultural questionnaire was used as an additional part of the set of guideline questions that was sent to the interviewees prior to the meeting. The purpose of adopting a quantitative approach in this research is twofold: first, to provide certain quantitative information for the case study; second, to provide some complementary measurable data to the study of the cultural perspective of ABB which was largely illustrated by observations in a qualitative manner (Goddard, 1997; Reynolds, 1986).

Therefore the final version of the guideline of questions comprises two parts: one part contains interview questions and the other contains questionnaire related to

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<sup>9</sup> Likert scaling is a popular approach to the creation of multiple-item measures. With Likert scaling, respondents are presented with a number of statements which appear to relate to a common theme; they then indicate their degree of agreement or disagreement on a five- or seven-point range (Bryman and Cramer, 1997, p. 55).

culture. A copy was also required during the meeting to allow the researcher to discuss some questions in more details.

#### 4.6. Reliability and Validity of Data

Critics to the case study approach often argue that human judgements are consistently less accurate than those that are derived from the use of scientific methods (e.g. statistical or computational ones) and therefore cast doubts on 'representativeness' or 'generalisation' of findings of a case study (e.g. Dawes, 1971; Goldberg, 1970). Scapens (1990) summarised that there were three aspects of the case study approach which were a common source of difficulty for researchers (for details, see Scapens, 1990, pp. 276-277):

- (i) There is the difficulty of drawing boundaries around the subject matter of the case.
- (ii) The human judgement, or arguable researcher bias, stemmed from the nature of the social reality which was required to be interpreted by the researcher.
- (iii) The ethical difficulty, caused by inevitable the compromise of the need to present the disclosure of confidential information in order to gain access to organisations, raised particular problems in writing case reports.

Otley and Berry (1994) suggested, in relation to the first problem raised by Scapens (1990), that 'it seemed wised to let the nature of the case be adjusted and to let the boundaries of the study adjust accordingly (p.56).'

Researchers also emphasise on increasing the reliability and validity of the case study data so that credible and unbiased conclusions can be drawn. Miles and Huberman (1984) proposed twelve tactics for measuring the reliability and validity of the findings of a case study. These include: checking for representativeness; checking for research effects on the site and vice-versa; triangulation across data sources and methods; deciding which kind of data are most trustable; making contrasts/comparisons between two sets of things (i.e. persons, roles, activities, sites) as a whole; checking the meaning of outliner; using extreme cases; ruling out spurious relations; replicating a finding; checking out rival explanations; looking for negative evidences; and getting feedback from informants.



Yin (1994) summarised the above twelve tactics into the following four tests of validity and reliability (see Table 4.5).

Table 4.5 Tests of Validity and Reliability

| Tests              | Case Study Tactic                                    | Phase of research in which tactic occurs |
|--------------------|--|--|
| Construct validity | ▪ Use multiple sources of evidence                   | Data collection                          |
|                    | ▪ Establish chain of evidence                        | Data collection                          |
|                    | ▪ Have key informants review draft case study report | Composition                              |
| Internal validity  | ▪ Do pattern-matching                                | Data analysis                            |
|                    | ▪ Do explanation-building                            | Data analysis                            |
|                    | ▪ Do time-series analysis                            | Data analysis                            |
| External validity  | ▪ Use replication logic in multiple-case studies     | Research design                          |
| Reliability        | ▪ Use case study protocol                            | Data collection                          |
|                    | ▪ Develop case study data base                       | Data collection                          |

Source from: COSMOS Corporation, adopted by Yin, 1994. *Case Study Research: Design and Methods*, 2<sup>nd</sup> Edition, p. 33.

To ensure the validity and reliability of the research data, precautionary measures and constant checking of various procedures against the criteria, as listed in the Table 4.3, have been undertaken throughout the whole process of this research programme. As discussed in the previous sections, multiple sources of evidence (both quantitative and qualitative) are collected through multiple data collection processes (i.e. interviews, observations of management meetings, documents), this approach ensures integrity of data, minimises biases and increases data reliability. The draft case study reports are reviewed by key contacts in each of the three organisations to ensure that validity and credibility of the analyses. The use of qualitative and quantitative data analysis techniques via computer software packages (called NUD\*IST and SPSS respectively) ensures the internal and external validity of data among a variety of perspectives expressed by the people from the three organisations. Pilot study was conducted prior to the main study to ensure that case study material to be used in the main study suited the individual organisations so that relevant and reliable data can be collected during the main study. The transcripts of interviews were used to establish a database for the case study. This database can be used to cross-examine data wherever a perceived contradiction was detected so that actions can be taken to resolve the perceived contradiction.

## 4.7. Summary

This chapter discusses the methodology adopted for the study of a complex phenomenon, such as an ABB system, which inevitably requires a close examination at business practices in order to reveal the source of such complexity. A case study approach is derived on the basis of prior empirical methods in use to study similar stance (i.e. budgeting processes) and the comparison to other commonly used empirical methods, namely survey and experiment, from a phenomenism stance. The decision to utilise a multiple-case study strategy for this research was made on the basis of the richness of the data which can be obtained as well as the ability to gain the following new descriptions:

- The procedures of ABB systems,
- The relationship of ABB systems and other organisational procedures (e.g., strategic planning process),
- The relationship of organisational structure and ABB procedures,
- The significance of organisational changes for the design and implementation of ABB systems,
- The feedback of users from the measures that are necessary as a result of ABB implementation,
- The change of motivation and performance measures, and
- The relationship between persons, values/cultures and the use of ABB systems.

The adoption of 'triangulation' method is shown to be appropriate in terms of capturing varieties and complexities of transactions or events in study the ABB processes at three-selected case study organisations. The multiple-case study approach in this research guide the researcher in describing, translating, and analysing actions, events and organisational procedures in the research settings which involve organisational members from various levels in practice.

## **Chapter 5            Case Study One: Scottish Courage Brewing Ltd.; a Technical Perspective**

### **5.1.            Introduction**

On the basis of practical adoption of ABB, organisational variety (e.g. manufacturing, services and financial institution in public and private sectors, and government organisations) and accessibility (as described in Chapter 4), three organisations have been identified for the study of the ABB phenomenon. These case studies are presented in this and the following two chapters.

The case of SCB is used as an exploratory medium with a particular focus on the technical attributes and problems of an actual ABB system. This chapter explains the rationale for choosing SCB, outlines the background of the organisation, and describes the introduction and implementation processes of ABC and ABB systems. An illustration of SCB's ABB system viewed from a technical perspective, i.e. system design, computer software packages utilisation and the computation process, is described. This is followed by a relatively detailed exploration of SCB's ABB development and implementation process, by using Kwon and Zmud's (1987) six implementation stages (i.e. initiation, adoption, adaptation, acceptance, routinisation and infusion stages) as outlined in the research framework (see Section 3.5 in Chapter 3). Difficulties encountered are then analysed to highlight some technical issues that have not been adequately addressed by the existing ABB literature. Other issues related to organisational structure and procedure and behaviour are also discussed.



## 5.2. Rationale of Choice

SCB is one of the three organisations that have then been chosen through the three-phase research method (as described in Chapter 4). The criteria for selecting SCB are that its ABB implementation story has been briefly reported in one of a leading management accounting journal (Mason & Martin, 1996) and the case has also been referred to by some management consultants in ABM practice. SCB is one of the few organisations to publicise its ABB applications. Although at the time of this case study, SCB had decided to shelve further development of its ABB system, exploring SCB's ABB development and implementation experiences can still provide valuable insights into the technical factors involved in an ABB implementation process. The three perspectives (i.e. behavioural, organisational and cultural) have been explored to a certain extent on the basis of comments and opinions from the key person (who was an ABB co-ordinator during the ABB implementation, and now is a regional finance manager, see Table 5.1).

It would be ideal to examine the behavioural, organisational and cultural perspectives in details in this case study. However, this is not possible in the SCB case since limited access was granted to interview one person rather than a team of personnel (which would include people who were involved with the development of the ABB system and managers with budget responsibility at various hierarchical levels). SCB implemented its ABB system during 1996-1997 and had not done any further implementation and development since then. Members of staff who were involved in the implementation process have since moved on to take up other positions within SCB or have left for other organisations. When the case study of SCB was commenced in February 1999, anticipation to interview most of the members of staff who were directly involved in its ABB implementation or deemed to be the users of the ABB system was not perceived as a possible option. Thus this case study has been conducted through the use of semi-structured interviews to a key person (who was the ABB co-ordinator and heavily involved during the entire ABB implementation process) during August 1999 and January 2000. Information from archival documents (e.g. ABB user manuals, ABC ledgers and implementation evaluation reports) and correspondences has been also used as part of evidence.

Table 5.1 Profile of the Interviewee(s) at Scottish Courage Brewing

| Interviewee      | Position                 | Location                        | Involvement with ABC/ABB |   | Education  | No. years with SCB |
|------------------|--------------------------|---------------------------------|--------------------------|---|------------|--------------------|
|                  |                          |                                 | Producer/ User           | Brief Description   | Background |                    |
| ABC co-ordinator | Regional Finance Manager | Edinburgh & Newcastle Breweries | Producer                 | Coordinated and Implemented ABC/ABB models across the six breweries | n.a.       | 25                 |

5.3. Organisation’s Background and it’s ABC System

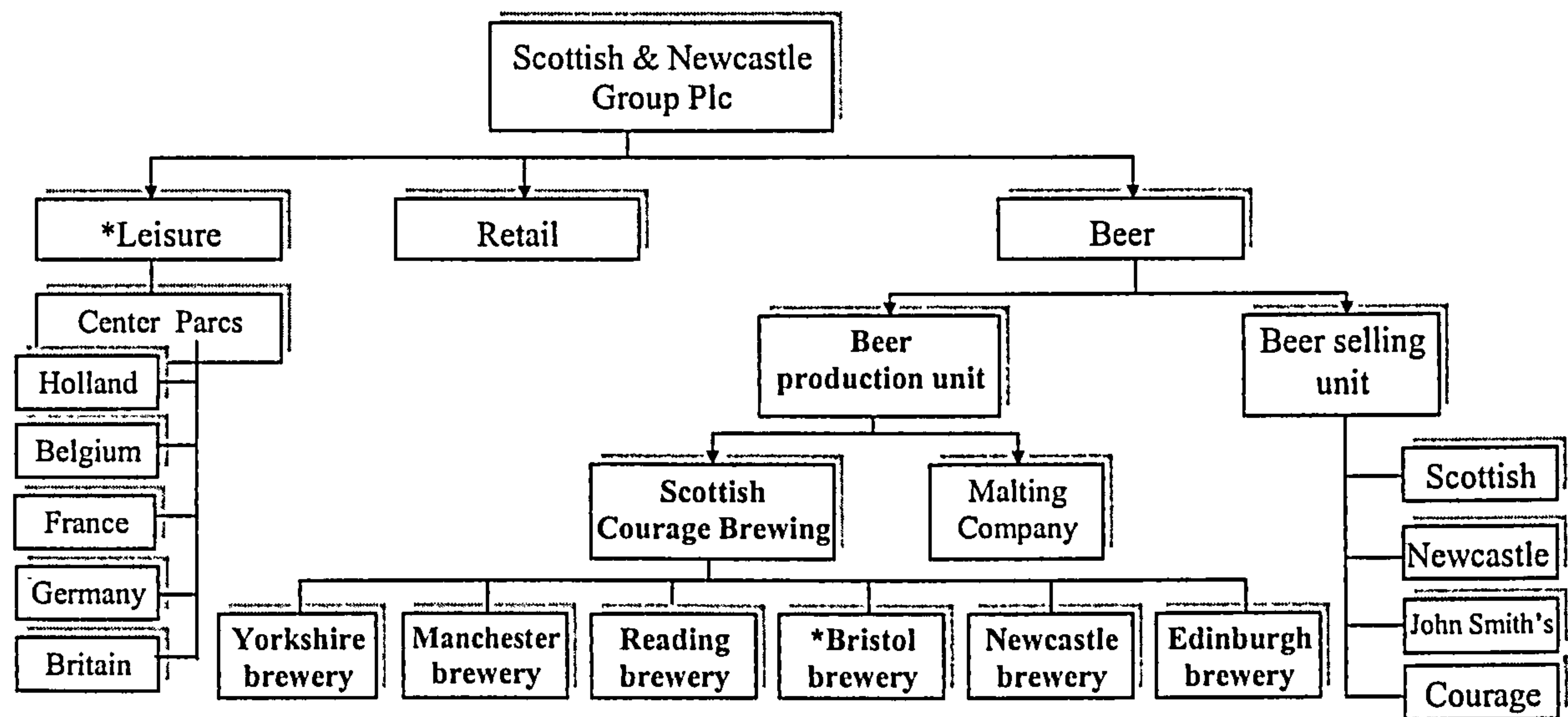
This section introduces the background of the organisation. It is followed by the description of the introductory process of its ABC system, which marked the start of SCB’s ABB project. It is also necessary to introduce its the design of the ABC system since the design of its ABB system was largely based on the structure of the ABC system.

5.3.1 Company Background

SCB originated from two organisations: Scottish & Newcastle brewing Ltd. and Courage brewing Ltd. Scottish & Newcastle brewing Ltd. belonged to Scottish & Newcastle (S & N) Group plc and in 1995 S & N group acquired Courage brewing Ltd. in order to expand its business activities. After the acquisition Scottish & Newcastle and Courage brewing Ltd. had been merged to become SCB which is a wholly owned subsidiary to S & N group.

At present, S & N group is the largest brewer in the UK and one of the leading brewers and leisure operators in Europe. In 1999, the S & N group’s annual operating profit was over £460 million (see its published 1999 annual report). The profit was achieved via three sources of business: retail, brewery and leisure (see Figure 5.1 of its organisational chart, the highlighted part indicated the part of business that SCB was involved with).

Figure 5.1 Organisational Chart of Scottish & Newcastle Group plc



\*As a result of its restructuring to meet competitive market, S & N sold its Bristol brewery and its Leisure business unit in 2000.

As shown in Figure 5.1, S & N had three types of business operations: leisure, retail and brewery. The leisure business focused on the investment in and operation of holiday resorts (known as Center Parc) within Europe. The retail business focused mainly on beer retailing to pubs and the housing and tenancy operation of pubs, bars and restaurants. The beer business consisted of two main units: beer production unit and beer selling unit. The beer production unit was involved in the actual manufacturing, packaging and distribution of beer to depots throughout the U.K. The beer selling unit was responsible for whole-sales to external clients, and the supply of beer to the companies (e.g. pubs, bars and restaurants) in the retail business within the S & N group. The transfer price of beer from beer production unit to beer selling unit was calculated based on a fully absorbed production cost<sup>1</sup>.

The beer production unit consisted of two production subsidiaries (i.e. SCB and a beer malting company). The beer malting company produced various grades of malts and supplied them to both the breweries within SCB and other external clients. SCB had six

<sup>1</sup> Before its implementation of ABC, the transfer price was based on traditional costing method. After the ABC was implemented in 1997, the product costs derived from ABC calculations was used as standard costs for transfer price for a consecutive three-year period (i.e. 1997-2000) despite SCB ceasing any further development and use of the ABC and ABB systems. From year 2001 onwards, SCB uses traditional accounting systems to inform its costing, transfer pricing and other financial information.

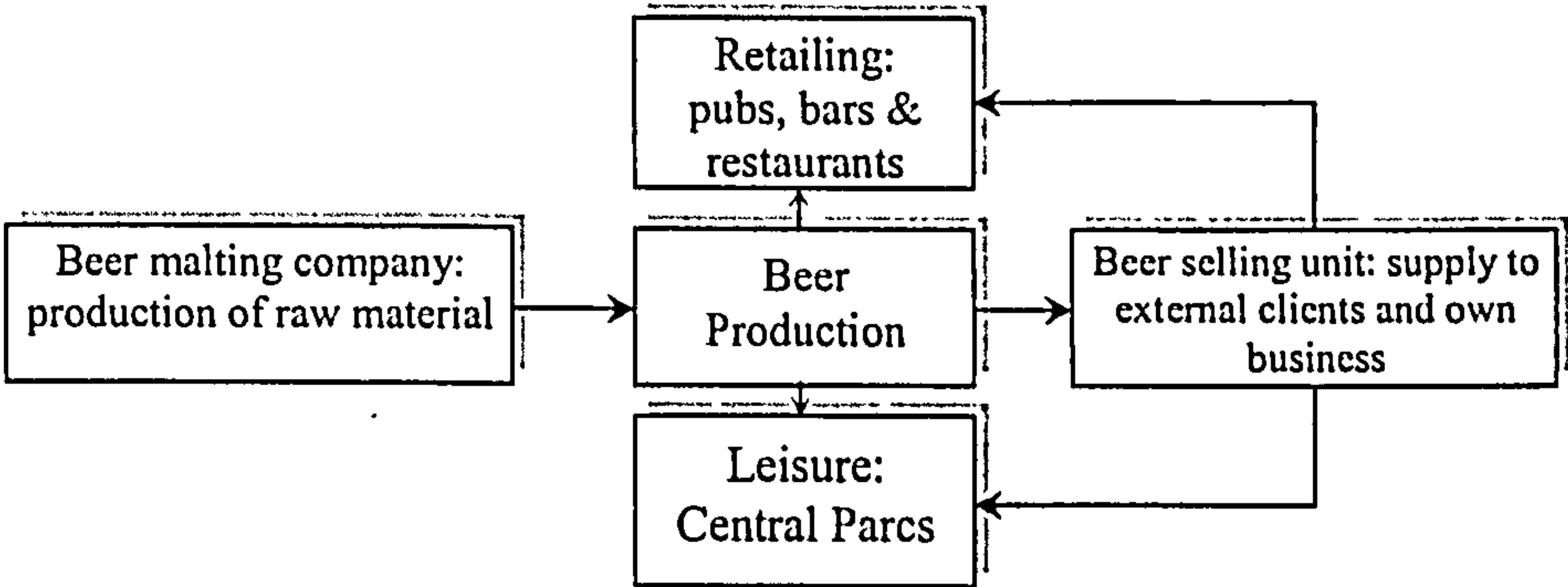


breweries, including its original three brewing plants (operated within Scottish & Newcastle brewing Ltd. before the acquisition) and three additional plants from Courage brewing Ltd. after the acquisition in 1995. The main activities carried out in SCB were beer brewing and beer packaging. These activities were described by SCB’s ABB co-ordinator:

[ABB co-ordinator] ...each of these breweries produces beer relevant to its area, on the principle of producing beer as close to the market and to outlets where the beer is sold. For example, we brew the brand Fosters in a number of breweries because Fosters is certainly sold throughout the whole country. However, the brand Newcastle Brown Ale is only brewed at Newcastle. So the company has certainly kept some products that from a heritage point of view will only be produced in certain areas. However, we can produce beers throughout our breweries. We have two rules in term of where to produce our beer: we can brew beers depending on what the required volume is and as close to market place as possible. ... There are primarily the four main packages: keg, cask, bottle and can. Kegs can come in either 11-gallon or 22 gallon (i.e. equivalent to 50 litre or 100 litre respectively). We also package beer in cask. Cans come in different sizes. We produce can-beer in 440ml containers, and there is also the standard European size which is 500ml.... Each of our breweries and plants are not identical, especially when it comes to the package of beer. So for example, at Newcastle here, we prepare into kegs, casks and bottles, but not in cans, whereas in Edinburgh we can pack beer in bottles, cans and kegs, but not in casks. So each of the breweries is not identical in terms of packaging.

It can be seen from the above description that S & N group plc was a strategically integrated organisation (i.e. its business operations cover a range of activities: from malting, beer production to beer selling and from pub operation, beer production to leisure business). The relationship between these integrated operations is depicted in Figure 5.2. Measuring the complex activities and processes within the S & N group in a correct and accurate manner is therefore a difficult task.

Figure 5.2      Strategically Integrated Scottish & Newcastle Group plc



### 5.3.2 *Introduction of Activity-Based Costing at SCB*

An ABC pilot project had been initiated in 1991. The catalyst of this ABC project's initiation was an annual negotiation process between S & N group and supermarkets to which S & N group would sell its canned beers.

[ABB co-ordinator] ...as a normal process, we go to supermarkets to negotiate the volume and prices of beer for the next year. There was always a bargaining process during the negotiation. However, for that particular year, a different scenario had developed. It was that the supermarkets actually came to us and told us what price they were looking for. There was no negotiation whatsoever, because obviously they had a lot of bargaining power to do so. It was really at that time, we said to ourselves 'Okay, can our product cost meet this price? how confident are we in knowing the actual costs of our products?' And then the finance director of Scottish Newcastle Brewing at that time said to each of the breweries 'how confident are you about your production costs, not only of canned products, but all of our product costs.' ... Our product cost is made up of variable cost and fixed cost. In terms of the variable cost, we were very confident that the make-up of the variable cost is accurate because it varies in accordance to the production volume. But we were debating among ourselves as regard to the accuracy of our fixed costs since it does not necessarily vary in accordance with volume. Take the rates for example, we pay rates to the council for various utility services. We did not have a rational base to allocate the council fee to the whole site ... Take payrolls as another example. Things that we can do fairly well are wage costs. We have detailed information on employees working on the bottling line and therefore we can allocate accurately the wage costs. But things that we got difficulties with are those like salary costs. For example, if a manager who is responsible for a number of products, how does one actually allocate this manager's salary to each of these products? We were therefore not confident about the accuracy of our fixed cost allocation. Indeed we were not 100% confident about the accuracy of our costing.

In response to the constant pressure for lower prices exerted by its customers' demands and the uncertainty about the accuracy of its product costs, the former SCB (i.e. Scottish & Newcastle brewing Ltd. before S & N's acquisition in 1995) felt the need to ascertain the accuracy of its product costing. After consultation with external management consultants, the ABC method was brought attention of the former SCB's management, who

then decided to conduct an ABC pilot test. In this ABC pilot project, the external management consultants helped the management to develop a simple prototype model to calculate the product costs. This prototype model consisted mainly of a computer spreadsheet product-costing model that was used to calculate and allocate fixed costs to finished products. In this first attempt, variable costs were still calculated using individual breweries' existing spreadsheet models. This simple and limited capability ABC model produced results that gave some important insights into costing system in the former SCB. By highlighting a link between product costs and the work (especially those overheads or sustaining activities) being undertaken in the production process, management at the former SCB began to understand the rationale behind the ABC and recognised the importance and relevance of ABC to the organisation. For example, costs of each production process – fermentation, maturation, canning and transportation – were calculated using identified cost drivers which directly related to the activities, not the direct labour costs or production volume.

Following the recognition of ABC from the initial pilot project, the top management of the former SCB then decided to increase the functionality of the ABC by introducing a computerised ABC system, which could handle fixed and variable costs and be able to produce ABC costs and reports promptly. After assessing a range of commercially software packages being available by then (in 1993), it was concluded that a software package, 'Cost Control' from Quality Production & Research (QPR) Ltd, a Finnish software company, was to be used as the standard ABC system for the former SCB. The software package 'Cost Control' was designed to handle fixed costs<sup>2</sup>. However, QPR agreed to customise its 'Cost Control' by developing a common software suite that could convert variable cost data to a format suitable for 'Cost Control'. The large amount of variable costs in the former SCB, therefore, would still be calculated independently using each brewery's existing spreadsheet models, consolidated and then fed into the 'Cost Control' through the customised common software suite.

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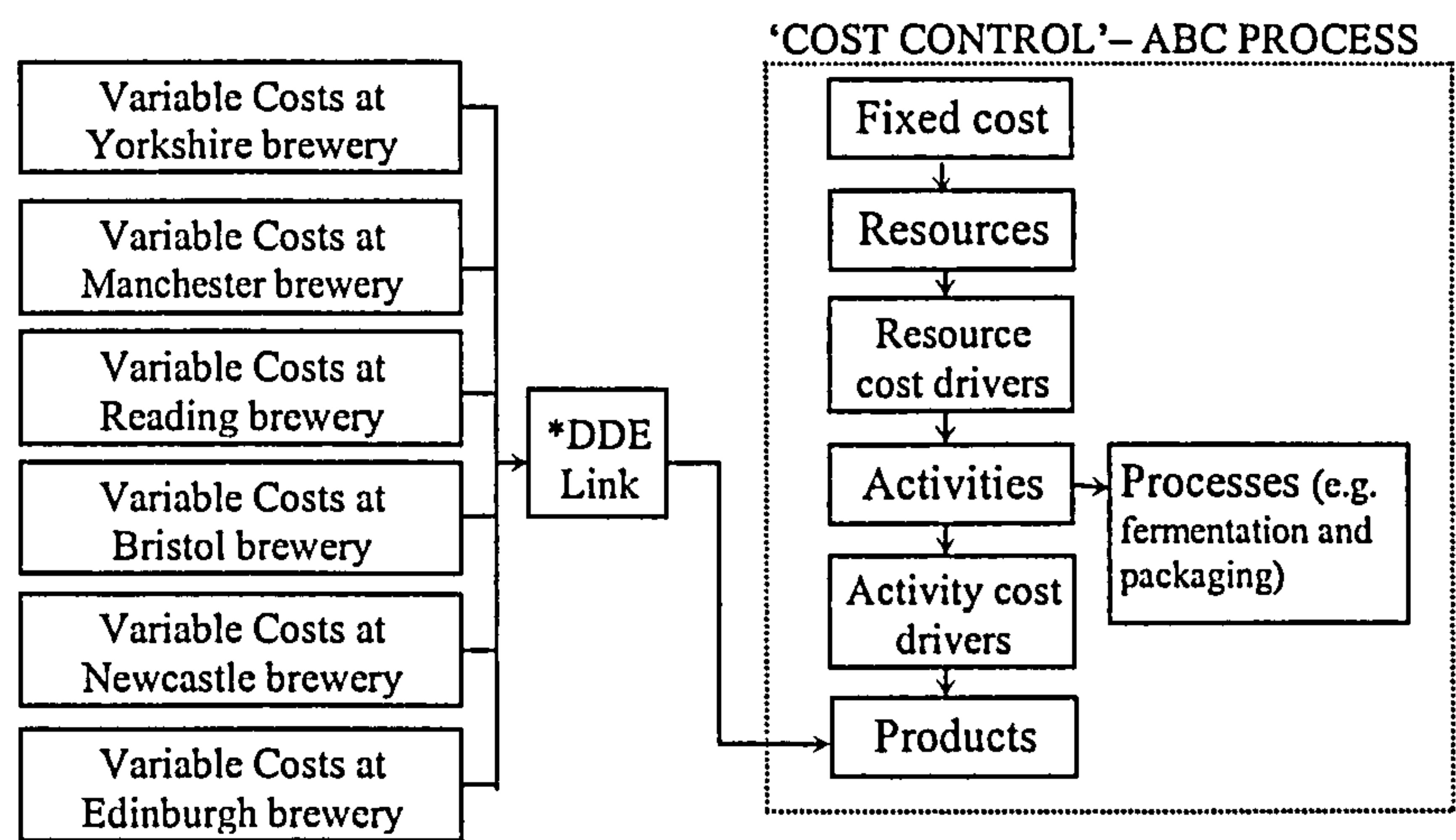
<sup>2</sup> According to the ABB co-ordinator, it was a common practice for a software company to develop software packages for manufacturing companies that only contained fixed costs. The reason was that manufacturing industry had various types of variable costs and a unified software package for variable costs was thus not considered as economically viable.



One of the three breweries at the former SCB was chosen to be the pilot test plant for the development and installation of this customised ABC 'Cost Control' system. A pilot test was conducted in 1994 with reasonably satisfactory results. In 1995 (after the acquisition) the system was ready to be rolled out to all other five breweries at SCB. During the pilot-test phase, it was found that the common software suite, which was used to transfer variable cost data to 'Cost Control', was inadequate in dealing with the large amount of data. To overcome this problem, a customised database interface system was then developed to replace the data-transfer function for variable costs.

In the final version of SCB's ABC 'Cost Control' system (see Figure 5.3), two separate processes were set up. The variable costs were calculated during the first process. This information was then fed into the 'Cost Control' system (i.e. the volumes and costs of the variable items were first calculated using individual brewery's spreadsheet models before being fed into the 'Cost Control' system via the database interface system). The second process fed the fixed costs to the 'Cost Control' system. For example a number of fixed asset items was first consolidated from the 'Fixed Asset Register' and then fed into the 'Cost Control' system, together with other data such as purchased date and useful life of equipment, so that depreciation charges could be calculated. The depreciation charges were then allocated to individual products using different cost drivers (e.g. floorspace usage and no. of Cans). The product costs produced from the ABC 'Cost Control' system had been generally accepted to be relatively accurate as compared to those produced from the traditional costing system, because the ABC was able to track costs to activities via the brewing and packaging processes.

Figure 5.3 Structure of ABC Model at Scottish Courage Brewing



Note: \* DDE link is the interface database system that transfers volumes and unit costs of variable items from spreadsheet models into the ‘Cost Control’ system.

Source: modified based on the structure of ABC model in “SCB Brewing Ltd: Senior Management Team ABC Training” (Internal Document).

5.4. Activity-Based Budgeting at SCB

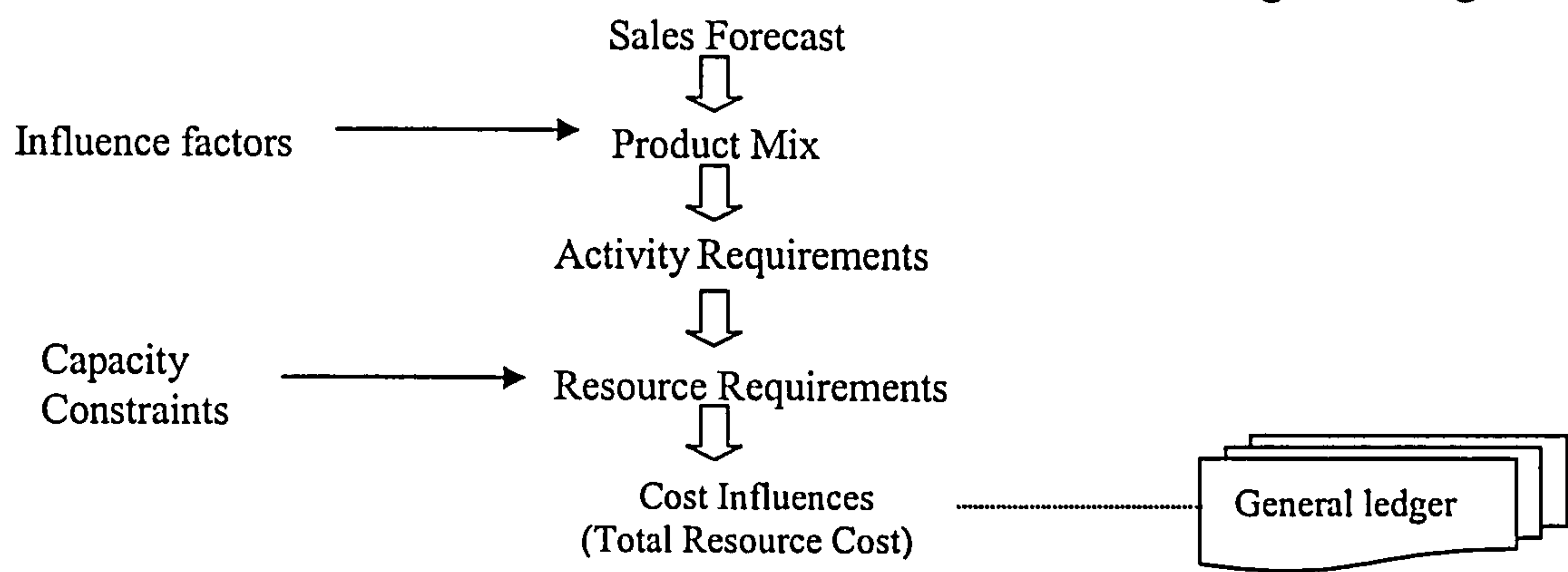
This section illustrates the conceptual design of SCB’s ABB system, including a detailed demonstration of the ABB process, and describes the outlines of the ABB implementation process at SCB.

5.4.1 Conceptual Design of the ABB System

The conceptual model of ABB used in SCB was based on the ‘reverse ABC’ model, as codified by Kaplan & Cooper (1998) (see Figure 5.4). The ‘reverse ABC’ concept was used to calculate ABB from the fully absorbed product costs and anticipated to derive resource costs and capacity constraints information. Referring to Figure 5.4, starting with the sales forecasts, the ABB process worked against the product structures to determine product mix by taking account of various influential factors (brands, packaging and markets). Activity and resource requirements were then determined by taking capacity constraints into

consideration. Finally the expected cost influences on the various products or future product costs were then determined and used to feed back to the general ledger to derive (functional) budgets. In this model, simulations of sales forecasts (corresponding to different sales scenarios) could be used as a part of ‘what-if’ analysis to provide SCB’s management with useful costing information.

**Figure 5.4     The Conceptual ABB Model used in Scottish Courage Brewing**



Modified from: Roddick, S. 1997. Activity-Based Budgeting: The Way Ahead, *The Brewer*, March, pp. 112-117.

This ABB model was built on the infrastructure of the existing SCB’s ABC system with various enhancements. These enhancements included the additional capability for the system to undertake calculations of different volume/mix scenarios and to allow the process to work from sale forecasts towards resource cost influences, which were used to determine revised total resource costs in the general ledger (see Figure 5.4). A main requirement of this process was to establish activities and resources requirements in relation to production volumes so that relationships (e.g. linear relationship<sup>3</sup> were used in the ABC/ABB models) between these variables were able to be determined. Another requirement was to set capacity constraints for assembly lines/sites. This was achieved by establishing maximum ceilings in resource/activity cost drivers. During the operation, the model should then be able to flag a warning signal if a particular site’s capacity was exceeded; the violation of these constraints would invalidate the resultant total cost budget for the site.



#### 5.4.2 *A Detailed Illustration of ABB Calculation Process at SCB*

To appreciate the various issues related to SCB's ABB implementation, an understanding of the ABB calculation model is required. This section introduces the general algorithm of the SCB's ABB model and illustrates the various steps involved and the methods used to perform the calculations.

SCB's budgeting process started with the calculation of expected production quantities based on the sales forecast information (provided by beer selling unit). The variable cost items based on the expected production quantities were calculated using individual breweries' spreadsheet models. The product volumes determined the number of times certain production activities that needed to be performed as well as the required resource level (to sustain and support these production activities).

The schematics data flow diagram of the ABB model at SCB is shown in Figure 5.5. From Figure 5.5, it can be seen that the various calculation routines for the variable product costs are carried out by the variable cost spreadsheet model prior to the transfer of these to 'Cost Control' via the DDE link (the database interface system).

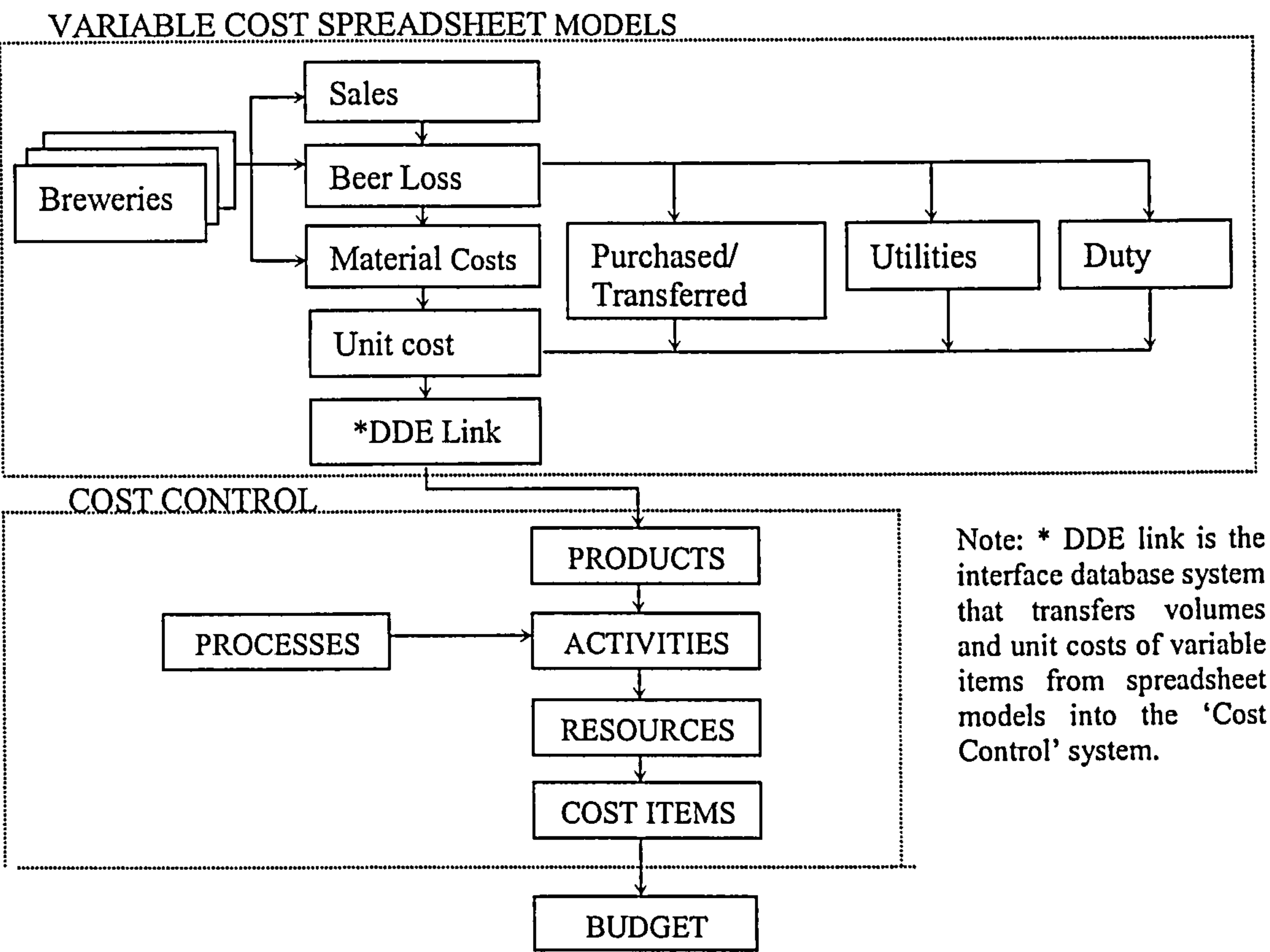
The calculation procedures for volumes and unit cost were based on the following:

- (i) *Volumes*: beer production volume was derived from the sales forecasts with some volume allowance given to beer loss during the movements of beer in the beer production process (the same procedures as adopted in the conventional way).
- (ii) *Unit Cost*: unit cost of each type of beer was calculated at each stage of the production process based on a variety of recipes, prices, wastage and usage factors (in the variable cost spreadsheet model).

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<sup>3</sup> e.g. volume increase/decrease of 1 unit may lead to a 100% increase in an activity which results in a 50% increase in a resource leading to a 150% increase in a cost item.

Figure 5.5 The Schematics Data Flow Diagram



The total product cost of a particular of beer, as well as a given brewery's total production cost, was then calculated based on the computed variable unit costs, volumes, and related fixed costs. Final calculations were performed automatically in the 'Cost Control' model. It was the intention that cost items resulting from the final calculations would be translated into relevant cost items in general ledger account in order to construct a functional budget that was based on the general ledger.

For the purpose of illustrating the ABB process, a few simplifying assumptions<sup>4</sup>, which do not affect the generality of the ABB process flow, are necessary. Like any normally budgeting process, SCB's ABB process started with the forecasted sales volumes to

<sup>4</sup> These assumptions are: (1) One brewery produces only one brand of beer. In actual case, one brewery usually produces more than one brand of beer; (2) Allowances for beer losses have already been considered in the forecasted volume. The production quantity is actually derived after making allowances for beer losses and additions at each stage of variable materials costs calculations; (3) 'Purchased/transferred beer' relates to beers that are tanked in for packaging only, including beers purchased from another company or beers transferred from another brewery within SCB. As it is not applied in this single brand production case, it will not be discussed here.

derive product volumes. The product volumes were determined by combining information on sales forecasts with information on inventories (see Table A5-1 in Notes at the end of this Chapter). After the derivation of product volumes, the ABB process worked through the product structures based on the recipes of the product and the number of times of each activity, as shown in Figure 5.5, to establish the unit costs of variable cost items (see Table A5-2 to A5-6 in Notes for detailed illustration of the computations). Further downstream, the resource level (both volume driven and non-volume driven) required and the subsequent costs were determined by taking the capacity ceilings into account, and finally the unit cost of a product was derived on the basis of total resource costs and expected product volumes.

To differentiate nature of activities for manufacturing, support (overhead) and primary (for variable cost) activities were used. The brewery’s support activities which were not totally driven by production volume (e.g. utilities, financial, maintenance, and quality control) were classified as ‘fixed cost’ and calculated using the ‘Cost Control’ system. Table 5.2 shows a sample of support activities and their associated cost drivers.

Table 5.2 Sample of Manufacturing Support Activity and Cost Drivers

| <i>Support Activity</i> | <i>Cost Driver</i> |
|-------------------------|--------------------|
| Routing Beer/CIP        | No. of Tank Fill   |
| QA product Sampling     | No. of Samples     |
| Stock Control           | No. of Products    |
| Planned Maintenance     | No. of Inspections |
| System Development      | No. of PCs         |

An overhead budget for support activities was derived from detailed analyses of processes and relevant activities, and these were not extracted from the general ledger accounts as in the conventional budgeting method. Take quality control as an example, it comprised a number of activities (see Table 5.3):

Table 5.3 Activities and Cost Drivers in Quality Control Process

| <i>Activity</i>     | <i>Cost Driver</i> |
|---------------------|--------------------|
| QA product sampling | No. of samples     |
| Product tasting     | No. of tastings    |
| Material Analysis   | No. of samples     |



Using the forecasted total production volumes (see Table A5-1), Table 5.4 shows an example of the budgeted resources needed for carrying out the QA product sampling activity.

Table 5.4 Resources Needed for QA Product Sampling Activity for January

| Resources            | Description  | Productive Capacity | Nonproductive Capacity | Total Capacity Required | Available Capacity | Capacity Shortfall |
|----------------------|--|---------------------|------------------------|-------------------------|--------------------|--------------------|
| Employee Hours       | Items produced (see Ex A1)   | 70,200              |                        |                         |                    |                    |
|                      | Items sampled  |                     |                        |                         |                    |                    |
|                      | Total samplings  | 10%                 |                        |                         |                    |                    |
|                      | Sampling minutes (per can)   | 7,020               |                        |                         |                    |                    |
|                      | Sampling hours   | 5                   |                        |                         |                    |                    |
|                      | Ratio of non-productive to productive time of workers (see line 3 of Table A5) | 585                 | 23%                    |                         |                    |                    |
|                      | Additional inspection  |                     |                        | 720                     |                    |                    |
|                      | Number of QAs  | 2.93                | 135                    | 3.61                    |                    |                    |
|                      | Future growth (based on sale growth rate)                                      | 60%                 | 0.68                   | 2.17                    |                    |                    |
|                      | Total QAs needed   |                     |                        | 6.00                    | 4.00               | 2.00               |
| Supervision          | Estimated portion of manager's time  | 10%                 | 0                      | 10%                     | 0                  |                    |
| Space                | Square feet per inspector  | 100                 |                        |                         |                    |                    |
|                      | Total needed (by existing QAs)   | 400                 |                        | 400                     |                    |                    |
|                      | Corridors, aisles, etc. 20%  |                     | 80                     | 80                      |                    |                    |
|                      | Future Needs (50%)   |                     | 40                     | 240                     |                    |                    |
|                      | Total space needed   | 200                 |                        | 720                     | 1,000              | Excess             |
| Equipment – Existing | Test equipment*  | 10%                 | 9%                     | 19%                     | 81%                | Excess             |
| Equipment – New      | <sup>a</sup> Test equipment  | 19%                 | 4%                     | 23%                     | 77%                | Excess             |

\*The existing equipment is available for 365 days x 24 hours a day. There is no book value for the equipment. It is currently being used 4.5 hours a day for 4 days a week for 50 weeks a year or 4.5 x 4 x 50 = 900 hours. The productive use, therefore, is 10% (rounded). The non-productive use for set-up and scheduling is 2 hours a day or 5% and repairs is 300 hours a year or 4%. The rest, 81%, is idle.

<sup>a</sup>The test equipment need is based on a one-shift operation. Since adding 2 more QAs will require the purchase of new equipment, which will need no repair and can therefore work longer hours. The productive use will 6.5 hours x 5 days x 50 weeks or 19%. The non-productive use will be 1.5 hours or 4%.

As shown in Table 5.4, the calculation of resources needed for QA product sampling activity was primarily based on product volumes, however the resource cost drivers were not. The resource required for product tasting and material analysis activities used were obtained averages of previous years' statistical records (not just last year) and were constrained by the maximum capacity. Table 5.5 shows the resource required to perform these two activities.

Table 5.5      Resource Needed for Product Tasting and Material Analysis for January

| Resources        | Description   | Average Measures | Max. Capacity    | Capacity Shortfall |
|------------------|---|------------------|------------------|--------------------|
| Employee's hours | Samples tasted  | 1,200            | 1,500 of samples |                    |
|                  | Tasting minutes (per tasting)                         | 15               |                  |                    |
|                  | Tasting hours   | 300              |                  |                    |
|                  | No. of specialist needed                              | 1.5              |                  |                    |
|                  | No. of specialist employed                            | 2                |                  |                    |
|                  | Samples analysed                                      | 2,000            | 2,200 of samples | Excess             |
|                  | Analysing minutes (per test)                          | 30               |                  |                    |
|                  | Analysis hours  | 1,000            |                  |                    |
|                  | No. of analyst needed                                 | 5                |                  |                    |
|                  | No. of analyst employed                               | 5                |                  |                    |
| Supervision      | Estimated portion of manager's time for both activity | 10%<br>10%       |                  |                    |
| Space            | Square feet per specialist                            | 50               | 200              | Excess             |
|                  | Total needed for product tasting                      | 100              |                  |                    |
|                  | Square feet per analyst                               | 150              |                  |                    |
|                  | Total needed for material analysis                    | 750              | 800              | Excess             |
|                  |   |                  |                  |                    |
| Equipment*       | Material analysis equipment                           | 9%               | 100%             | Excess             |

\*No equipment is needed for the activity of product tasting. There is no book value for the material analysis equipment. Each piece of equipment is being used for 3 hours a day for 5 days a week for 50 weeks a year or 3 x 5 x 50 = 750 hours. The productive use is, therefore, 750/365 x 24 = 9%.

The manufacturing overhead budget (i.e. Quality Control Cost in this illustration) can be then derived by the estimates of the cost of resources, as illustrated in Table 5.6.

Table 5.6      Quality Control Cost Budget

| Description of Resources   | Cost   | January Quantity | January Budget | Annual Budget |
|--|--------|------------------|----------------|---------------|
| <b>QA Product Sampling Activity:</b>   |        |                  |                |               |
| QA sampling's salaries – existing  | £1,500 | 4                | £6,000         | £72,000       |
| QAs salaries – new   | 1,100  | 1                | 1,100          | *19,800       |
| Manager salary   | 2,500  | 10%              | 250            | 3,000         |
| Space occupancy costs (incl. Lease, insurance, property taxes, and utilities)                | 4      | 1,000sq ft       | 4,000          | 48,000        |
| Equipment depreciation – existing <sup>a</sup>   | 0      |                  |                | -----         |
| Equipment depreciation – new (equipment is £5,000 at an annual rate of 20% or 1.67% monthly) | 10,000 | 1.67%            | 167            | 2,004         |
| <b>Product Tasting Activity:</b>   |        |                  |                |               |
| Tasting Specialist salaries  | £1,800 | 2                | £3,600         | 42,200        |
| Manager salary   | £2,500 | 10%              | 250            | 3,000         |
| Space occupancy costs  | 4      | 200 sq ft        | 800            | 9,600         |
| <b>Material Analysis Activity:</b>   |        |                  |                |               |

| Description of Resources | Cost  | January Quantity | January Budget | Annual Budget |
|--------------------------|-------|------------------|----------------|---------------|
| Analyst salary           | 1,800 | 5                | 9,000          | 108,000       |
| Manager salary           | 2,500 | 10%              | 250            | 3,000         |
| Space occupancy costs    | 4     | 800 sq ft        | 3,200          | 38,400        |
| Equipment depreciation   | 0     |                  |                | -----         |
| Total QA cost            |       |                  | £28,617        | £349,004      |

\*One QA and two test machines are added in January; another QA is employed in June.

<sup>a</sup> SCB used book value to calculate the equipment depreciation: no depreciation, therefore, appeared on the old equipment.

The above process was performed by ‘Cost Control’, which combined with the variable cost information and checked the new resource levels against the maximum capacities to ensure that the required production volume could be met. In the event of production capacity constraint violation, an over-capacity report would be produced.

The above (simplified) calculations exemplify the complex nature of ABB calculations in SCB. The actual ABB processes performed at six breweries were significantly more complex due to the existence of a large product range.

Owing to problems with the ABC and ABB system design and other difficulties in relation to technical and implementation aspects, SCB was unable to obtain an accurate and reliable budget from the ABB system as they originally anticipated for the use of the computerised ‘Cost Control’ system. The implementation process is outlined in the following section. The analysis of difficulties and problems encountered are discussed in the Section 5.5.

5.4.3 *ABB Implementation Process at SCB*

The ABC product costs obtained from 1991’s initial pilot test provided the management at the former SCB with a new and different set of costing information as compared to those obtained from traditional costing methods. Once they understood the rationale behind the ABC concept, they started to seek a full-scale of ABC implementation to six breweries at SCB. At this stage, the objectives were as follows (based on correspondence with the ABB co-ordinator; Roddick, 1997):

- to build a product cost model,



- to build an ABB model and,
- to build a cost management model.

To achieve these objectives, a comprehensive computer model was deemed to be adequate (based on correspondence with the ABB co-ordinator):

- to incorporate both the principle of ABC and ABB within the model,
- to deliver the product costs and budgets based on the ABC and ABB systems, and
- to integrate the ABC and ABB data with other organisational systems to provide support for management decision making process.

As both of the computerised ABC and ABB models were developed and implemented concurrently, the implementation process of ABB described here would be inevitably linked with that of ABC.

The following sub-sections describe the process related to the design, development and implementation of SCB's ABB/ABC systems. Owing to the various difficulties encountered, which is explained in Section 5.5, SCB had managed to complete the first three of Kwon and Zmud's six implementation stages (i.e. initiation, adoption and adaptation stages), but was unable to complete the remaining three stages (i.e. acceptance, routinisation and infusion).

#### **5.4.3.1. The Initiation Stage**

The potentials of applying the ABC information in the budgeting process were recognised by SCB's top management after they realised the benefits of ABC (e.g. relatively sound cost drivers as allocation bases, more accurate product costs and clearer view about the cost involved in each production process). The finance director then decided to initiate the development and implementation of a computerised system that had the capability and functionality to support both the ABB and ABC processes. Apart from utilising the impetus from the introduction of the ABC system (see Section 5.3.2), the introduction of the ABB system had other purposes. They were, according to the ABB co-ordinator, '*to improve the traditional methods of budgeting and to enhance the ABC database for cost management*

*purposes*<sup>5</sup>.' It was anticipated that the ABB system, once developed successfully, would also solve some problems related to SCB's annual budgeting process (e.g. labour intensity and time consuming).

Before its introduction of ABB SCB adopted a form of zero-based budgeting (ZBB). This ZBB process started with sales forecasts, which were produced by the beer-selling unit. Based on these forecasted figures, the managers at each of the six breweries then applied the ZBB principles to budget their expenses. They looked at their business activities from scratch (not from previous years), put justification on the necessities of these business activities in the 'decision packages' and then produced the individual annual budget proposal accordingly. This budget preparation process would normally last for at least 2 months. Once the budget had been calculated, it would be presented to various hierarchical management levels within SCB and S & N group at different stages. At each of these stages, changes were made to this budget proposal at the discretion of managers at various levels of the management hierarchy. According to the ABB co-ordinator, '*managers have to justify on how and why they need the resources to support his business operation.*' The presentation and subsequent negotiation of obtaining the final budgets was a difficult process, as the managers had to satisfy a set of conflicting objectives and requirements, which were then left accountants to face with difficult calculations.

[ABB co-ordinator] ... the accountants, who were involved in the calculation of the breweries' budgets, were always rather strained with this method of calculation since they needed to perform fairly detailed calculations. Even a small change in one of these stages would result in tedious re-calculations. Let's say if somebody asked to reduce a particular budget by £100,000, the accountants had to work out in details where or from which items this £100,000 reduction may be taken without significantly affecting the business operation. So the changes made was rather arbitrary. Well, some heuristic methods may be applied, but these might be 'Rule of Thumb'. In some cases, to achieve the required budget one might as well simply take 5% off all of the cost items. ... Recognised these problems, the finance director then said, 'Not only is our budgeting process quite labour intensive, we also needed a model that will be able to do things

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<sup>5</sup> The purposes for cost management was defined as a part of its ABC/ABB project, but because of the technical difficulties encountered in the ABC/ABB system, the ABC/ABB information never materialised to be used for cost management.

quicker with less resources. So that if our volume demand changed we could come out with a different set of cost budget very quickly'. ...

The internal need for a cost-effective budgeting system was coincided with external pressure. Owing to the changes of lifestyle and culture the beer market in the U.K was declining, which had a substantial impact on the brewing industry. Each of the breweries, which had originally been instructed to operate to its full production capacity, was struggling obviously to achieve an optimised production level in such an unfavourable market climate<sup>6</sup>. Since each brewery was organised as an independent production unit and a cost centre, the sales forecasts produced by the beer selling unit were treated as 'sales/production orders' by the breweries. With the declining beer market, each brewery therefore would have to compete with each other for favourable sales forecasts in order to meet the optimal production requirements (or otherwise face the risk of reducing production or even closure). Human interference undoubtedly existed within such competitive situation (e.g. personal influence or good relationship between a brewery manager and personnel in charge of sale forecasts would enable some favourable forecasts to be given to the particular brewery). This tended to cause discrepancies between the actual product demand and forecasted one in the budget, and subsequently resulted in some distortions in the final budgets. Thus, the annual budgeting process, which was already a rather difficult one, was made even more difficult by these undesirable complications.

The above-mentioned problems can be summarised as follows:

- the existing budgeting process was time consuming, it usually took over 2 months to complete;
- the budgeting process was very labour intensive and therefore costly;
- the process produced rigid budgets and was difficult to identify savings (e.g. cut for £100,000 was not according to the necessity of activities but in a form of 'across-the board');
- there was a lack of standardisation;
- the budgeting system was not related to the ABC model;
- the information from the existing budgeting process could not be used to support 'what-if' analysis.



These issues (which were associated with its ZBB process) had prompted the management to seek other alternative budgeting methods. The successful introduction of the initial ABC system pointed to an attractive and feasible path – to extend the use of ABC system to its budgeting process. A feasibility study was subsequently authorised in October 1994 by the finance director and the study was completed with satisfactory results in August 1995. The ABB project was officially initiated in December 1994. A steering committee was formed to set the strategies for the ABB implementation, to monitor the progress of the project and to measure the achievement of the project against the set objectives. This steering committee comprised of a production director, the finance director of SCB and an ABB co-ordinator (who is also the interviewee of this case study). In addition, an ABB implementation team with two full-time members of staff (i.e. the ABB co-ordinator and a management accountant) and part-time members representing each of the breweries was also formed. To ensure a successful implementation, support from top management was sought by the implementation team at the beginning of the implementation process.

[ABB co-ordinator] ... we started to seek support from the top-level management hierarchy of our company. So support to this (ABB) implementation was obtained from the main board (of the S & N group) and the SCB brewing executive board so as to ensure that we had full support from the top. ...

#### **5.4.3.2. The Adoption Stage**

When the ABB project started in December 1994, the steering committee and implementation team set the following detailed objectives (Roddick, 1997):

- to enhance the existing ABC databases so that the ABB system can be build on top of these databases;
- to carry out the development and implementation of an ABB system which aims to link output costs and production volumes against the forecasted volumes with an attempt to identify capacity constraints;

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<sup>6</sup> That was evident from the closure of Bristol Brewery (see Figure 5.1).

- to carry out a full-scale test of various process improvement scenarios to aid the management decision-making processes;
- to set practice standards for budgeting and business processes;
- to provide an accurate product costing tool covering fixed and variable cost calculation and allocations.

The implementation team invited one representative from each of the six breweries for a series of meetings to explain the basic principles of the ABB model, which was to be built on the basis of the existing ABC model:

[ABB co-ordinator] ... the basic ABC principle is to allocate the (fixed) costs with some linkage mechanism to resources available. .... During these meetings, we would actually look at our beer manufacturing processes, take each part of the process and say 'Right what are the main activities that take place in that particular part of the process'. From here we then link activities to the products. And then, we explain the ABB process, which was in essence the reverse process of the ABC.

After clarifying the ABC and ABB principles, the two full-time members of the implementation team first worked together in one brewery which was used as a pilot site to map the processes and activities accordingly:

[ABB co-ordinator] ... Our brewing process consists of four main stages. It starts with a brew house, where we actually brew beer, fermentation, maturation, and beer packaging. The first three processes are done in similar manners for all the breweries. But with the packaging, each of our breweries does have different packaging lines and different packaging units. So the model we developed needed to accommodate changes in processes within these different breweries. Managers at each brewery were asked to list activities carried out in the brewing and packaging process. We then produced a list of all activities. Once again, we were trying to create a standard list of activities (i.e. the ABC dictionary), which should be applicable to all of our breweries. ...

After working together at one pilot test brewery, the two full-time members of the implementation team then went to work separately in two other breweries in order to accelerate the implementation process. During the introduction of both ABC and ABB models to the first and the second brewery, the team had encountered some problems:

[ABB co-ordinator] ... we got the process, got the activities, and then we started looking at the cost drivers. We had difficulties in identifying some of the cost drivers. We then got a lead from a management consultant called Develin that we should look for cost

drivers to begin with. ... So through a series of links we were able to allocate each of the costs to activities. We established a total number of 250 activities, 100 products and about 500 types of resources. The level of detail we went to, looking back at it, was actually horrendous.

Apart from the above-mentioned technical problem (i.e. the incorrect sequence of identifying cost drivers and activities), the classification of activities had also caused some discomfort amongst some of the breweries' managers. For example, the term 'non-value added' was used to differentiate activities (e.g. machinery maintenance and repairing), according to the ABC theory. Although it was only used for the purpose of activity analysis, managers of the maintenance divisions at the six breweries were rather upset about the term. A strong feeling of being unnecessarily penalised were shared amongst those managers who were then reluctant to provide useful information about machinery maintenance and repair processes.

During the adoption stage, the implementation team sought consciously for the involvement of line management. At each brewery, each of the two members of the implementation team worked in conjunction with accountants from the finance department and managers at individual brewery to build up the ABB and ABC computer models for that brewery. Involvement of the line management was also encouraged by the implementation team to ensure a smooth transfer of the ownership of the ABB and ABC models to the line-managers once the systems were developed.

[ABB co-ordinator] ... I think we were conscious about the involvement (of the line management). So things like the cost drivers, it was the managers who provided some leads on the identification of the cost drivers. Yes, we were very conscious to the fact that they needed to be involved. And in some sense it needed to be their decisions because, it is like anything else, if you feel it is your decision, you got a better chance of actually saying 'I like that model'. If they are actually using a model built based on somebody else's decisions, they might not want to use it. It was that approach as well. ... The system was not just a financial tool and we were very clear on that. We wanted them to have access to the ABB model as well. ... However, due to the complexity of the model, what we had decided to do initially was to involve the managers and accountants together at each brewery. The accountants would be able to understand the model relatively readily, I think. So during the course of work, if a manager needed to search for some information within the system, he would probably need to ask his accountant to perform



some scenario analyses on his behalf. Or if the manager wanted to make changes to the system to reflect changes made to the manufacturing process, he would also work together with his accountant to make the necessary changes to the system.

... What we had also done when we were in each of the breweries was to disseminate information to the production director of each of the breweries, as well as their heads of departments. We took them through in a series of presentations about what we were going to do to ensure that they were fully involved with this implementation process.

Literature about successful system implementation (Cooper, 1990b; Norkiewicz, 1994) suggested that the system ownership has a direct influence on the subsequent success of a project. From the above description, it seemed that the involvement of line management, which would potentially resolve the ownership issue of the ABB system, was carefully taken into consideration. However, as a result of some other issues (e.g. the use of the term 'non-value added' and the complexity of the system), some managers distanced themselves from the system and were also reluctant to supply information during the construction of ABC model. They were unlikely to claim the ownership of the ABC/ABB systems.

During the course of system development, two other problems had arisen: one problem was related to the ease-of-operation of the system and the other was an indirect result arising from the lack of resources allocated to carry out system implementation.

The line management was only involved during the initial stage of implementation, (i.e. briefing of activity-based principles and initial identification of cost drivers, activities and processes). However, they were not consulted in the detailed activity analysis and technical elements of the software packages (i.e. user-friendliness of the software user interface and easy-of-use of the system). There was a possibility that the managers would not be able to use the systems without constant assistance from the accountants. This would defeat the implementation team's purpose of building the ABB and ABC models as 'operation tools' for the breweries' managers rather than a 'financial tool' for accountants.

On the other hand, the implementation team was working under tight constraints of time and resources. Thus consultation to breweries managers about the detailed activity analysis was not perceived as a viable option. Instead, breweries' accountants were used to assist members of the implementation team in developing ABC/ABB models for individual

breweries. In addition, a general resentment to new ideas was perceived as norms in SCB, which would attribute to resentment to the ABB system as a whole (according to the ABB co-ordinator).

#### 5.4.3.3. The Adaptation Stage

During 1995-96, the developed ABB model (as shown in Figure 5.3) was put into a pilot operation in an attempt to produce an annual budget for each of the six breweries. Since this was the first time to use the ABB system, the ABB system was run in parallel with the ZBB process.

Contrary to the original anticipation of reducing labour intensity, the ABB process was found to be extremely labour intensive because of the demand for fine details in activity-based information and the use of an inadequate ABB model.

The demand for great details was described by the ABB co-ordinator.

[ABB co-ordinator] ... what we did find was that the ABB model was very much labour intensive. (This is) probably due to the great level of detail we went. If you would ask any member of staff working within the finance division during that ABB budgeting process, working day and night to arrive an ABB budget would be the answer. The original idea of using the ABB system was, amongst other things, to reduce the time required to arrive at the budget. But I think to be fair, looking back at it now, it was the unnecessary great level of details we went to that drastically increased the effort and labour intensity. As a result it defeated the purpose of the ABB exercise.

During the ABB implementation process, it was found that the ABC model, which worked relatively smoothly for the production of ABC costs, was ineffective and somewhat problematic in producing the required ABB budgets. The ABC system at SCB was based on 250 activities, 100 products and 500 types of resources. During the ABC process, the calculations of variable costs, which included linear and step cost relationships<sup>7</sup>, were done in a spreadsheet model at each brewery before being fed into the ABC 'Cost

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<sup>7</sup> A linear cost relationship is one in which the cost is linearly proportional to the production volume; whereas a step cost relation is one in which the cost increases in a stepped fashion in relation to increases in production volume.

Control' system. The ABB system, however, was unable to handle the 'step-change' nature in costs. As a result the budgets from the ABB system were painstakingly adjusted manually, and this in turn contributed to the problem of labour intensity.

[ABB co-ordinator] ... our volume of beers can vary during the year, and so can our variable costs. But when it comes to our packaging lines, for example, which vary seasonally. The lines are usually busy leading up to the Christmas and the summer season. So we were actually bringing in temporary crews during these busy packaging months. So for example, if we are producing, say 50,000 hectolitres on one particular production line, you need X number of people for that, the model will then create a relationship of that. If you then went to 51,000 hectolitres of beer, you will probably need to increase your manning by bringing an extra shift (i.e. a 'stepped' increase in cost), or to allow for overtime. The stepped increases were determined in the variable cost spreadsheet models.

The importance of training, as being identified as one of the important issues in the literature (e.g. Anderson, 1995; Krumwiede, 1998b), was reflected throughout the entire development and implementation in SCB. SCB's managers were provided with a series of training sessions.

[ABB co-ordinator] ... so we actually gave a presentation at the beginning before we commenced the process to explain objectives and time-scales to each of our breweries. We gave feedback presentations at the end and we also gave training to these people as well, based on our own training programme. ... However, I think it is probably fair to say at that time, not all managers were comfortable with PCs. ... in some cases they were not reluctant to use the model, but the actual PC itself. ... We would encourage them to sit down with their accountant and do it together. ... But I think that the model was quite complex as well. Perhaps it was another point that turned people off. It is like anything else, something is rather simple to use gives you a better chance for somebody to actually use it. Some systems, like our ABB system, are a lot more complex and you could not use them properly if you are not using them on a daily basis.

What was apparent from the above description was that the ABB and ABC models built at SCB were rather complex. The concepts on which these models were based were fairly new to those line managers in comparison to the ZBB methods that they were familiar with. In addition, it was possible that some line managers who were not accustomed to working with a computerised system would prefer not to use the models by



themselves, rather they would utilise accountants to carry out the tasks for them. All of these factors (i.e. complexity of the ABB and ABC models, unfamiliarity with the new ABB concept, and the general reluctance to use computers) thus contributed to the difficulties experienced during the adaptation stage.

#### **5.4.3.4. The Acceptance, Routinisation and Infusion Stages**

Owing to the various problems encountered in the three implementation stages (i.e. initiation, adoption and adaptation, as described above), in 1997 the management had made a decision to cease further implementation and use of ABC and ABB systems. Therefore the achievement of final three stages of acceptance, routinisation and infusion were only at minimum levels.

A positive note was that management accepted the results produced from the ABC system and used the resultant product costs as a standard costing basis for transfer price between beer production unit to beer selling unit for a consecutive three-year period (i.e. 1997-2000). However, the ABC and ABB systems were not used as a routine operation to produce management accounting information.

[ABB co-ordinator] ... (*At the acceptance stage*) the systems were perceived to be rather labour intensive, in terms of initial preparation of the model and its subsequent maintenance. I think they (preparation and maintenance) were the direct result of the complexity of those models. ... (*As for the routinisation and infusion*) for the calculation of variable costs we now have a new Oracle (a database software package) model, and that came primarily as a direct result of using ABC. I think the experiences of the ABB exercise indicated that we needed a more robust model than what we had before. ... we now calculate fixed costs using only computer spreadsheet models. So things like wages and salaries, maintenance costs, utility costs, are all calculated using various spreadsheets, and these computations are fairly traditional.

Despite the existence of problems, some positive outcomes have resulted from the ABC and ABB implementation at SCB. The first positive influence of this project is the general acceptance of the ABC product costs as standard transfer costs between SCB to the beer selling unit. Secondly, the use of ABC and ABB models have resulted in the

understanding and appreciation of the product costing and budgetary planning from an activity and process viewpoint.

[ABB co-ordinator] ... Before the take-over by S & N, the Courage (brewing Ltd.)'s board got together and they actually understood for the first-time their own costs in the various processes of the business. They were then able to use the principle of ABC to do costing calculations at a fairly broad level. ... I think there is a place for ABC in our organisation since it will allow our managers to have a thorough understanding of cost elements: where the various elements of costs are coming from within the various activities and how and why we actually spend money on. ...

The causal link demonstrated in ABC/ABB models also provided top management and managers at the six breweries with an overview of their production processes and activities/cost attributes.

## **5.5. Analysis of ABB system design and implementation at SCB**

Owing to the problems occurred during the implementation process and some technical issues (as discussed and exemplified in Section 5.4.1-5.4.3), the computational steps as described in Section 5.4.2 could not be performed in an efficient, reliable and accurate manner. These implementation related problems, together with other contextual factors, eventually led the management to make the decision to shelf this ABB project.

The analysis of these implementation problems in this section is based on the interviews with the ABB co-ordinator and evidence gathered from SCB's internal documents.

### **5.5.1 *Technical Perspective***

The preceding ABC and system implementation literature has suggested that some technical factors, such as complexity of the designed system for users and compatibility of the new system with existing accounting information systems, are critical elements during

the design stage of implementation of a system (Armstrong et al., 1996; Cooper, 1990b, Norkiewicz, 1994, Miller, 1990; Kleinsorge & Tanner, 1991). By contrasting SCB's experience with the technical factors identified in the literature, the following three factors are particularly influential to its system implementation:

- (i) Differences between conceptual model to the actual computer model;
- (ii) Limitation of the computer model built into the 'Cost Control';
- (iii) Complexity of systems.

#### **5.5.1.1. Differences between the Conceptual Model and the Actual Computer Model.**

SCB's ABB process, which worked backwards of the normal ABC flow, was undertaken in the same (albeit enhanced) computerised ABC system. Although SCB was able to undertake the ABC process relatively satisfactorily, the system was unable to cope with the reverse process required by ABB. Although the same conceptual process was described by Kaplan and Cooper (1998), this process has some drawbacks if implemented in the practice. From a conceptual viewpoint, an ABC system and an ABB system serve two different purposes: the former is mainly for the derivation of product costs and can be achieved by tracing resources to products and customers, whilst the latter is designed for management planning and control purposes. The different purposes that the ABC and ABB models serve have also been explained using a notion of the two-dimensional model of ABC as described in the literature (Brimson, 1991; Raffish, 1991; Raffish & Turney, 1991) (see Figure 2.3 in Chapter 2). The first dimension, according to Raffish (1991), is the cost assignment view which is related to the objective of tracing resources to cost objects. The second dimension, described as the process view, has the objective of identifying and measuring activity attributes to provide a framework of activity management or ABM. Thus it is rather difficult to serve the two rather divergent purposes under the same model, as the one developed in SCB's ABC and ABB systems. From a data processing viewpoint, an ABC process aggregates resource costs to products, whilst an ABB process disseminates costs from products to resources. Such dissemination process requires additional amount of support from both computer hardware and software. Therefore, a computer system which



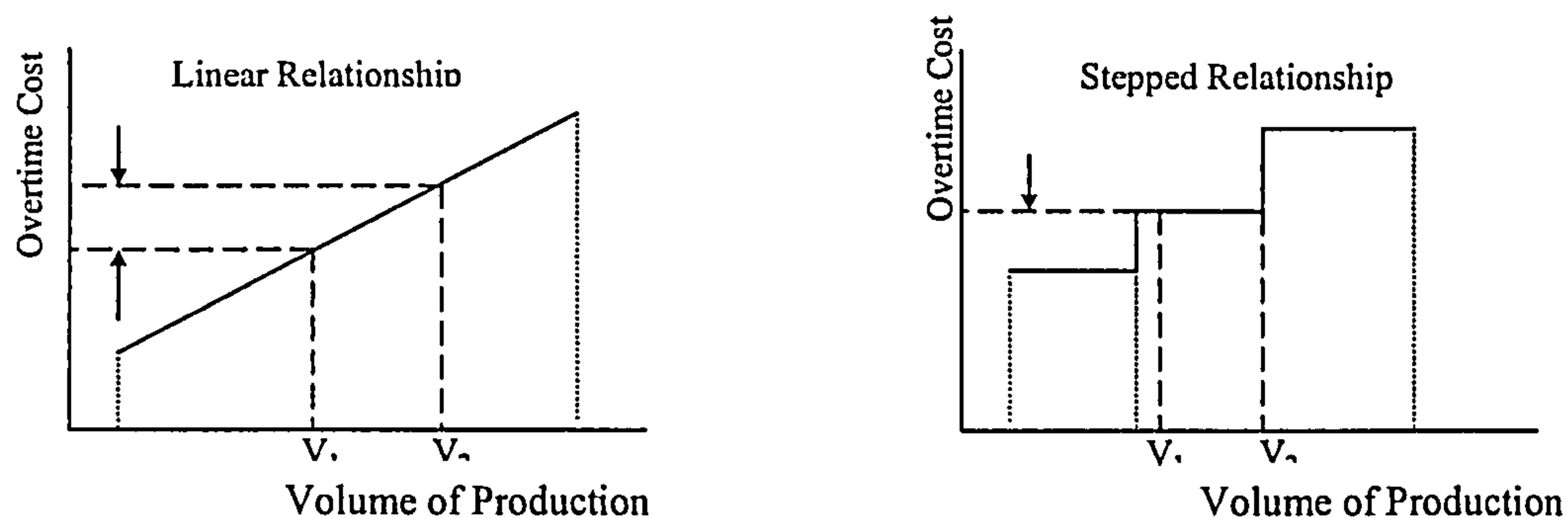
has the functionality to support an ABC process may not be suitable to support an ABB process. In addition, using the same computer system, the technical drawbacks of an ABC system which may occur during the development and implementation of the ABC system may cause direct impacts on the success of the ABB system.

#### **5.5.1.2. Limitation of the Computer Model Built into the 'Cost Control' Model**

Another drawback of SCB's ABB system was the limitation of computer model built into the 'Cost Control'. The computer model in the 'Cost control' did not take account of costs with 'stepped' nature. This limitation was not properly addressed during SCB's enhancement of its existing ABC software (in order to carry out the backward flow calculations). Within the enhancement SCB made the following assumption:

- □ The existence of 'linear' relationships between volume and products, activities and resources.

However, some cost variables would be better modelled using 'stepped' relationships rather than 'linear' relationships (e.g. overtime cost). This modelling problem was not obvious during an ABC calculation since the 'stepped' nature of these variables was accounted for manually (i.e. manual intervention and adjustments) prior to inputting to 'Cost Control'. However, the exposure of this modelling problem occurred during the ABB process since all variable costs were assumed with 'linear' relationships. For example, in a scenario where the volume of a product was reduced, overtime costs were reduced linearly according to the assumed 'linear' relationship. The budget produced by the system in this scenario was much lower than expectations and thus unrealistic. The 'stepped' relationship of the overtime cost, which required the reduction of volumes below a certain level before an overtime shift could be removed, could not be realised in the 'Cost Control' system. This was because that under the 'Cost Control' system an ABB process was impossible to make manual adjustment on costs with 'stepped' nature. The difference between these relationships is shown in Figure 5.6.

**Figure 5.6** Difference in 'Stepped' and 'Linear' Relationship

#### 5.5.1.3. Complexity in the ABC/ABB Systems and Other Employed Systems.

The original purpose for SCB's ABC project was to obtain a set of accurate product costs information. As a result a complex ABC system, consisting of 250 activities, 100 products and 500 types of resources, was developed. This complexity led to three immediate problems:

- The requirement of large computer storage and search space.
- Lengthy processing time.
- Approximated but not exact (accurate) solutions for budgeted costs (see also Appendix 4).

The amount of activities, products and resources caused a significant level of complexity in tracking resources to activities and vice versa. Consequently this increased the processing time and reduced the functionality of the system substantially. Cooper et al. (1992a) stated that the cost of measurement and cost of maintaining such a system became disproportionately high if too many activities were defined. The complexity problem extended when SCB built the ABB system using the ABC system and performed its ABB processes in the same ABC system. As a result the budgeting process using the ABB system was extremely labour intensive and produced some unrealistic budgets (which were partly contributed by the technical problems identified in Section 5.5.1.1-2). The level of system complexity eventually outweighed the benefits offered by the application of ABC/ABB principles. The system was eventually rendered unworkable. This view was also expressed

by the ABB co-ordinator that *'the level of detail we went to has actually defeated the purpose of the exercise rather than anything else'* (see also section 5.4.1.3).

The possible permutations for a large number of variables made the computations of an ABB budget in SCB's computer system formidable<sup>8</sup>, resulting in lengthy processing time because of the constraint of available computer space. This also resulted in a problem known as NP (non-polynomial) Hard Problem<sup>9</sup> (Garey & Johnson, 1979; Ibaraki, 1997), which gave the approximate solutions but not the exact ones as expected by managers. Since the budgets were closely linked with individual brewery managers' targets and responsibilities, an approximate budget was obviously not acceptable to these managers. In addition, given the large amount of data which had to be processed and transferred between the spreadsheet models and 'Cost Control' system, the time required to perform these operations was also found to be significantly longer than expected. Thus these three problems contributed significantly to the unreliability of the ABB system and its resultant budget.

Another facet of complexity was caused by the existence of a variety of systems employed within SCB. Some of the systems used in SCB were based on concepts that conflicted with the ideas and principles of the ABC/ABB methodology. The financial accounting system, for example, was a traditional system and served the purpose for financial accounting and reporting. The classification and codes of financial accounting data were not based on ABC principles. Therefore, the data was not able to be downloaded from the financial accounting system to the 'Cost Control' system automatically<sup>10</sup>. This has also contributed to the problem of labour intensity in an ABB process.

<sup>8</sup> For example, 250 activities and 100 products could potentially produce 25,000 possible permutations, and ultimately 12,500,000 possible permutations may be required to cover all possible scenarios of activities, products and resources.

<sup>9</sup> The NP Hard problem, the complexity of the problem and the huge size of the solutions space favour approximate solutions rather than exact solution because exact solution to the problem cannot be found (see Appendix 4 for further explanation).

<sup>10</sup> For example, the "book value" of a given piece of equipment in the nominal ledger depreciates gradually. Hence, over a period of time, that piece of equipment will eventually have a zero "book value" in the nominal ledger. Since the "book value" of a piece of equipment is taken into consideration for product costing in ABC and ABB, the products which use a piece of zero "book value" equipment in the production process will naturally have disproportionately low cost as compared to those that use a piece of newer equipment with a relatively high "book value". The account codes at the nominal ledger, which were created to fulfil the traditional accounting purpose, are not as detailed as required by ABC and ABB. To perform an ABB process, data from nominal ledger accounts need to be disseminated and converted to an ABC form and then to be divided into variable and fixed costs data before inputting to the 'Cost Control' system. This process is rather labour intensive and time consuming.



### **5.5.2      *Other Perspectives***

Although access to the various level of managers and members of staff who were involved in the ABB implementation process was not possible in this case study, the following discussion aims to explore some factors related to other three perspectives (i.e. behavioural, organisational and cultural) that may shed more light on SCB's ABB experiences. The interviews with and documents that were provided by the ABB coordinator enabled the following factors to be identified:

- (i) A lack of standardisation in budgetary computations within the six breweries;
- (ii) Frequent changes in organisational structure and its impact on corporate culture.
- (iii) Behavioural influences on the implementation of the system.

#### **5.5.2.1.      A Lack of Standardisation in Budgetary Computations within the Six Breweries.**

The procedures to the derivation of sales forecasts and the classification of fixed and variable costs demonstrated some inconsistencies in SCB. Whilst the ABC and ABB projects were developed by staff at SCB, the management did not ensure that the forecasts and budget data were prepared in a consistent manner between the beer selling unit and the six breweries. This inconsistency affected the reliability of the final budget.

In terms of sales forecasts, each brewery had its own method of obtaining sales forecasts from the beer selling unit, which had the full responsibility of marketing the entire range of beer SCB produced. Each brewery made attempts to obtain the highest share of beer sales forecasts possible from the selling unit in order to maintain the highest possible production level and keep the plant running. The latter was extremely crucial in light of the fiercely competitive beer market that SCB faced. This created a problem of perceived credibility and budget reliability, because the sales forecasts that one brewery would use to calculate its budget would not be based on the realistic market forecasts. Thus the distortion was built in at the very beginning of the budgeting process. Because of the tedious justification involved in a ZBB process, this distortion could be scrutinised. However, it was unable to do in the ABB process since the volume forecasts were input and calculated

automatically in the 'Cost Control'. SCB's ABB process could not eliminate this distortion and ended up with an unreliable budget.

In addition, each brewery had its own classification of fixed and variable costs which did not conform to the standards of the ABB model. Furthermore, layout and format of product volume and mix varied from one brewery to another. These various sources of non-standardised data created difficulties and labour intensity in data conversion and data validation for the purpose of inputting into the unified ABB model. As a consequence, the budget outputs from the ABB system were unreliable and the process was labour intensive. The budget information based on the ABB system was considered by the breweries' managers to be unsuitable for the purpose of budgetary planning, control and performance measurement.

#### **5.5.2.2. Frequent Changes in Organisational Structure and its Impact on Corporate Culture**

The scale of the involvement of organisational functional units in the ABC/ABB project and the stability of an organisation played a role in SCB's ABC and ABB system implementation process.

The acquisition in 1995 brought the following changes to the organisational structure:

- The expansion of 3 breweries to 6 breweries.
- Managers from the Courage brewing Ltd. joined the Board, which would bring in different management style to SCB.
- Adoption of other systems (e.g. SAP<sup>TM11</sup>) from Courage brewing Ltd. across the entire S & N group.

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<sup>11</sup> SAP AG, based in Walldorf, Germany; is a software developer. Its product SAP<sup>TM</sup> provides enterprise-software solutions that can integrate all information from various organisational information systems into one central system and enable information retrieval and extrapolation. According to some IT commentators and consultants, SAP finance is the 'best of breed' integrated financial software application which can ultimately accelerate the speed of process if integrated with other organisational systems such as human resource, payroll, etc..

- Constant restructuring was taking place in response to the competitive market situation. One result of the restructuring was the closure of one brewery during the course of this case study.

These changes had inevitable impacts on the ABB implementation process. For example, the adoption of Courage Brewing Ltd.'s SAP™ meant that some possible changes of the ABC/ABB systems were needed in order to be compatible with the SAP™ system. As a result, additional resources and time were needed for the ABB project team. However, this also meant that ABB project needed to compete with SAP™ for priority and resources from top management. The volatile nature of both beer and holiday resort markets required the S & N group to make rapid responses to market. In order to achieve this, the prime requirement for its management information systems was to be able to perform "what-if" scenarios for planning, provide timely information for marketing decisions and control performance through budget revision. This was not possible in the ABB system given the technical difficulties. Given the problems in the ABB system and the limited resource, it was likely that SCB top management shifted its priority to SAP™ and other projects. This in a sense had a significant impact on the future of the ABC/ABB projects.

In addition, the acquisition has also brought some changes of management. The changes of finance directors, in particular, had direct impacts on the ABB implementation process.

[ABB co-ordinator] ... we have had over the last 4 years, 3 financial directors. So there have been many changes over that time, which did not help in terms of the continuity to the whole ABB project.

Changes were also evident from the use of accounting information in the decision-making processes. For example, in terms of budgetary control the introduction of a quarterly review of managers' performance, based on financial and non-financial (not based on the budget) performance measures, made the budget become less important. This was because that managers generally perceived the quarterly forecasts as more realistic and accurate performance targets. This observation was also asserted in the ABB co-ordinator's comments:

[ABB co-ordinator] ...For example the canning assembly line needs to be maintained. Even though the budget for the maintenance division has been cut, the manager who is



responsible for maintenance will still carry out the necessary activities because these are essential activities. The consequence of not doing this is a penalty of much higher costs, consisting of repair and loss of production. So it is a way to prioritise between the business interest/need and budget.

The external market pressure prompted SCB's management to perceive the competitiveness as the utmost important organisational objective. This led to the greater demand for timely information to assist management planning and control process. In fact, SCB has since replaced the budget planning and control with a series of other management tools (e.g. Scorecards, TQM, and Benchmark).

Furthermore, the acquisition brought inevitable changes to the different sets of corporate culture, which had been established in Scottish & Newcastle brewing Ltd. and Courage Ltd. over the years. The radical changes evident in SCB may indicate the formation of a new set of culture (e.g. believes in rapid response to market demand, prompt performance indicators and timely information). This set of culture, which was made apparently during the interviews with the ABB co-ordinator, reiterated that the importance of an annual budget would be diminished. This indication may also determine the unfavourable future of the ABB system.

#### **5.5.2.3. Behavioural Influences on the Implementation of the System**

A considerable human inertia was experienced during the implementation of the ABB and ABC systems in 1995. Due to the time constraints, members of the implementation team were unable to consult all managers at individual breweries despite their full awareness of the importance of line managers' involvement. Consequently, some managers at the six breweries felt that the project was developed without their involvement and consultations. During the implementation, some managers disagreed with the treatment of a number of cost items, e.g. 'machinery maintenance cost' was treated as a non-value-added activity (as mentioned at Section 5.4.1.2-4). As a consequence these managers were reluctant to provide the implementation team with useful information, and also unwilling to claim the ownership of the ABC/ABB systems.

In addition it was the company's intention that breweries' managers were the ultimate users of the ABC and ABB systems. However because of complexities of the systems and the requirements for specific IT skills, these managers required the assistance from the accountants to access the systems and also to produce their budgets. This contributed to confusion of the ownership of the system. The heavy involvement of accountants (i.e. both members of the implementation team with accounting background and accountants at breweries) in the implementation deepened this confusion to the ownership issue and contributed to the reluctance of managers to accept the systems (Innes, et. al., 2000).

On the other hand, managers at SCB were fully aware of their budget responsibility and would always like to participate in the budgetary processes. With the use of the ABB system, which was complex in both conceptual and operational senses, their abilities to participate in the budgeting process could not be achieved. In contrast, they were familiar with and able to participate in the ZBB process. The budgets derived from the ZBB were more likely to be accepted by the managers as their budgetary targets than those derived from the ABB system. Therefore this is also another reason that contributes to the managers' rejection to the ABB system.

Training was another important issue related to the system implementation. The transfer of "ownership" of an ABB system could be achieved through the provision of effective training sessions to the users. Despite the training sessions which were provided to accountants and managers at the end of the implementation process at each brewery, the effectiveness of these training sessions was difficult to justify, given the existence of the existence of technical difficulties involved and requirements of general IT skill.

## **5.6. Summary and Discussion**

This chapter demonstrated the deployment of the ABB techniques at SCB. The theoretical ABB process, which is 'ABC in reverse' (Cooper & Kaplan, 1998), can provide sound justification for resource needs and activity deployments based on activity information

from activity and process (workload) analysis. This provides a generic basis for SCB's ABB implementation. In applying this theoretical process to practice, SCB first developed an ABC system with detailed ABC analyses (i.e. 250 activities, 100 products and 500 types of resources) for the purpose of product costing across its six breweries, the ABB system was then developed based on the ABC system. The various problems that had been encountered (as analysed in Section 5.5), however, prevented SCB from realising the benefits of the ABB techniques. It was, thus, hard to prove or establish the merits of ABB over conventional budgeting methods based on the finding of this case study.

The problems that were encountered by SCB arose directly from factors initially related to technical design, implementation and 'know-how' about transferring conceptual ABB knowledge to a computer model (see section 5.5.1.1). SCB's experience suggested that it was impractical to translate an ABB as 'reverse the ABC' process directly into a computer model. The impracticality stemmed from the two different functions performed in ABC and ABB, in that ABC aggregated many resource costs to fewer product costs, however, ABB was to disemminate the costs from fewer products to many resources. In practice, this disemmination task was very hard even for a modern-day computer to cope with the 'explosion task' (or it was called 'NP Hard Problem', see Appendix 4).

The ABB implementation process also affected by the acquisition of Courage brewing Ltd.. The resultant changes on the organisational structure and culture at SCB may also give rise to uncertainty and instability to the continuity of the ABB project.

On the basis of similar implementational problems that have been addressed in prior ABC research (e.g. Anderson, 1995; McGowan & Klammer, 1997) and evidence from SCB, some practical issues warrant further consideration in the following chapters.

- Level of detail in activity/process analysis.
- Software and system modelling
- Users' awareness and behavioural issues.
- Issues relating to organisational culture and structure and external environment.

**Level of detail in activity/process analysis.** 'Information from these analyses will greatly influence the goals set by management. Combined, the two (i.e. information for analysis and management goals) provide the raw material for budgets based on prior-period performance which management will modify accordingly to meet new goals (Sharman, 1996,



p. 22).’ However, one may ask “Does ABB require the same level of detail as ABC?” SCB had a very detailed ABC analysis which included more than two hundred activities and cost drivers. This level of detail in ABC was used in order to achieve accurate product costs. To achieve this level of accuracy, the members of staff, however, were confronted with a time-consuming and labourious task of calculating variable costs using spreadsheet software (which is a comparatively inefficient software in comparison to many purpose-built software packages) and converting/feeding this information to the ABB system. In this aspect, a trade-off between efficiency or cost effectiveness and accuracy, and some kind of compromise is required in order to achieve an optimum benefit (Cooper & Kaplan, 1999, p. 216).

**Software and system modelling.** Very few off-the-shelf software tools were available then for ABB development during the implementation phase of SCB’s ABB development project. The significance of various cost natures (i.e. linear, stepped-nature and fixed) was also not fully explored at that time, this may contribute to some of the problems that were encountered during the development of the ABB computer model. The ‘stepped’ nature of variable costs in SCB’s ABB system, for example, was inappropriately modelled. At the time of writing, an increased number of off-the-shelf ABB software packages is available to handle these situations. If off-the-shelf software packages are not suitable, customer-made ABB software packages (these are usually available from specialist software developers) may be developed to meet the exact specifications and requirements of a particular organisation.

The following should be considered when evaluating ABB software packages:

- (i) compatibility of an ABB system to existing computer software systems in an organisation;
- (ii) the objectives to be achieved (via consideration of the technical specification of the ABB system);
- (iii) allocation of adequate resources (financial and human) for the implementation of the proposed ABB project.

**Users’ awareness and behavioural issues.** Sufficient training must be provided to ensure that all users (system managers, team/operation managers and accountants) are familiar with the operation and at ease with the ABB system. In the SCB case, some managers were not computer-literate; this may have contributed to the users’ unwillingness

to use the system. In addition, constant technical support must also be provided to ensure continuity of the ABB system. A reasonable period “parallel-run” of new and existing systems is necessary so that all users have sufficient exposure to the new system and gain confidence through its results being validated against the results from the old system. This ‘parallel-run’ period should be reasonable (usually about six months), otherwise users tend to return to the old system because of their confidence and familiarity in the old system.

**Organisational structure and culture.** There are micro (i.e. organisational structure and culture) environment and macro (i.e. market) environment impacts on the development and implementation of an ABB system. At SCB, for example, changes to its organisational structure and culture arose due to acquisition process in 1995, which coincided with the development process of the ABB system. These changes have created an interruption and cause instability to the ABB project and had severely affected its model building process.

Generally speaking, all these factors may in some ways contribute towards the SCB’s final decision to shelve its ABB development and implementation project. Observations and valuable lessons can be drawn from the experience of SCB, so that the above problems can be avoided by other organisations in their attempts to develop practical ABB systems in the future. It is worth to mention that, despite existence of ABC and ABB implementation problems, the S & N group has approved SCB’s proposal to use its product costs obtained through the ABC/ABB project as the standard costs in its cost-accounting system since then. Finally, it should also be noted that SCB’s present costing model – Oracle (a database software package) model – is also based primarily on the ABC system.

**Notes:**

The financial information used is based on fiction figures for the purpose of illustration.

**Table A5-1 Beer A Production Quantity (Activity) Budget**

| <i>Formula</i>   | <i>January</i> | <i>February</i> | <i>...</i> | <i>Annual</i> |
|--|----------------|-----------------|------------|---------------|
| Expected sales in cans   | 70,000         | 80,000          |            | 2,306,000     |
| Plus cans required in ending inventory (20% of next month's sales quantity)* | +16,000        | +17,086         |            | +25,782       |
| Less cans in beginning inventory (from prior month)                          | -15,800        | -16,000         |            | -18,034       |
| No. of cans to be produced for this period                                   | 70,200         | 81,086          |            | 2,313,748     |

Note: \* this includes the consideration of beer loss factor.

Brewing managers would prepare a list of all raw, process and packaging materials needed to produce Beer A. Purchasing personnel would provide information about material prices. Multiplying the price by the purchase quantity yields the purchase budget in sterling pounds. SCB kept an inventory equal to 20 % of the following month's production for all raw materials (based on recipe measured in tonnes, the addition of Hops and by products) and packaging materials used for beer production. To simplify the illustration, it is assumed that all process materials (i.e. filter aids, detergents, and process gases) are based on 10% of the production quantity; that the purchase quantity will be the same for all types of raw materials; and that packaging materials refer to canned products (whereas bottles should be also included in the actual case). Table A5-2 shows the estimated purchase quantity for the raw materials.

**Table A5-2 Direct Materials (Raw, packaging and process) Purchase Quantity Budget**

| <i>Formula</i>  | <i>January</i> | <i>February</i> | <i>...</i> | <i>Annual</i> |
|---|----------------|-----------------|------------|---------------|
| Budgeted beer production (From Table 1)                         | 70,200         | 81,086          |            | 2,306,000     |
| Plus ending inventory   | +16,217        | +18,310         |            | +5,122        |
| Less beginning inventory (20% of production volume)             | -14,040        | -16,217         |            | -11,903       |
| Total purchase quantity (raw materials and packaging materials) | 72,377         | 83,179          |            | 2,299,129     |
| Process materials (10% of production)                           | 7,020          | 8,109           |            | 230,600       |

Calculation of material costs, usage (or wastage) x% for each type of material must be considered: Volume x Usage Rate x Price. Here we assume that the usage is 100%. Table A5-3 shows the materials purchase costs for January based on the recipe for Beer A.

**Table A5-3 Materials Purchase Cost – January Purchase Budget**

| <i>Material Name</i> | <i>Quantity</i> | <i>Unit Cost</i> | <i>Purchase Budget</i> |
|----------------------|-----------------|------------------|------------------------|
| Raw materials:       |                 |                  |                        |
| Yeast                | 72,377          | £0.005           | £361.89                |
| Sugar                | 72,377          | 0.002            | 144.75                 |



| <i>Material Name</i>  | <i>Quantity</i> | <i>Unit Cost</i> | <i>Purchase Budget</i> |
|-----------------------|-----------------|------------------|------------------------|
| Barley                | 72,377          | 0.04             | 2,895.08               |
| Hops                  | 72,377          | 0.01             | 723.77                 |
| Packaging materials   | 72,377          | 0.02             | 1,447.54               |
| Processing materials: |                 |                  |                        |
| Process gasses        | 7,020           | 0.15             | 737.10                 |
| Detergents            | 7,020           | 0.03             | 210.60                 |
| Total                 |                 |                  | £6,520.73              |

In SCB’s standard procedure, Duty and Utilities costs are determined by output volume, duty (usage) rates, package conversion and price. For example, the calculation for duty cost is: Output Volume in Units x Duty Rate per Hectolitre (Hl) x Package Conversion x ABV% (varying strengths); the basic calculation for utilities is: Volume x Usage rate x Prices. Table A4 shows the duty and utilities costs for January.

Table A5-4 Duty and Utilities Costs for January Budget

| <i>Items</i>  | <i>Quantity</i> | <i>Rates</i> | <i>Budget</i> |
|---|-----------------|--------------|---------------|
| Duty (70,200 cans* based on a ¼ package conversion and 6% ABV percentage) | 1,053           | £0.60        | £631.80       |
| Utilities (based on 30% usage rate for production 70,200 cans*)           | 2,106           | £0.25        | 526.50        |
| Total   |                 |              | £1,158.30     |

\*see Table A5-1.

The direct labour budget, or the process budget, requires an estimate of the number of workers needed the following year, their pay rates, and benefits. The number of process workers needed depends upon the volume of beer produced, the time it takes to process in each unit, and the expected non-productive time (downtime) of the assembly process. An analysis of the production process in this brewery showed that a production employee is able to process, on average, a can of beer in 3 minutes (or 0.05 of an hour). If every minute is used productively, January’s production of 70,200 cans requires 3,510 processing hours [(3 minutes x 70,200 cans) ÷ 60]. Since each person works for 200 hours a month (8 hours x 25 working days), this brewery in SCB needs 17.55 people. Organisations do not acquire the exact level of resources that they need for current productive use, one reason being that most processes have unavoidable unused capacity. Workers, for example, have lunch and breaks, they often have to wait for work, and machines break down causing delays. Secondly there is the balance between a flexible workforce and a skilled workforce. Flexible workforce is an ideal resource to suit the seasonal production pattern in the brewing industry. The availability of part-time workers and their skills, however, is also essential to maintain the quality of the product. Finally, managers also acquire additional capacity to gear up for production increases before their occurrence. SCB may want to hire and train workers in anticipation of production in the year.

Table A5-5 shows the direct labour cost budget for this brewery. The budget starts with the labour hours needed to produce beers (assuming a 480-minute workday).

Table A5-5 Direct Labour Budget

|   | January | December | .... | Annual    |
|---|---------|----------|------|-----------|
| 1. Budgeted beer production (from Table A1)                 | 70,200  | 151,736  |      | 2,306,000 |
| 2. Process hours needed (3 minutes/can)                     | 3,510   | 7,587    |      | 115,300   |
| 3. Add non-production time (23%)                            | 807     | 1,745    |      | 26,519    |
| 4. Total labour hours needed (line 2+3)                     | 4,317   | 9,332    |      | 141,819   |
| 5. Workers needed (line 4÷200 hours/month)                  | 21.59   | 46.66    |      |           |
| 6. Total work force (management decision)                   | 21      | 40       |      |           |
| 7. Additional workers or overtime needed (remainder line 5) | 1.59    | 6.66     |      |           |
| 8. Labour cost regular (line 6 x £600)                      | 12,600  | 24,000   |      | 390,000   |
| 9. Labour cost overtime (£6)*                               | ---     | 7,992    |      | 7,992     |
| 10. Total labour cost (line 8+9)                            | 12,000  | 31,992   |      | 397,992   |
| 11. Labour cost per can of beer (line 10÷line1)             | 0.17    | 0.21     |      | 0.17      |

\*There should a step nature existed in the labour overtime costs. For example an overtime shift will be run only when a certain level of production is breached. However, its existing model was built based on linear relationship between the overtime and production run, as a result the calculation is 6.66 x 200x £6.00=7,992.

From the above calculation, the unit cost of variable cost items for January budget can be derived (see Table A5-6).

Table A5-6 Unit Cost of Variable Cost for January Budget

| Items                                    | Production | Unit Cost | Budget     |
|--|------------|-----------|------------|
| Material purchase costs (from Table A2)  |            |           | £6,520.73  |
| Duty and Utilities costs (from Table A3) |            |           | £1,158.30  |
| Direct Labour costs (from Table A4       |            |           | £12,000.00 |
| Total                                    | 70,200     | £0.28     | £34,079.03 |

## **Chapter 6                      Case Study Two: BG Transco plc; Technical, Organisational and Cultural Perspectives**

### **6.1.            Introduction**

The previous chapter illustrated the detailed model specification of SCB's ABB system, and explored technical and other factors (which relate to behaviour, organisational structure and culture) that had influences on SCB's ABB implementation process. This chapter investigates the ABB implementation experience at BG Transco plc (Transco) and explores the influential factors from technical, organisational and cultural perspectives (and behavioural perspective at a minimum level, see Section 6.2.3 for an explanation).

This chapter first introduces the rationale of the choice on Transco as a case study organisation. This is followed by a brief description of Transco's background. The introduction of its ABC system and model is then illustrated. Transco's ABB system is presented from a technical perspective, i.e. design specification of the system and the use of computer software packages. The various stages of its ABB implementation process (i.e. initiation, adoption, adaptation, acceptance, routinisation and infusion) are then reviewed. Finally, analyses of the technical, organisational and cultural factors involved with the ABB system are presented and discussed. Throughout the chapter, a particular emphasis is placed on identifying factors that affect the design and implementation of an ABB system, which are not reported in the existing ABB literature.



## 6.2. Rationale of Choice

### 6.2.1 *Reasons for Selecting Transco*

In response to the initial inquiry of possible research collaboration, a favourable and positive reply was received from a financial analyst at Transco's Headquarter (HQ). A follow-up meeting with the financial analyst and an ABC management accountant (see Table 6.1), held at the HQ, ascertained the relevance of its ABB experience to this research. During this meeting, it was learnt that Transco had made two attempts to extend the usage of its ABC knowledge to budgeting processes. According to the financial analyst, the first attempt to use ABB took place shortly after its ABC implementation in 1996 but was shelved mainly because of data quality problems at the front end operations (see Section 6.4.1.1.). The second attempt, which took place in 1999 (at around the same time as this follow-up meeting), aimed to apply ABB in an appropriate form to arrive at a product<sup>1</sup> cost budget for the financial year 2000. Thus the experience from this recent attempt was considered by the researcher to be of significant value as it offers an opportunity to study an on-going ABB implementation process. Shortly after the meeting, a formal letter was sent to the financial analyst inviting Transco to take part in this research. Owing to some unforeseen events at Transco (e.g. demerger, details are described in the next paragraph), permission and access to the organisation was granted later than initially anticipated. Permission for this research was granted with the assistance of a number of Transco's personnel after the completion of its ABB model development and implementation.

A major re-organisation took place in Transco during the course of this research. Transco was demerged from the British Gas Group plc to join another newly formed holding organisation – Lattice Group plc (see Section 6.3.1 for details). The demerger delayed Transco's commitment to external projects (such as this research). The demerger also resulted in a slightly reduced level of access for this case study. However, as compared to SCB, the permitted level of access was still comparatively comprehensive and allowed a relatively detailed case study to be conducted. A number

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<sup>1</sup> Transco refers to its different types of services as products. Thus, to ensure the consistency to the term used by Transco, here adopts 'product(s)' in Transco case throughout this thesis.

of management accountants and line managers from Transco’s Local Distribution Zones (LDZs)<sup>2</sup> at Operations (Operations) and Asset Management (Asset) business units were interviewed (see Table 6.1). The duration of this case study on Transco was 17 months (i.e. from March 1999 to July 2000).

**Table 6.1      Profile of the Interviewees at Transco**

| Interviewee | Position                                       | Location                             | Involvement with ABC/ABB  | Education Background                | No. years with Transco |
|-------------|--|--------------------------------------|---|-------------------------------------|------------------------|
| *Contact    | Financial analyst                              | Headquarter , Solihull               | Use ABC information for strategic analysis  | n.a.                                | 18                     |
| *           | ABC management Accountant                      | Headquarter , Solihull               | Produce ABC reports for the strategic purposes.                                       | n.a.                                | 6                      |
| A           | Business finance analyst                       | National Operations Centre, Hinckley | Use ABC information for strategic analysis at Operations                              | BA in Business Studies, CIMA        | 20                     |
| B           | Management Accountant – system                 | Operations, North LDZ, York          | Maintain/Update the Hyper Metify -- ABC System  | BA in Business Admin.               | 25                     |
| C           | Management Accountant                          | Operations, South LDZ, Slough        | Produce financial and ABC/ABB reports for LDZ use                                     | HNC Business Finance, Studying CIMA | 13                     |
| D           | Marketing Manager (former operational manager) | Operations, South LDZ, Slough        | Use ABC/ABB information to assist decision making on management and marketing options | B.Eng.(Hon) Mechanical Engineering  | 9                      |
| E           | Operational network manager                    | Operations, West LDZ, Cardiff        | Use ABC/ABB information for the management of LDZ                                     | B.Eng.(Hon) Mechanical Engineering  | 20                     |
| F           | Management Accountant                          | Asset, Sunderland                    | Produce the ABB model   | BA Economics, ACAEW                 | 3                      |

\* As a part of the preliminary investigation a discussion was carried out through the contacted financial analyst and the ABC management accountant. Their educational background and career history were not required.

### 6.2.2      *Justification of the Validity of Choice*

In this case study, access to personnel from a relatively wide spectrum of job functions within the organisational hierarchy was granted, hence the research data

<sup>2</sup> LDZ is a process-aligned operation centre that carries out Transco’s main part of business (i.e. maintenance of gas pipeline transmission systems and metering) (refer to Section 6.3.1 for details).

obtained from Transco's ABB development and implementation offers relatively significant insight into an actual ABB experience. The following considerations justify the choice of Transco as an appropriate case study organisation:

- (i) Firstly, limited experience in ABB among U.K. organisations restricted the scope and choice of selection base for case study organisations (see Chapter 4). Therefore, the choice of suitable case study organisations was largely dependent on a limited number of suitable short listed organisations that were willing to participate in this research. Transco was one such organisation (the magnitude of the selection problem can be seen from the fact that the process of gaining permission of access to Transco was non-trivial and time consuming).
- (ii) Secondly, during the initial discussion meeting it was found that it was Transco's second attempt to implement ABB after its first attempt 3 years ago (i.e. in 1996). This is an indication of the company's strong commitment to achieving a successful ABB system. This implementation experience from the second attempt may offer an excellent opportunity for the research to explore a variety of important issues.
- (iii) Thirdly, Transco uses ABC to measure its service. Unlike the existing case studies which were based in the manufacturing sector (see Section 2.3), Transco's experience may provide a different insight into the ABB implementation from a service company's viewpoint.
- (iv) Finally, Transco was one of the host organisations that presented their ABC systems and shared their ABC/M implementation experiences in one of the CIMA's nation-wide ABM workshops held in 1997. This is thus an indication that Transco has a continuous and sustained interest in ABC and uses the practical ABC knowledge gained to develop and implement an ABB system.

From the above discussion, it can be argued that the negative effect arising from Transco's demerger process is more than adequately compensated by the above-mentioned four positive notes. On the basis of a series of discussion and interviews with various personnel (see Table 6.1) and reviews of archival documents available internally and externally, the results derived from this case study provide relatively substantial insights into Transco's ABB development and implementation process from the technical,



organisational and cultural perspectives. The limited inclusion of behavioural perspective is discussed in the next section.

### **6.2.3      *Limitations of this Case Study***

The case study on Transco was conducted through interviews and reviews of internal and external archival documents. Whilst the issues evolved from the technical, organisational and cultural perspectives can be extrapolated from interviews and documentation, an exploration of issues on budget-related behaviour would require the participation of personnel who were responsible for budgeting and the end users of such a budgeting system (i.e. ABB). However, owing to an insufficient number of participants from the top, middle and line managers, who were involved in the budgeting process, and the limited extent of the present usage of the ABB system (see Section 6.5 for detailed analysis of the reasons for this limited use of ABB), an in-depth exploration of issues from a behavioural perspective was restricted. Although the selected interviewees were fairly co-operative and prepared to give their opinions on behavioural issues based on their ABC and ABB experiences, only 2 out of 8 interviewees (i.e. Interviewees D and E) were middle-level managers that were the users of budgetary information and with non-accounting background. Thus, together with the lack of opportunity for the researcher to observe the on-going implementation process and the relatively small sample size (in comparison to the sheer size of Transco), the behavioural perspective can only be explored at a fairly minimum level.

## **6.3.      BG Transco plc**

This section provides background information on the organisation. As the organisation's ABC system can be regarded as a predecessor of its ABB system, it is also necessary to describe its ABC system in some details. The organisation's ABC model and its introduction to the business are therefore described in this section.

### 6.3.1 *Company Background*

Transco is an organisation which enjoys monopoly in transporting and supplying gas to end consumers in the U.K. Owing to its monopoly position, it is deemed necessary for Transco to be regulated by the Director General of Gas and Electricity Markets, Ofgem. The regulator determines the profit ceiling of the company (i.e. at the time of the study this was 7% Return on Assets). Ofgem also constantly monitors the cost structure of Transco.

As with other nationalised organisations (e.g. railway, telecommunication, post office), British Gas was once a state-owned government organisation. In 1986, however, the privatisation process introduced by the Conservative government had brought an end to this era of national ownership and British Gas was privatised. Seven years later, after a Monopolies and Mergers Commission (MMC) report issued by the government, the privatised British Gas was demerged into two separate organisations – BG Group plc and Centrica, which was the retail section of the old BG. BG Group plc comprised of Transco (which operated the UK's gas pipelines network) and a business unit (which focused on international exploration and production activities). Transco became BG Transco plc in December 1999, but still remained as a part of the BG Group plc. In October 2000 another demerger from BG Group plc resulted in Transco becoming a part of Lattice Group plc<sup>3</sup>. The remaining BG Group plc thus concentrates on its international exploration and expansion activities.

Despite of the series of organisational privatisation and demerger processes, Transco is still highly regulated due to the monopoly nature of business activities it carries out. Transco is the owner, operator and developer of a majority of UK's gas transportation systems. Offshore gas producers supply gas to 7 coastal terminals around Britain and then Transco transports the gas on behalf of more than 50 shippers to nearly 20 million industrial, domestic and commercial consumers. It operates a network of 273,000 km, or £12 billion, of pipes and infrastructure, and aims to provide a secure and economic gas transportation and storage services in the U.K. According to Transco's 1999 Annual Report, Transco employed 16,000 people and its annual turnover in 1999 was just over £3 billion.

Transco had a comprehensive gas control system that managed and controlled the flow of gas from the beach terminal to the end consumer. Historically the control system disseminated its operation into 12 regional grid control centres managing gas flows within a geographical region and a National Control Centre (NCC) at Hinckley managing the National Transmission System (NTS). The separation of old British Gas into two separate organisations (i.e. BG group plc and Centrica) enabled this gas control system to streamline the regional operations by re-organising its 12 control centres into 4 Area Control Centres (ACCs) (see Table 6.2), which managed 4 Area Transmission Systems (ATSs) respectively. The NTS and 4 ATS were made up by a series of 18,000 kms of pipeline, annually transporting approximately 78,000 million cubic metres of gas.

**Table 6.2      12 Former Regional Grid Control Centres to 4 Area Control Centres at Transco**

|   |                           |
|---|---------------------------|
| Scotland<br>Northern<br>North West        | North Area Control Centre |
| East Midlands<br>Eastern<br>North Eastern | East Area Control Centre  |
| West Midlands<br>Wales<br>South Western   | West Area Control Centre  |
| Southern<br>North Thames<br>South Eastern | South Area Control Centre |

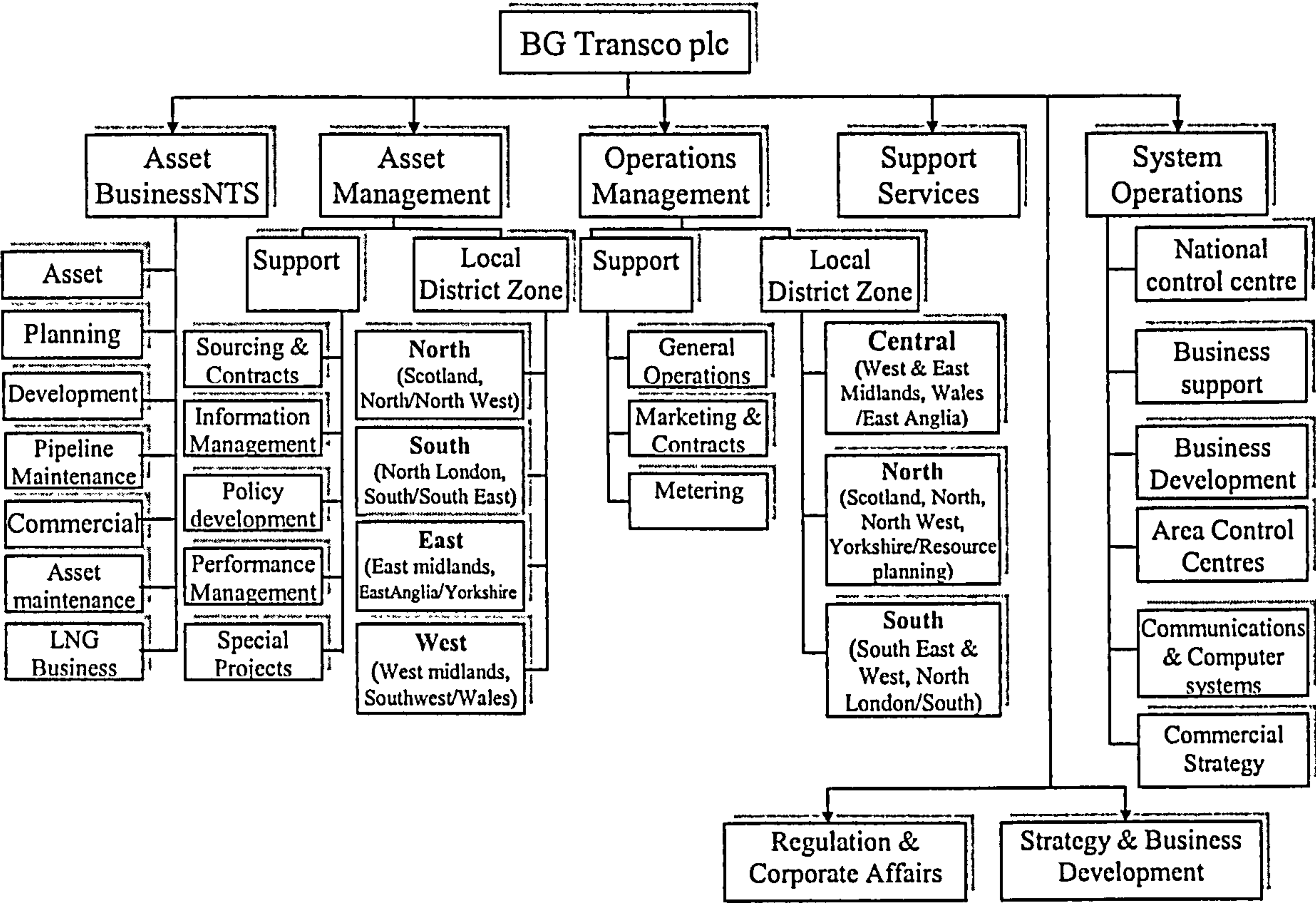
Transco’s organisational structure (at the time of this case study<sup>4</sup>) consisted of 5 operating business units (i.e. Asset Business – NTS, Asset Management, Operations Management, Support Services, System Operation) and 2 main strategic business units (i.e. regulation and strategy and business development). The front-line business operation was undertaken by Asset Business-NTS, Asset and Operations. The 2 strategic business units and the Support Services unit, which were located at Transco’s Headquarter in Solihull, carry out strategic business activities and financial services (e.g. finance, accounting and billing) (see Figure 6.1).

<sup>3</sup> Lattice Group is the holding company for the group of businesses recently demerged from BG Group plc. Lattice Group comprises Transco and other business units, including Telecommunications, Property management, Leasing group, and Energy services and Advantica.

<sup>4</sup> Transco’s organisational structure has constantly adjusted to suit the business needs. This structure represented its structure when this case study took place.



Figure 6.1      Organisational Chart of BG Transco plc\*



\*Note, this chart refers to the organisational structure when this study was commenced in 2000. However, Transco has changed this structure since then, after the commercial relationship between Operations and Asset Management was introduced. As a result the internal structure of these two units is changed significantly.

Asset and Operations management was once a single business unit that was formerly responsible of Local Transmission System (LTS) operations within the 4 ACC. With an aim to improve competitiveness and efficiency within the front-line business operation, Asset and Operations were separated into three independent business units in 1998. Asset Business – NTS unit, which was located in Hinkley, focused on management and development of pipeline and other assets within NTS and carries maintenance for NTS; Asset focused on management of pipeline networks and other assets within 4 ATS. Operations focused on the construction, maintenance and replacement of gas pipelines for the 4 ATS.

The Support Service unit provided support activities (i.e. finance, strategic planning and human resources) at the corporate level. The System Operation unit oversaw all matters related to the management of computer systems and communication systems across the NCC and 4 ACCs.

To ensure safe and efficient transportation of gas to its end consumers, the business activities that Transco undertakes generally consist of gas demand forecasting,

management and replacement of gas pipelines, metering and cost calculation and customer services. Transco employs a series of gas demand forecasting methodologies and technologies to ensure reliable gas supply within its NTS and 4 LTSs. A majority of front-line business activities was undertaken by LDZs within Asset and Operations. Normally, Asset received all enquires for new connections to LDZ networks and undertook the design and cost calculation work. Asset was also responsible for demand forecasting, management on gas pipelines infrastructure in compliance with Transco's licence obligations and other relevant legislation. Operations undertook all the essential services at the request of Asset (including construction of new gas pipelines, maintenance and replacement of existing pipeline infrastructure). The relationship between Asset and Operations was primarily a performa 'contractor and service provider', or in Transco terms as 'agent-contractor', 'service-provider' or 'budget holder – budget operator', as described by the interviewee F.

[Interviewee F, a management accountant from Asset, Sunderland] ... The relationship between Asset and Operations is always a changing one in this ever-changing organisation. The current relationship is one in which Asset is the budget holder and Operations carries out the requested work. It is rather like an 'agent-contractor' kind of relationship. We assign the work to be carried out to the Operations and they bill us with their operational costs. In the near future, we ultimately will go towards a true sense of 'service-provider' relationship. At the moment Operations is our main service provider for a vast majority of work.

### 6.3.2 *Introduction of Activity-Based Costing at Transco*

As a privatised monopoly organisation, Transco's cost structure is under scrutiny on a regular basis in order to ensure the achievement of cost-effectiveness as required by both external and internal stakeholders (including Ofgem, consumers and the internal management). The financial analyst described that, '*we have a regulator who is constantly looking into our costs. Thus it is a commonly known fact that we are under constant pressure to reduce cost.*' This constant pressure had prompted Transco to introduce a better costing paradigm – ABC.



Transco viewed ABC as a methodology that used activity analysis to derive the costs of products or services for an organisation (Transco ABC Review, 1996, p. 3). The fundamental principles of ABC adopted by Transco were (Ibid.):

- customers demand services,
- demand for services drives a business to undertake certain activities,
- activities consume resources which cost money.

ABC was first introduced in British Gas during 1992 for the purpose of identification of business activities during the demerger between old BG and Centrica. During the following-up meeting with the financial analyst and the ABC management accountant, the ABC management accountant described the introduction of ABC at Transco as follows:

[ABC Management Accountant] ..... In 1992, we originally brought in ABC in an attempt to identify different parts of business activities in Transco when the separation between British Gas and Centrica took place. That was done on the basis of a top-level management exercise.

The result of this initial ABC information, as it was a top-level analysis, was perceived by both the regulator and its internal management to be encouraging, in that it provided a relatively clear justification of cost structure for Transco's core business activities.

[Interviewee F, management accountant from Asset] ... Initially it (ABC system) was introduced at a strategic level. The introduction of ABC helped to provide better quality information to the regulator. We also felt that ABC provided a good basis for us to manage things.

It was regarded by Transco that its introduction of ABC was undertaken at a time when ABC was still a relatively new costing paradigm and adopted on an experimental basis by business organisations in USA and Europe (Transco ABC Review 1996). Transco's initial ABC model was built on the basis of the business processes and activities of a sample district<sup>5</sup>. Since then its ABC model has been improved by mapping business processes and activities within 12 LDZs in the front-line operating units<sup>6</sup>, and became more sophisticated.

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<sup>5</sup> Transco originally had 32 districts which were organised by either geographical or process aligned functional units. The 32 districts were later merged into 12 process-aligned LDZs.

<sup>6</sup> These units include Asset – NTS, Asset, and Operations, but excluding those business units at Headquarter (i.e. Support Services, Regulation and Corporate Affairs, and Strategic and Business Development). Costs incurred at these units were re-charged to Asset and Operations and allocated to Transco's five principle services on a pro-rata basis.



In 1996, Transco made a major improvement on its ABC system. Rather than taking the initial top-level approach, this new attempt was made via a bottom-up approach.

[Interviewee F, a management accountant from Asset, Sunderland] ... About 4 years ago (i.e. in 1996), it was decided that rather than taking a top-level approach, the new system should take a bottom-up approach to build every thing across the whole business using ABC principles. But its greatest impact was for the Operations. It was in the Operations unit that we were applying ABC to measure their activities.

[The ABC Management Accountant during the follow-up meeting] .... At first (during 1993/94) we were using generic templates from a sample district using a top-down approach. Now each district does its own templating and has own models. So it is a lot more detailed and a lot more accurate. It is a big exercise. .... we got 12 regional LDZs plus one NTS section. And each of those has its own activity model, which is maintained by each LDZ itself.

This new system was subsequently implemented in 1997 and was in full operation throughout Asset-NTS, Asset and Operations at Transco upon the time of this case study. The primary motivations for the use of ABC information were as follows (ABC Review 1996, p.3):

- Continue to ensure that prices are cost-reflective.
- Maintain the quality and accuracy of ABC.
- Continue to provide accurate information for regulatory purposes.

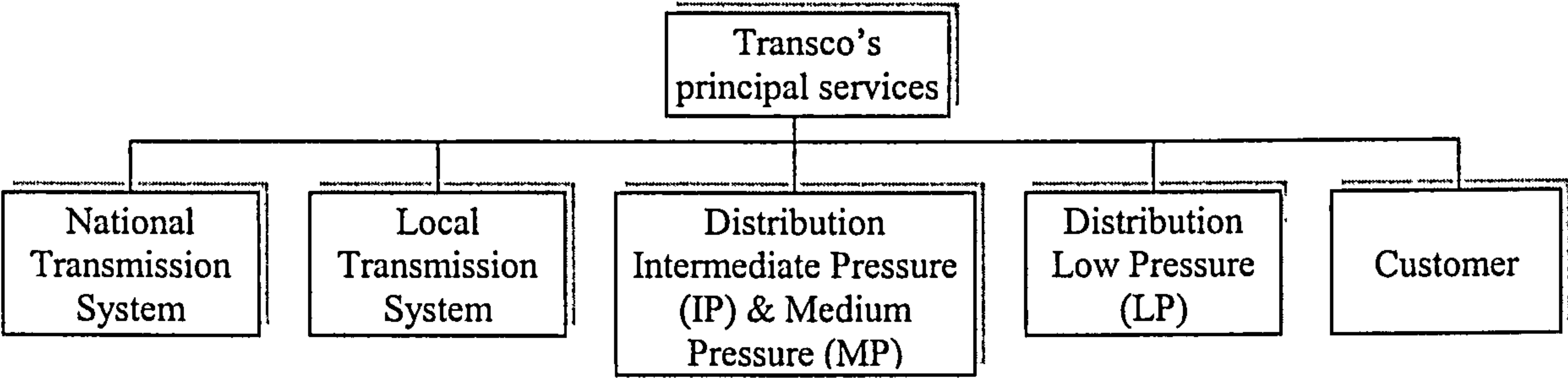
ABC information was used to reflect the actual costs in providing the transportation services (as required by Transco's Public Gas Transporter's licence). Since Transco's total revenue was regulated by an agreed price control formula set by Ofgem (i.e. 7% of Return on Assets at the time of this case study), ABC information has also helped to rectify the charges made to customers.

#### **6.3.2.1. Transco's ABC model**

This 'bottom-up' ABC process started with the conversion of general ledger data into a form, which represented a view of all the activities undertaken at Transco. In this process, thousands of transaction costs across all the departments within the 32 districts at 4 ACCs and the NCC were re-orientated to provide one single view of all the activities undertaken by Transco, irrespective of which part of the organisation they

occurred in. As a result, 350 core activities and 76 products<sup>7</sup> were established on the basis of ABC principles. An ABC dictionary, containing product description and relevant cost drivers, have also been developed, constantly revised and updated, and made available to users via Transco's internal computer network. These 76 products, which are intermediate services, were eventually driven into 5 main principal services. These principal services were used as a base to the ABC system, are shown in Figure 6.2.

**Figure 6.2     The ABC Service View at Transco**



Source from: Transco's Activity-Based Costing Review 1999, p. 3.

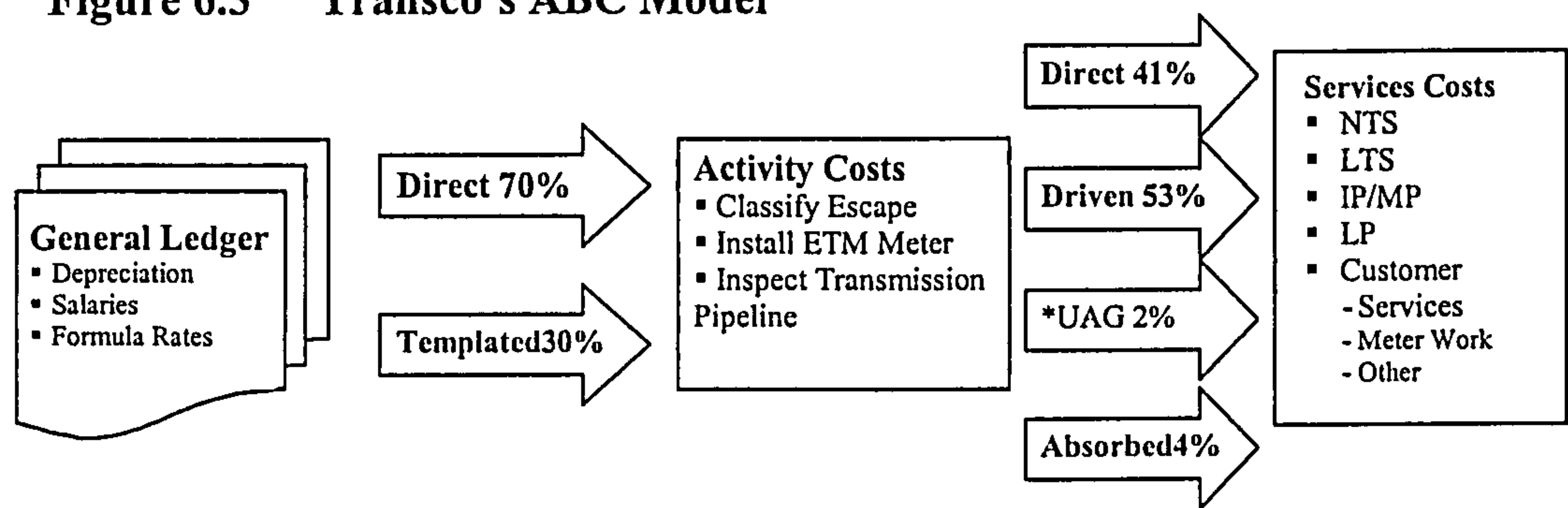
The computational steps undertaken in Transco's ABC process were summarised as follows (Transco ABC Review, 1999, p. 16):

- (i) Each LDZ's and centre department's ABC costs were converted from the general ledger data in accordance to the activities they undertook. This involved taking each ledger account (e.g. wages, materials) and assigning it either directly to a single activity, or in the case of support departments, indirectly across a range of activities using templates based on timesheets or other appropriate data.
- (ii) These activity costs were then consolidated.
- (iii) Activity costs were driven to (76 products eventually) the 5 principal Transco services. An activity that supported more than one service product would require the use of ABC cost drivers such as the number of employees or lengths of main and Transco's 'Activity Mapping Rules'. However, for a small number of activities no meaningful driver existed – these costs (around 4%, see Figure 6.3) were then allocated to services using conventional absorption costing principles.

<sup>7</sup> Products are the types of services that Transco provides, because the nature of Transco's business is to provide gas transportation services.

In Transco’s 1999 ABC model, 70% of resources costs from general ledger were directly driven to activities whilst the remaining 30% were templated<sup>8</sup>. In addition, 94% of activity costs were directly attached or driven to a service using ABC cost drivers (see Figure 6.3).

Figure 6.3 Transco’s ABC Model



\*UAG stands for Unaccounted for Gas, which is an adjustment occurred due to LDZ shrinkage factor and falling gas prices.

6.3.2.2. Development of Transco’s ABC Computer Software System

Upon completing the development of the conceptual ABC model, the next step was to find a suitable computer software package to implement the tasks identified and specified by the conceptual ABC model.

It was revealed that the first trial software package was unsuccessful.

[Interviewee A, a business finance analyst at Operations Headquarters, Hinckley] ... We spent a fortune on the first set of software - in 1997 probably. After we finished working on the ABC dictionary and defining our products, we were actually implementing it. But we could not do it, because of compatibility problems with our existing systems.

[Interviewee C, a management accountant at South Operations LDZ, Slough] ... The first set of software itself was a good system from a reporting point of view. But the processing time was phenomenal. When we ran a report for some items in an account, it probably took 24 to 48 hours to run. And that obviously was not creditable.

The first set of software package was unable to cope with the demands (350 activities and 76 products) for data-processing at Transco. This problem had a ‘knock-on’ effect on the ABC project itself. Shortly after realising the limitation of the first

<sup>8</sup> Transco uses a number of drivers to template its resources costs to activities and then to products. For example, managers are required to fill in timesheets to indicate proportion of times they spend on a range of activities and products.



software system, Transco decided to use another commercial software package called Hyper ABC, which was able to perform the required data-processing task satisfactorily. The Hyper ABC was subsequently upgraded to Hyper Metify.

[Interviewee C, a management accountant at South Operations LDZ, Slough] ... I think we only have used the first set of software for about a year. And we had Hyper ABC for 3 years, and now we use Hyper Metify which is an upgraded version of Hyper ABC. ABC accounts' processing time has been reduced from originally D plus 2 to 3 weeks to D plus 9 days now. And our traditional financial account's processing time is still D plus 7 days. So from that point of view it is not so much of a problem. D is the closing date for the monthly account.

After solving the data-processing problem associated with the software system, Transco was then able to focus its effort on improving the quality of information that was vital to the utilisation and credibility of the ABC system.

[Interviewee A, a business finance analyst at Operations Headquarters, Hinckley] ... When the organisation (Transco) split into Asset and Operations in 1998, there was a real opportunity to re-launch ABC using Hyper ABC. Now you can see this is our third year. We start to look at things a lot more closely. We are now addressing things like data quality.

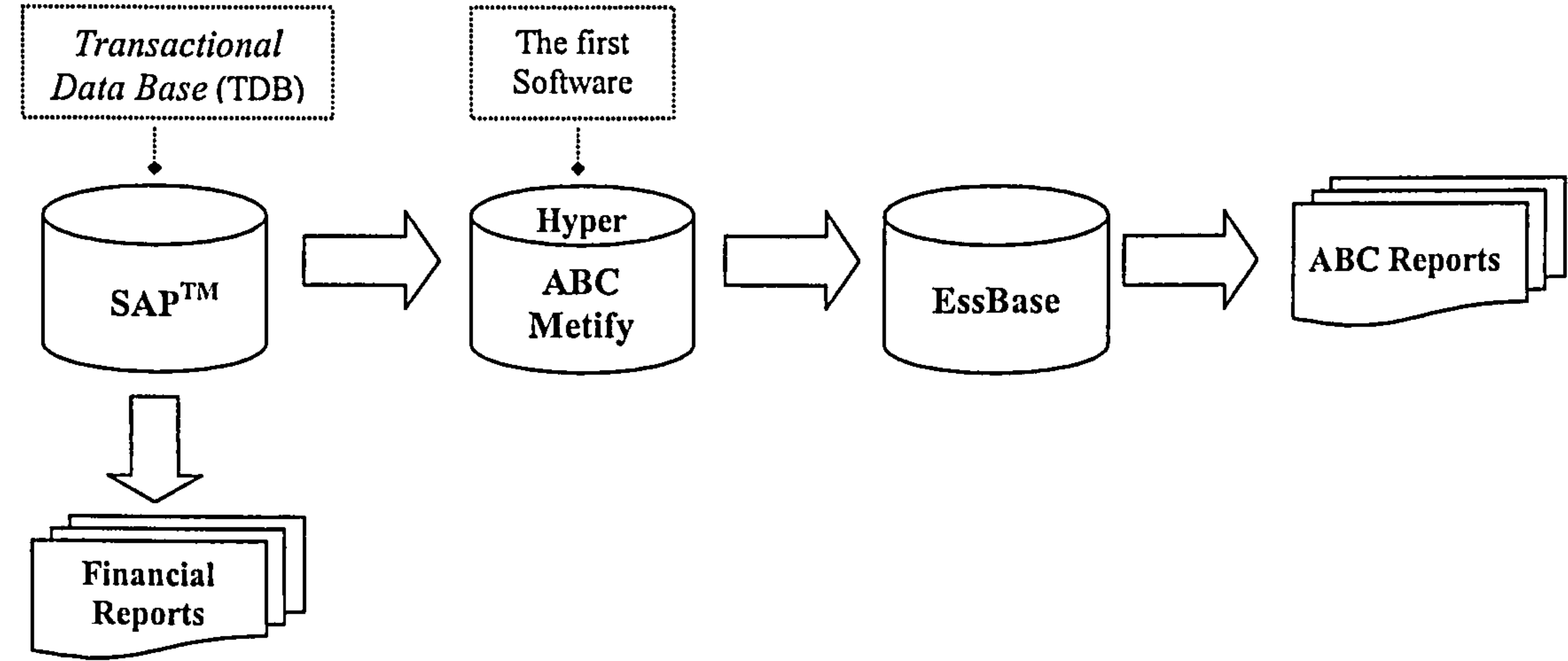
To facilitate efficient data transfer, query and conversion, Transco utilised another computer software system called EssBase, which was a database management system. Hence data retrievals and queries of various forms were able to be generated with relative ease via EssBase without causing constant interruptions to ABC data processing in Hyper Metify (e.g. producing various reports and conducting 'what-if' scenarios). The ABC system was centrally maintained by a designated accountant (i.e. Interviewee B).

[Interviewee B, a management accountant-system at North Operations LDZ, York] ... All the ABC data are held in Hyper ABC/Metify here. LDZs prepare their cost information and timesheets. The actual processing of ABC information is carried out by Hyper ABC/Metify and downloaded the results into EssBase, to which managers are allowed to access and request for reports. But the managers are not allowed to access Hyper systems. This is to ensure the data integrity and security.

With the introduction of ABC system, two sets of financial information were then available at Transco, Traditional and ABC as shown in Figure 6.4. Traditional financial information was processed in SAP<sup>TM</sup>, originally in Transactional DataBase (TDB). As shown in Figure 6.4, SAP<sup>TM</sup> produced financial reports that were based on

expenditures' categories (e.g. salaries, materials, printing) within the cost centres. For example, in Operations, expenses were divided into three main cost centres: Operation Expenditure (Opex), Capital Expenditure (Capex) and Replacement Expenditure (Repex) and summarised in accordance to LDZs and total costs in Operations. Variances between traditional expenditure budgets, actuals and forecasts were used to monitor the spending. Transco used ABC information for monitoring actual performances between LDZs in Operations and Asset, identifying performance gap by using target figures (e.g. forecasts, last year's actual, ABC unit costs for top 26 out of the 76 products).

**Figure 6.4 Transco's ABC Computer Systems and Financial Reporting System**



## 6.4. Activity-Based Budgeting at Transco

With the growing understanding and confidence arising from the use of ABC information and computer systems, it was somewhat natural for Transco to venture into ABB; an application that extended the use of ABC into budgeting (according to the financial analyst). The following sub-section first introduces the conceptual design of ABB system and a detailed description of Transco's ABB process, and this is then followed by an illustration of the ABB implementation process at Transco.

### 6.4.1 Conceptual Design of the ABB System at Transco

The conceptual model of the ABB system was developed in 1999, for the purpose of the construction of the Year 2000 product costs budget, primarily for

Operations. During the preparation stage for the Year 2000 budget, two types of budgets were being built – Traditional and ABB. The traditional budget was used to control each profit centre (i.e. LDZ)'s costs and spending limits, whilst ABB was designed to estimate future product costs for the 76 products within the costs limits.

The traditional budget was calculated by extracting expenditure information from the general ledger and applying with a fluctuation of x%. The budgeting process started with a 'Control Total', which was determined by the top management on the basis of forecasts of future workload and the agreed percentage of 'Return on Assets' (with Ofgem). The Control Total was then used to determine a control sum for each business unit's budget. All departments within one business unit were required to propose their departmental budgets. The consolidation sum of the departmental budgets was then required to match with the control sum of the business unit. The calculation of each department's budget was undertaken in a 'bottom-up' fashion and based on the nature of expenditures. The expenditures were classified into three cost centres (i.e. Capex, Opex, and Repex). Each cost centre consisted of direct costs and overheads. Direct costs had a 'one-to-one' relationship with the 76 products as identified in the ABC exercise, and were linked directly to *Operational ABC costs* (i.e. unit driven costs). Overheads had a 'one-to-many' relationship with the products, and were linked to cost items within *Non-Operational ABC costs* (i.e. batch-level costs or technical support costs, sustaining costs which include management, administrative support and manager sustaining costs).

Instead of conducting a full reverse ABC exercise, which would start from product through activities and eventually to resource costs, Transco's ABB product cost budget was calculated directly by linking products to resources via a matching exercise:

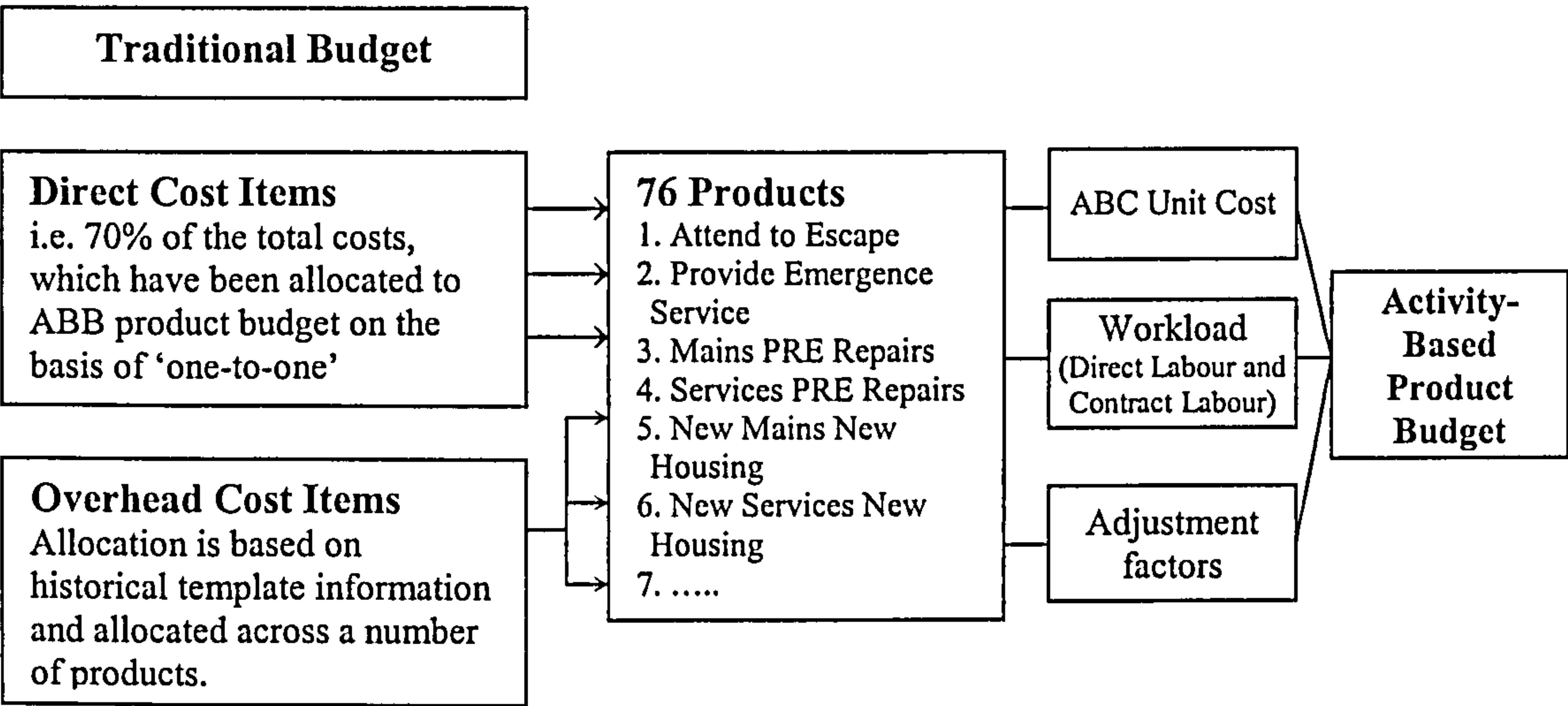
- (i) The direct costs in its traditional budget were first translated into Operational ABC costs in ABB,
- (ii) The overheads derived from the traditional budget were matched with Non-operational ABC cost using ABC templating information.

To derive an Operational ABC cost budget in the ABB process, the individual product budget was computed by multiplying previous year's ABC unit costs (which included materials, wages, contractors, others) with the forecast workload (which included direct labour and contract labour). The total sum of budgeted Operational ABC costs and unit costs were then derived. To derive the Non-Operational ABC cost (e.g. those batch-driven costs and sustaining costs) budget, traditional overheads budgets were allocated to ABC activities and then to products. The allocation of Non-Operational cost



to activities was primarily done on the basis of historical ABC template information (i.e. timesheets every manager at LDZ filled in for him/herself and his/her department) since the majority of these activities were repetitive in nature. The allocation of activities to products was based on Transco’s ‘mapping rules’. The template information specified the proportion of staff time spent across related products within the 76-product range. Based on the above description, a graphical representation of Transco’s conceptual ABB model can be shown in Figure 6.5.

Figure 6.5 The Conceptual ABB Model at Operations, Transco



#### 6.4.2 A Detailed Illustration of Transco’s ABB Process

The Transco’s ABB process was conducted via a computer software package called ‘Budget Plus’. Each LDZ’s traditional budget was fed into ‘Budget Plus’ on the basis of three main cost centres (i.e. Capex, Opex and Repex) and sub-cost categories related to each cost centre (see Table A6.1 in the Notes of this chapter for an example of Repex sub-cost categories). Owing to the existence of the ‘one-to-one’ relationship between direct costs and Operational ABC costs for the 76 ABC products, the Operational ABC cost budget was calculated by multiplying the forecast workload with the previous year’s Operational ABC unit costs<sup>9</sup>. The calculation of the Non-operational

<sup>9</sup> This ‘one-to-one’ relationship indicates that direct costs and Operational ABC costs are calculated on the same basis, in that direct costs are calculated by multiplying the forecasted workload with direct unit costs and Operational ABC costs are calculated by multiplying the forecasted workload with Operational ABC unit cost. Both unit costs are the same. Thus, the Operational ABC unit costs for 76 products was used as standard direct costs in the preparation of both traditional and ABB product cost budget.

ABC cost budget involved proportioning an overhead budget across activities on the basis of previous template information. The proportioned activity budget information was then allocated to products based on Transco's 'ABC Mapping Rules'. Each LDZ ABB product costs budget was then fed into EssBase which was used to consolidate data from other LDZs' ABB product costs budgets to derive an Operations' product cost budget. The final result then became an ultimate performance target for the Head of Operations.

The above ABB process prescribed is illustrated using one cost centre – Repex – at LDZ North model (see Figure A6.1 in the Notes at the end of this Chapter). The process starts with that Asset forecasts the workload required for direct labour and contract labour<sup>10</sup> across the general ledger data to derive its direct cost budget, or Operational ABC cost budget (see Table A6.2 in Notes). Some adjustment factors are applied to reflect pay increases and other cost fluctuations (see Table A6.3 in Notes). The budget that is segmented monthly for each cost (i.e. material, wages, contractors cost, other costs, and real income of recharging diversion cost) is calculated by applying a 'workload phasing percentage' to those cost items (see Table A6.4-6.10 in the Notes).

Based on the timesheets provided by LDZ line managers and staff members, a summary for time devoted to non-operational ABC activities is derived. Using the 'activity mapping rules' which establish the allocation base between ABC activities and products, the overhead cost budget is then attached to individual ABC activities and eventually allocated to individual products (see Table A6.10– 11 in the Notes).

A budget summary for the LDZ is then derived by combining the operational and non-operational ABC cost budgets (see Table A6.11 in the Notes). A consolidation in EssBase is then undertaken to obtain an overall Operations' product cost budget.

#### 6.4.3 *ABB Implementation at BG Transco*

With the development and implementation of the ABC system in Transco, extension of the use of ABC information to its budgeting process was perceived by Transco's top management to be a natural and necessary progress. The progress towards ABB, which went through several stages, could also be viewed as Transco's search for a suitable budgeting method.

[Financial Analyst] ... A few years ago we went down to do a detailed bottom-up budget. Basically people spent a lot of time and effort in producing their budgets which were percolated all the way up to the top of the pyramid. When it reached to the top, the total costs were too high to justify. This ended up being wasteful of time for those people. ... Now we decided in the last couple of years that we use control totals for LDZs and NTS, which reflect the objectives that our senior management is striving to achieve. Then we ask them (*general managers for the 5 business units*) to come up with some high level numbers which the individual business operation (LDZs and NTS) feels attainable. These numbers are based around the control totals. Senior management then either sign onto these numbers. Alternatively if these numbers are not acceptable then a further review and challenge follows.

Basically Transco's present annual budgeting process was a hybrid of top-down/bottom-up approaches<sup>11</sup>. The top-down approach helped the top-level management to reach an agreement of individual control totals with individual Heads of the five business units (see Figure 6.1). Once the control total was determined, the Head of each business unit then asked his/her departmental and LDZs' managers to submit their individual departmental budgets. The derivation of the control total and individual departmental budgets within a business unit was fairly traditional, which was based on expenditures, plus or minus x%. The proposed budgets were then negotiated with the Head of the business unit. The drawbacks of this bottom-up budgeting process, as described by the interviewees, contained much of those as described in literature (e.g. Drury, et. al., 1993; Hofstede, 1968; Newing, 1994). Hence ABB became an attractive alternative to improve the budgeting method used in the bottom-up approach.

The following sub-sections describe the emergence of ABB at Transco using Kwon and Zmud's (1987) six implementation stages as a reference framework. Owing to the various difficulties encountered (which are explained in section 6.5) the Transco's ABB implementation has only managed to complete the four stages (initiation, adoption, adaptation and acceptance), but has yet been able to proceed to the final two stages (routinisation and infusion).

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<sup>10</sup> Direct labour refers to the existing workload required in the LDZ. Contract labour refers to workload required from external service providers.

<sup>11</sup> The top-down/bottom-up budgeting approaches remain unchanged before and after the ABB implementation. The ABB method was to refine the traditional budgeting methods that were used by LDZs' managers at the Operations and Asset during their calculations of budgets in the bottom-up budgeting process.



#### 6.4.3.1. The Initiation Stage

The first attempt to implement an ABB system was closely related to its implementation of the ABC system. When Transco's attempt to implement an ABC system using a bottom-up approach during 1995-1996, a clear sense of enthusiasm to ABC was observed amongst the managers at the LDZ levels. The LDZ managers also tried to extend the use of ABC information to two areas, the 'league table' and budgeting, shortly after the development of the ABC models.

[Finance analyst, Transco Headquarter in Solihull] ... There was a big roll-out. I was seconded to the ABC section for 3 months. I found that managers were very excited by it. They saw it as a 'magical tool'. I think ABC was well received at LDZs level, because it would provide a more informed basis for decision making. ABC is a good tool for them to use. For example why one LDZ's cost is higher than its neighbours, they would use ABC to compare whether the higher cost is caused by operational activities or other sustaining activities ('league table'). The managers had also tried to use ABC information in their budgeting exercises.

The 'league table' was a simple ranking of LDZs' performance on the basis of ABC figures. The initial objective of the ABB exercise was to find an alternative budgeting method to derive the budgets (including individual LDZs and departments within LDZs) for Operations. The assumption for taking this initial ABB approach was that ABB was to be the 'back-flow' process of ABC (i.e. the same assumption as the one taken at SCB).

This initial ABB attempt was carried out as a part of the ABC implementation exercise. As it was a trial, each LDZ constructed its annual budget using a parallel run of both the traditional and ABB methods. The financial analyst described the construction process of this initial ABB model as follows:

[Financial Analyst, Transco Headquarter in Solihull] ... A traditional budget was constructed on the basis of general ledger codes, plus or minus x% on the basis of forecasted workloads. Then each LDZ took that budget figure and applied with ABC principles in order to get an ABC budget. The unit costs (in ABB) ended up were quite different from traditional ones, because ABB was constructed on the basis of activities required, instead of resource levels. Thus resultant ABB unit costs were significantly different from the traditional ones. ...

A significant discrepancy between unit costs derived from traditional budgets and those from the initial ABB model was observed during this exercise. The reason was revealed briefly as follows:

[Financial Analyst, Transco Headquarter in Solihull] ... I do not know whether it was a fault of the ABC/ABB model *per se*. I think it arises from a lack of understanding and the detailed working knowledge of ABC and ABB at that time...

When the new ABC system was piloted in 1995, the ABC implementation team went out to each LDZ. It was revealed during the initial discussion that the implementation team and LDZ managers had put in a lot of effort and hard work, a mixed reaction was obtained from the managers.

[The ABC management accountant, Transco Headquarter in Solihull] ... with the roll out, there was quite a lot of hard work that went into the process in terms of getting people sign on to it, explaining the reasons of the need to use it and the details we required. There were some difficulties in terms of asking people to fill in the timesheets and to do the templates....

[Finance analyst] ... I was on the ABC (implementation team) for 3 months. I found that people saw ABC as a magical tool. They were all excited by it. ... As for them to sign on to it, they had to do several workshops. Thus, there was a one-day launch of all those ABC principles, followed by more intensive sessions on templating all the business activities....

Both the ABC and ABB applications were fairly new to the managers at that time. Hence a number of tests were required to ascertain the compatibility and capability of the ABC system, and time was also needed to allow the users to gain an understanding of underlying ABC/ABB principles. Unlike traditional budgeting methods, which had been widely used for many years, the principles underlining the ABC/ABB applications were not yet fully comprehended at Transco. In addition, since the ABB model was introduced shortly after its introduction of ABC during the first attempt, it was too soon for those managers to develop such an extended understanding of ABB from the newly introduced ABC. This lack of understanding had produced an undesired impact on the first attempt to implement an ABB system. As a result the initial exercise did not achieve its objectives of ABB system implementation.

[Financial Analyst, Transco Headquarter in Solihull] ... We could not see much benefits from ABB frankly. In addressing the budgeting problems, it seems to raise more questions as it would be expected. We had other things on the agenda at the

time. The company Transco itself was recently formed, we had lots of other more important things to do. So we did not stick with it.

Transco then decided to shelf this ABB application and concentrated on further development, implementation and refinement of its ABC system (as described in Section 6.3.2).

Thus, the 'initiation' stage for Transco's ABB implementation can be regarded as a search for, and an initial attempt to identify feasible alternatives to its traditional budgeting method. The decision to concentrate on its ABC system was taken in order to gain a better understanding of the activity-based approach and prepare for another attempt to implement an ABB system. This suggests the close of the 'initiation' stage and marks the beginning of the 'adoption' stage.

#### 6.4.3.2. The Adoption Stage

Since 1996, Transco has committed itself to a process of continuous development and refinement on its ABC system. ABC information was originally perceived by Ofgem as being a relatively viable means to understand and justify Transco's 'gas transportation charges' and its cost structure. However, the full benefits of the ABC system would not be realised without the ability to supply precise and timely information for its internal users. During 1997-1999, various enhancements were made to the ABC computer software packages (from the initial software to the use of Hyper ABC/Metify) (see 6.3.2.2). The understanding of ABC principles and the operational process of the ABC system were gradually improved among various internal users along with the implementation process (e.g. management accountants and some line managers at Operations and Asset). In-house training courses were organised to help the internal users (mainly management accountants at LDZs) to gain practical skills and abilities to use the ABC information. At the same time, some management accountants and managers started to explore some ABM applications, one of which was the implementation of an ABB system for the second time.

In 1999, it was decided that another attempt to adopt an ABB approach should be made.

[Financial Analyst, Transco Headquarter in Solihull] ... For the first time this year (1999) we have constructed the ABB. Now we have 76 products, the budget is actually produced on the ABC format using those products and then translated back



to traditional types of budgets (line items based on general ledger codes). ... It was more to do with people's understanding of their business in terms of ABC cost. They had not had such a good understanding when they tried 3 years ago. Now 3 years on, we have introduced products and services, which is a further development of what we had for ABC information before. So they know ABC for 6 years.

The above discussion seemed to suggest that Transco would construct an ABB system to produce a functional budget (as mentioned by the finance analyst as "*it is actually produced on the ABC format using those products and... translate back to traditional types of budgets. ...*"). As the interview sessions progressed to other interviewees during 2000, it was then made clear that a product cost budget using an ABB approach, rather than a functional one, was derived.

From the interviews, it was also revealed that an ABB implementation team consisted of mainly management accountants from both Asset and Operations was formed to construct the Year 2000 budget using the ABB approach. In parallel with Transco's routine traditional 'bottom-up' budgeting process, the ABB implementation team constructed a detailed ABB product cost budget (see Section 6.4.3). An off-the-shelf computer software package called 'Budget Plus' was bought to assist the computational tasks so that the team would not be burdened with tedious detailed computations.

[Financial Analyst, Transco Headquarter in Solihull] ... Once the board of directors sign off those numbers – control totals, a detailed budget that would underpin those numbers will be done. There is not a lot detail in the budget, and not a control total either. We do it at a sensible level. Then the figures in that detailed budget will be used as inputs to this 'budget plus' system to come out with detail ABB budgets.

[Interviewee A, business finance analyst from Operations HQ in Hinckley]... We did not do an activity budget, just sort of product budget. We miss out that link with activity, just from resource to product. ... Basically, we convert the traditional budgets that LDZs submitted and do a product cost budget centrally. It is only for strategic purposes, not used as a day-to-day or monthly basis for monitoring performance.

The ABB product cost budget was apparently not devised using a 'bottom-up' approach, according to Interviewee E, a middle-line manager at Operations West LDZ.

[Interviewee E, network manager at Operations West LDZ] ... The ABB product budget, which took place last year, was not from a 'bottom-up'. From my understanding, it was an exercise that fit the conventional budget into the ABC. For

example, my budget is 25 million for my LDZ. The ABB is got to equal to this 25 million. So what they do is to do a matching exercise into the activity-based model.

The reasons for not adopting a 'bottom-up' approach were partially attributed to the concern over its failed first attempt, which was based on the 'bottom-up' approach. The first attempt was eventually aborted due to the lack of general knowledge about ABC and ABB at that time, and partially over the concern on the front-line managers' ability in the construction of a detailed 'bottom-up' ABB budget. The latter reflected the general diversity of opinions mainly between two groups of people: people with a financial background and people with an engineering background. People with a financial background had seemingly gained an understanding about the principles of ABC and ABB relatively quicker than those with the engineering background. There were doubts among those with financial background as to the ability of others, especially front-line managers, to build an ABB at the 'bottom' level (see the views by Interviewee A).

[Interviewee A, Business Finance Analyst at Operations HQ in Hinckley] ... We found that it may be too complicated for them (*the line managers*) to construct a 'bottom-up' budget. What they are accustomed to is a fairly simple budget: how many people are involved and how much it costs them. At the front-line level, the preparation of budgets has gone back to the original base of doing a budget. ... But at a strategic level, we still do an activity-based product cost budget by converting their submitted budgets.

On the other hand, people with the engineering background (e.g. front-line/middle level managers at Operations) had a better understanding about their business operations and activities, therefore regarded themselves as being suitable for the task involved in the budgeting process, especially for the product cost budget (see views from Interviewee E).

[Interviewee E, Operational network manager] ... The ABB budget last year was primarily done by the accountants, rather than the managers. It was a bit of a fix....

Resentment towards the way that the ABB should be constructed was apparent from the above conversation. At the end of December 1999, both budgets – traditional and ABB product cost budgets for Operations – were completed and ready to be adapted in the Year 2000 business operation (the design and process of this ABB system has been illustrated in Section 6.4.1/2).

#### 6.4.3.3. The Adaptation Stage

Transco's budget was normally used as a planning and control mechanism to set targets, measure performance and control spending over managers and LDZs. Operations have been using traditional budgets to measure individual manager's budget achievement against actual performance in his/her responsibility centre. This performance measure was incorporated in the individual manager's 'performance related pay' scheme.

The Year 2000 product cost budget, which was produced under the ABB model, was adopted as one of the performance targets (which were to link the bonus scheme) to measure the performance of the top/middle-level managers (i.e. the heads of Operations and Asset and general managers of individual LDZs). However, the performances of those managers who were responsible for the departments within a LDZ and front-end team supervisors were not measured against the Year 2000 ABB product cost budgets. In another words their performances were not appraised with reference to the achievement of ABB product cost budgets. Thus this adoption of ABB as a planning and control mechanism was relatively limited.

Operations did not use this ABB budget for management purposes either. Instead, they used other mechanisms (e.g. performance gap between LDZs and products, benchmarking and best practice), which were mainly based on the actual ABC performance. Different views about the importance of the ABB product cost budget were held by Operations and Assets.

[Interviewee F, management accountant at Asset, Sunderland] ... Asset and Operations do have different views. I think Operations have made the decisions to focus on the actual performance gap between LDZs' ABC per product. In a sense, they want to use ABC as an ultimate performance measure. They are interested in closing the performance gap between LDZs. In this resepect, they are only interested in actual performance to other LDZs' actual performance, rather than budget to actual, to forecasts. On the other hand, Asset is interested in comparing their performances to outside service providers. We have to compare their costs to other outside providers', to the budgeted cost, and to our forecasted costs for the whole work. So we do have different focuses on it (*i.e. the importance of ABB product cost budget*).

Thus the adaptation stage for financial year 2000 saw two adaptation schemes. Asset utilised the ABB product cost budget as a means of budgetary plan and control



mechanisms to the overall products' performance of Operations. On the other hand, Operations incorporated the ABB product cost budget into one of the performance targets for managers at the higher level (i.e. 12 LDZ general managers and the general manager for Operations) but not managers at the lower levels (i.e. departmental managers and team leaders within LDZs). In addition, daily management within LDZs of Operations was predominantly influenced by financial information. Managers at Operations just began to adopt some ABC information as a measure to actual performance (particularly amongst LDZs' middle management levels, i.e. Network business managers). For example the performance gaps that were derived from the comparison of actual ABC product costs among 12 LDZs indicated some gradual influences of ABC information on managers' thinking. LDZ managers started to look actively into their LDZs' ABC product costs and tried to learn from those LDZs with better performances.

#### 6.4.3.4. The Acceptance Stage

The acceptance of the ABB application at Transco was divergent between Asset and Operations. Asset regarded the ABB and ABC information as the essential measures to inform the overall product performance of Operations (see comments of Interviewee F in Section 6.4.3.3). On the other hand, the use of ABB information at Operations was a rather slow progress, which was reflected in the process of accepting the overall use of activity-based methods. Transco may have over 8 years experience in ABC implementation (from 1992 till now), but activity-based information (i.e. ABC and ABB) was not universally accepted by managers, particularly at the front-line levels. In fact the majority of the managers at Operations still relied on traditional financial information. Some of the interviewees commented on this situation:

[Interviewee E, Operational network manager at Operations, West LDZ] ... although I understand ABC information and want to use it, my LDZ general manager is looking at traditional financial information. Our discussion is very much based on reports produced by traditional budgets and actual expenditures. Thus I have to spend most of my time to look at these traditional reports.

[Interviewee D, Marketing manager at Operations, South LDZ] ... when you go and talk to team supervisors, our front-line managers, all they look at are traditional sets of information. It is hard to ask them to switch to ABC.

[Interviewee C, management accountant at Operations, South LDZ] ... but things have been improved a bit, not as worse as before. Some of managers here will come and ask you and talk to you using some of the ABC information. ...

Although the level of understanding of activity-based information at Transco had been improved over the years (particularly among management at HQs and some accountants and network managers at LDZs), gaps still existed among various levels of managers and accountants. For example, according to Interviewees C & D, who were considered to be the experts in ABC and ABB from that LDZ, *'front-line managers and some middle-level managers are still relying on traditional financial information to make their decisions. The front-line managers do not bother about the unit cost targets, as long as they achieve the main targets. So in that sense, it is not much different if you use an ABC or other.'*

In addition, the Year 2000 ABB product cost budget was generally not accepted by middle-level managers at Operations because it was perceived as a *'management accountant's budget but not a LDZ's budget'* (as commented by Interviewee E in Section 6.4.3.2). This perception was caused by the lack of participation and input from the middle and front-line level managers during the construction of the ABB budget.

#### **6.4.3.5. The Routinisation and Infusion Stages**

Owing to the above-mentioned different views held by Operations and Asset, the usage of the ABB product cost budget was fairly limited, in that it was only used by Asset as a planning tool to determine the Operations' product costs for the coming year. Operations held general resentment towards the Year 2000 ABB product cost budgets, primarily due to a lack of involvement from Operations' LDZ managers. Despite the limited success of the second attempt of ABB, Operations has made another attempt to work on ABB for year 2001 Operations' budget.

[Interview E] ... At yesterday's Ops (*Operations*) LDZ managers' meeting, it was decided that we are going to do a 'bottom-up' ABB, which will definitely be done by responsible managers. ... Asset is the budget holder and we (Operations) are responsible for making sure that we hit the budget. So what we have done this year (2000) in order to prepare for 2001 budget is that we sat down with Asset and went through every single product based on activity-based information. And we have

looked at the projected workload for next year. We looked at our performance and issues which affect our costs. For example, we just let a new resource contract, now the rates have increased. This means that the market rate for the work we do has increased, in turn we have to build this into our budget process.

Whilst the outcome of this recent attempt remains unclear at the end of this study, what is clear is that Transco has made continuous efforts on the development and implementation of ABB techniques. This shows Transco's clear commitment and continuous pursuit of a suitable ABB application, and their determination to infuse the usage of ABC and ABB to its whole organisation. The idea of moving towards ABC and ABB is evident as a belief, amongst most of the interviewees. According Interviewees C and D, *'if we want to be more competitive in this market, ABC is a way forward. However, it is a long way to go. Until the whole organisation is moving towards using only one system -- ABC, the usage of ABC and ABB would be remained at a very minimum level.'*

## **6.5. Analysis of ABB System Design and Implementation at BG Transco plc**

On the basis of the established research framework (see Section 3.5 in Chapter 3), the section analyses model design and implementation issues with reference to issues arising from the technical, organisational and cultural perspectives. The exploration of other factors (which are related to the behavioural perspective and market competition, see Section 6.2.3 for the explanation on the limited exploration of behavioural perspective) is also included in this section.

### **6.5.1 Technical Perspective**

Within the broad classification of technical perspective, issues such as compatibility, complexity, the improvements offered by activity-based techniques over traditional methods, and relevance to decision-makings, have already been identified in the ABC/M literature as prominent factors on the successful implementation of ABC/M systems (Kwon & Zmud, 1987; Players & Key, 1995; Innes & Mitchell, 1998).



The technical improvements of Transco's ABC system have been made over the years, as indicated in the following results:

- (i) Externally, it has published its ABC reports (i.e. ABC Reviews) on an annual basis since 1996 and provided ABC information to meet regulatory demands;
- (ii) Internally, the time taken to prepare a monthly ABC reports has been improved significantly over the years, and now (in 2000) it took almost the same time as the preparation of a monthly financial report;
- (iii) Issues such as refinement of its ABC model and enhancement of the quality of data have been addressed on a frequent and regular basis.

However, given the fact that traditional financial information was still used predominantly during managers' decision-making processes, the extent of the use of activity-based information was relatively limited. The evidence gathered from this case study showed that certain technical difficulties related to the ABC implementation process still existed and new issues (e.g. accuracy of the model to meet budgetary control purpose) arose during the ABB implementation. With reference to the issues suggested in the literature on the implementation of budgeting and ABC/M systems, the emerging technical issues can be summarised as follows:

- Suitability of ABB model in meeting budgetary planning purposes.
- System complexity from a user's viewpoint.
- Representational accuracy of the model to meet the requirement of budgetary control at different managerial levels.
- Compatibility of the ABB system with Transco's existing systems.

#### **6.5.1.1. Suitability of the ABB Information in Meeting Budgetary Planning Purposes**

The theoretical concept underpinning Transco's ABB model was relatively straightforward (i.e. multiplication of previous year's ABC unit costs with predicted workloads for Operational ABC cost budget and proportion of overhead costs budgets to Non-operational ABC costs budget based on a set of ABC allocation basis). The assumption of this theoretical ABB model was made on the basis of applying the previous year's ABC performance level to undertake the coming year's workload. Further the ABB product cost budget was restrained by the traditional expenditure budgets for the coming year.

In other words, Transco's ABB product cost budget was a reapportionment of traditional budgets into an ABB format, rather than a budgetary plan for 'should-be' product costs in the coming year. Generally speaking, budgetary planning requires information such as resource demand in order to determine whether or not the current available resource capacity can meet the demand. The resource demand is usually derived on the basis of forecasted workload of products and activity cost drivers (see Section 2.4.1.2 for detailed calculation steps explained in Kaplan and Cooper's proposed ABB process). Transco's ABB computation started with the determined resource costs that were derived from the traditional budget and then reallocated to 76 products (see Table A6.2).

The derived ABB product cost budgets were used to help Asset to obtain an overall picture of product costs at Operations. It was thus considered as suitable by Asset for managing Operations' product performance. However, this ABB budget did not appear to identify resource capacity constraints for planning purposes, which would be useful from Operations' viewpoint. Hence Transco's ABB product cost budget achieved relatively limited success in terms of fulfilling the needs of strategic planning requirement for Asset, but not for Operations.

#### **6.5.1.2. System Complexity from a User's Viewpoint**

Transco utilised a considerable number of computerised systems to enable the operation of information within such a complex organisation. For reasons of data security and integrity, the ABC system – Hyper Metify -- was operated centrally by a designated management accountant (Interviewee B). Managers at individual LDZs provided the management accountant with timesheets and templating information. They were then provided with ABC reports that were prepared by LDZs' accountants, using ABC information extracted from EssBase (which acted as an information generator). From end-users' (i.e. managers at all levels) viewpoints, these activity-based systems were fairly complex. The use of 'budget-plus' for the ABB purpose just added to the level of complexity. They were not able to construct their own departmental budgets directly using the 'budget-plus'.

Although some training sessions were provided to enable them to use the ABC systems, some of the users (e.g. front-line managers, Operations managers and some

management accountants at LDZs level) were still unable to understand the software packages or extract information effectively. This inability would deny them an opportunity to gain direct access to EssBase. Therefore despite Transco having about 8 years of ABC experience (since 1992), there were still significant variations in users' understanding of ABC and ABB principles and practical knowledge about using the ABC and ABB systems. During the discussion with interviewees, there was a common notion that front-line managers and some of the middle level managers still did not understand nor accept *'their unit cost was £15 in ABC as they still believed that it was £10 under the traditional direct cost calculation.'*

[Interviewee E, network manager at West LDZ] ... at the moment, if you go and ask a first-line manager about ABC or ABB, you will lose him basically. ... He does understand product costs and has product cost targets, but their understanding is on a traditional basis.

Transco's first attempt to implement ABB in 1996 (in which a 'bottom-up' approach was used) failed due to a lack of general understanding on activity-based information. According to the finance analyst at Transco headquarter, the possible reason was that the use of ABC information was pushed ahead too quickly. Learning lessons from the first attempt, the Year 2000 ABB product cost budget for Operations was developed centrally by a team of management accountants who had a relatively good understanding about ABC and ABB. The exercise (which intended to reduce the complexity involved in the construction of an ABB from a 'bottom-up' approach) did reduce the complexity to calculate the ABB budget. However it also resulted in some side-effects, indeed, the centralised budget construction exercise brought tension between management accountants and line managers, who perceived the ABB as accountants' budget (see Interview E's comments in Section 6.4.3.2).

Thus the ABB approach, which attempted to reduce the system complexity by constructing an ABB product cost budget for the end users, did not achieve its intended objectives.

#### **6.5.1.3. Representational Accuracy of Transco's ABB Model for Budgetary Control Purposes**

Generally speaking, a budget is used to measure and evaluate against managers' actual performance (Drury, 1996, Horngren, et al, 1999b). Since Transco



adopted the previous year's ABC unit costs in the construction of the ABB budget, the accuracy of this budget largely depended on the accuracy of the previous year's ABC information. In this respect, a problem with the reliability (which was attributed by the use of the previous year's workload data for budgeting purpose) was raised by the Interviewee A, finance analyst at Operations headquarter:

[Interviewee A, finance analyst at Hinckley] ... we got a major problem with the workload, and as a result, our ABC unit costs for one particular product here has a large variation of between £615 to £187.

These variations of ABC unit costs were the actual result of uneven distribution and fluctuation of workload across LDZs in 1999. There were seasonal factors, i.e. significantly heavier workload during the winter months than the workload during the summer months (because of leakage of gas pipelines during the winter months requiring more repair work). In addition, some LDZs that had more workload during the year had to cope the extra workload with existing workforce (hence stretching the staff overheads limits). Thus the actual ABC unit costs for those LDZs were lower than that for other LDZs. While using the lower ABC unit costs (which were affected by these non-routine factors occurred during the previous year) in budgeting, the derived ABB products cost budgets for those LDZs would be lower than for others. However, these non-routine factors which caused the lower ABC unit costs might not occur in the budgeting year. Therefore these ABB product cost budgets would be rendered as inaccurate to be used as a reliable measure for the purpose of controlling product costs and monitoring performance at LDZs' level on a monthly basis. As a result, LDZ managers at Operations did not accept ABB budget targets in measuring their performance. It was only used as complementary information, along with traditional budgets, for strategic purposes at Assets, e.g. Asset monitoring Operations' product performance by comparing product costs between last year's actual ABC, ABB and this year's actual ABC.

#### **6.5.1.4. Compatibility of the ABB System with Existing Systems**

In comparison to the compatibility of its ABC system, Transco's ABB system was relatively incompatible to the existing systems. After a series of improvements to the ABC computer systems were made over the years, Transco's ABC system was now

relatively compatible with the traditional ones. For example, information from SAP<sup>TM</sup> was extracted with relative ease to enable the production of monthly ABC reports at the approximately same time-scale as financial reports. This also helped to promote the adaptation of the use of ABC information at LDZs.

The ABB system, however, did not enjoy the same degree of success as the ABC system, owing to the incompatibility of 'Budget Plus' with existing systems at Operations. Technically, the ABB system 'Budget Plus' was not integrated into the ABC systems directly but linked to EssBase. Therefore a lot of time was spent on downloading ABC information from EssBase, and consequently affected the speed to produce an ABB budget. In addition, Operations relied on current ABC performance rather than past performance (e.g. ABB product cost) to control its product performance. Thus from Operations' viewpoint ABB which was constructed on an annual basis was quickly out-of-date. It was considered to be less cost-effective to construct an up-to-date ABB as the labour intensity in the construction of an ABB made updating an onerous task.

The intention of monitoring product costs by comparing ABB and actual ABC results was thus not feasible, and the task was therefore replaced by the use of other control mechanisms, e.g. monthly forecast, performance gap analysis, and bandwidth analysis<sup>12</sup> using ABC information. Operations considered that these mechanisms to be relatively simple and suitable for achieving its operational planning and control purposes.

[Interviewee A, finance analyst at Operations' headquarter] ... You put a lot of effort into preparing the budget. But as soon as the budget is printed out, it becomes out-of-date. Another thing is to do with the way of budget works as well. You can do a great job to put an ABB, when it goes up to the Head of Operations or Support Service Centre, they would say 'we do like this bottom line, take out 20 millions.' What you have to do is to feed into activities in all circles again. Thus, we do not want people to achieve the budget, we want people to achieve targets or latest forecasts. ...

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<sup>12</sup> Based on ABC analysis, the bandwidth analysis is to set a 'bandwidth unit cost' as a standard unit cost for each product, and to compare Year-to-Date unit costs with the 'bandwidth unit cost'. The 'bandwidth unit cost' is a unit cost that is applied certain percentage to a targeted unit cost. It aims to even the variations attributed from factors outside of LDZs' control (e.g. location variation between South and North LDZ).

### 6.5.2 *Organisational Perspective*

In terms of organisational perspective at Transco, some implementation issues that emerged were summarised in the following three areas:

- Aspects of administrative arrangements that had influence on the adoption and acceptance of the ABB product cost budget.
- Suitability of organisational structure for the introduction of the ABB system.
- The impacts of restructuring on the ABB implementation and training.

#### 6.5.2.1. *Administrative Arrangements*

Administrative arrangements have significant influences in the way a budgeting process operates (Covaleski & Dirsmith, 1986; Hirst, 1987; Merchant et.al, 1989; Xavier, 1996). Xavier (1996) indeed concluded that a budgetary reform needs to encompass all administrative arrangements that impinge on budgetary and financial management. Transco's experiences with ABB, which can be regarded as a type of budgetary reform, are consistent with the views reported in the literature.

Transco had different administrative arrangements with the two departments to undertake its budgetary planning processes. Support Services Finance (SSF) at HQ was assigned with the job to oversee projects to ensure acceptable delivery of its organisational long-term plan. The business planning team at Operations was responsible for developing and executing some short-term plans (including annual budgets). It should be noted that a slight discrepancy existed between the execution of the long-term plans and that of the short-term plans, because the (long-term) planning team at SSF worked separately from the (short-term) planning team at Operations (as indicated in Operations' short-term planning proposal, internal document). The development of Year 2000's ABB product cost budget only involved the members of the planning team at SSF, but did not involve the team members at Operations. This arrangement might explain the limited perceived usefulness of ABB amongst LDZ managers at Operations. The discrepancy of administrative arrangements was even apparent from the different views held by two interviewees on the latest attempt to ABB.

[Interviewee A, business finance analyst at Operations HQ, who is a member of long-term planning team at SSF] ... We are going to do ABB for Year 2001's annual



budget. This time will be at a strategic level – not very detailed, more of a ‘broad brush’ approach.

[Interviewee E, operational network manager, who is a member of short-term planning team at Operations] ... I was at the Operations’ managers meeting yesterday at Hinkley. We are going to do a ‘bottom-up’ ABB for the year 2001 budget. It will be a more onerous task obviously than we did last year.

The discrepancy in administrative arrangements (and difference in opinions resulted from the arrangements) could potentially cause Transco to face some conflicts and inefficiencies in this latest attempt (e.g. jeopardy of Operations’ short-term plans and the implementation of ABB for Year 2001 budget, and inefficient utilisation of internal resources). As revealed in its mid-term budget review and planning meeting, Transco’s budget process manager recognised the existence of these potential risks and proposed some actions to minimise the effects of these risks (Operations Short Term Planning Proposal, Transco internal document):

- Steps were taken to ensure that Operations and Support Services Finance work closely together on their projects to formulate a single strategic plan underpinning their projects.
- Liaison meetings between these two groups were to be held fortnightly.
- The models for both projects were to be developed under the auspices of Support Services Finance

A hybrid approach has been subsequently suggested in the proposal for Operations’ short-term (budget) plan for Year 2001. In this proposal, a combined top down/bottom up approach was suggested to reach the Operations Budget for 2001. Based on a pre-determined control budget total allocated from Transco HQ to the Operations, the Top-Down approach was used to calculate a ‘Benchmark Budget’ aimed at closing the performance gap and reducing the cost among LDZs. The Bottom-Up approach was used in LDZs to review their current performances and to prepare a business case to support their applications for any additional funds. It is thus hoped that the discrepancy of administrative arrangements among the two teams can be properly addressed during this proposed approach.

#### 6.5.2.2. Suitability of Organisational Structure for the Introduction of the ABB System

The structure of an organisation may influence the implementation of an ABB system, particularly for an ABB product cost budget system. The design of the ABB system was not in line with the existing structure and operational processes, which were in a fairly hierarchical and functional manner. It was therefore essential that more efforts would be required to co-ordinate between functional departments to ensure the success of the ABB implementation. This requirement became apparent when a lack of co-ordination occurred relating to the two planning teams (i.e. the long-term planning team at SSF and the (short-term) business planning team at Operations). Furthermore, managers at Transco got used to calculate and manage budgets in a functional way. Therefore, the ABB product cost budgets, which set budgets for 76 products, did not appeal to these managers, particular those at Operations. For example, a front-end team supervisor was only interested in the cost of finishing a job by using his team resource. The overall ABC cost for that job which included other support activities did not seem to be relevant to this supervisor. Furthermore, the ABB product cost budgets did not appeal to those managers at top and middle-levels either, evidently those managers still adopted traditional budgets as the predominant form of budgetary control. Given Transco's hierarchical structure, the introduction of ABB product cost budgets encountered barriers arising from the structure and general practices which were established over the years.

Such barriers were also identified in the literature about the implementation of PPBS systems (Dennison, 1975; Jager, 1973; Wilhelmi & Kleiner, 1995). As suggested in the literature, to overcome these barriers, changes to either the construction of the ABB budgets or the structure. There were some indications that Operations were to be separated from Transco to become an independent gas operator, in that it would have to compete with other service providers to bid contracts from Asset. By then the importance of ABB information would become more apparent to managers at Operations. But until the market competition was formalised at Transco<sup>13</sup>, the structural barriers to the adoption of the ABB product cost budgets still remained as one of the major factors to the success of ABB implementation.

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<sup>13</sup> During this case study, Transco only gives a limited amount of contracts to external contractors if Operations did not have spare capacity to do it.

### 6.5.2.3. The Impacts of Restructuring on the ABB Implementation and Training

The restructuring exercises in Transco's had some positive and negative impacts to the implementation of the activity-based systems. The positive notes were illustrated by the remarks made by interviewees.

[Interviewee C, marketing manager at South LDZ] ... The separation between Asset and Operations will bring a sort of commercial relationship and we are becoming leaner to compete with outside service providers. I think we will move more and more towards ABC and ABB. The more we got into commercial activities, the more we get broken up, the more we get competition against us. Thus we will rely more on ABB eventually. ... but until this relationship becomes apparent, the use of ABB is still very limited.

[Interviewee E, network manager at West LDZ] ... Our business is changing dramatically. At the moment we are regulated, but at the end the Operations is going to move to an open market. Thus to us, product costs provided by ABC models are most important. We are going to budget all product costs based on ABC information.

It can be seen that as an indirect result of the potential restructuring process, these interviewees showed greater awareness to the potential use of ABC and ABB information. In that sense, restructuring would play a positive role on promoting the use of ABB information.

However, constant restructuring may produce some negative results: tendency to use traditional sets of information and loss of expertise. The restructuring resulted in constant updating and maintenance of the activity-based models (which were designed based on the structure prior to restructuring) in order to keep up with the changes. To the managers, particular front-line managers, the constant changes amounted to additional confusion (i.e. the original confusion arose from the different interpretation between traditional and activity-based information; the additional confusion was the different figures shown in activity-based information before and after the restructuring).

Restructuring may also relate to a loss of expertise and knowledge. This tended to have detrimental impacts on the development and implementation of the ABB system. Interviewee E had expressed his concerns over a lack of use of ABB at LDZ levels, by suggesting that it was attributed partially to the high turn-over of experienced management accountants during the restructuring exercise.

[Interviewee E, network manager at West LDZ] ... because we have gone through such a massive change, a lot of our experienced management accountants, for



instance, took attractive redundancy package and left the company. ... It would make managers like me more difficult to get hold of information on a timely basis.

The constant restructuring also increased the demand for training. Training was usually given to managers and management accountants at LDZs, however, priorities would normally be given to management accountants. The constant structural changes resulted in the constant changes to the activity-based models, thus demand for training was increased in order to keep managers and management accountant updated with the changes. However, owing to the high turn-over of experienced/trained staff members and increased training demand for updated models, a 'vicious-cycle' seemed to exist in Transco.

#### 6.5.2.4. Summary of Organisational Perspective

Administrative arrangements, organisational structure and restructuring are three essential factors that affected Transco's ABB implementation. The conflicting arrangements between HQ's planning team (for long-term plans) and Operations' planning team (for short-term plans and budgets) could be eased with some mitigating actions. As evident in the internal document -- Operations' Short Tem Planning Proposal, these mitigating actions included the co-ordination between these two teams and involvement of both HQ's and LDZs' managers during its latest ABB attempt. The product costs budget information was of limited use at Transco, given its structure and the requirements of budgetary control were in a fairly functional basis (e.g. the traditional budget for control of departmental spending and performance gap and bandwidth analysis for control of product performance). Corporate restructuring has both positive and negative effects on the ABB implementation. On one hand, the realisation of commercial interests arising from the restructuring exercise had made managers gradually aware of the potential importance and usefulness of ABB information. On the other hand, a loss of experienced management accountants and constant changes made to the ABC/ABB models (to reflect the change of structure) were the side effects restructuring, which in turn, de-motivate mangers (particular at LDZ level) to use an ABB system.

### 6.5.3 *Cultural Perspective*

In his research to determine managers' perceptions of organisational culture and budget-related behaviour, Goddard (1997) had discovered the existence of a correlation between these two variables, particularly in the areas of budgetary participation and the usefulness of budgets to support the managerial role. He also found that in practice some tensions existed between culture and the financial control system (e.g. the users' belief about what a financial control system ought to be and what they are required to do in the financial control system).

From conversation with interviewees, it was found that some of the issues raised by Goddard (1997) were of direct relevance in Transco's case. For example, a 'set culture' was suggested by interviewees in the case that Operations' line managers perceived the ABB information as less relevant and useful to their daily operations. One reason for this perception was that these managers got used to the use of traditional information and thus were perceived to have a 'set-view' (culture) about the way to do things.

[Interviewee D, marketing manager from South LDZ] ... Most of our managers have got 20 or 30 years of experiences. All of their years, they use the same information. They do not like changing into ABB that easily. As long as they are getting their targets, they are happy. They do not care what elements are constituted within their targets. ... And that is a problem until you change that culture. It won't take you to the next stage. This problem is not only related to our budgeting side, it is also related to our marketing when Transco is going to move to a commercial environment, which means some of jobs can open to competition between our own teams and other private business. In that sense, the pricing for one job or a product shall be looked at as a whole. But some managers still think the price is only for direct operating cost. However, it is a rooted concept among them. It will be a hard change to it and is going to take quite some time.

[Interviewee E, operational network manager at West LDZ] ... The level of use ABC and budget information is at my level of management. So there are six overall network managers at this LDZ are responsible for the spending. We are looking at both traditional and ABC figures. Our front line managers basically look at their unit cost lines – the direct cost lines – that is driven into product. Because that is what they really affect them.

The existence of the 'set-culture' implies that some difficulties are to be expected in the infusion of an activity-based approach across the organisation.

[Interviewee C, management accountant at South LDZ] ... After eight years since we first introduced ABC in 1992, things have changed slightly. Some people, such as managers in the LDZ's management team, start to understand a bit. But to the level beneath that management team, such as supervisors and low grade managers, there is still a long way to go. Most of the front-line business activities at Operations are still very much relying on traditional information. Unless there is a decision from the top to allow only one set of accounting information—ABC, I do not think things can change that quickly.

[Interviewee A, finance analyse at Operations' headquarter] ... The reason why we did not use ABB at Year 2000 is that managers do not agree with the figures of product cost budget, derived from ABB, simply because they do not understand ABB or ABC. In addition, their performances measurement are on traditional results, not ABB. Thus there is neither motivation nor incentive for them to use it.

A different explanation was offered by the interviewee F about the lack of the perceived usefulness of ABB. The budgetary cultures in Asset and Operations were based on different management focuses.

[Interviewee F, management accountant at Asset] ... Asset and Operations hold different views on ABC and Budget. I think Operations, perhaps, they have made the decision that they want to focus on actual, the performance gap. And for them I can sort of see why, because they loved to drive the performance gap down and if they are using that ultimately lead to performance measure. So by doing that, they are only interested in actual performance comparing to somebody else's actual performance, rather than budget to actual, to forecast. Whereas within Asset, we are interested in their performance compared to somebody outside, because we may use that to other person. But we also have to look the work that being done, how much is cost to do that work, how much it was budgeted to cost, how much that our forecast is going to cost to complete all that work, and comparing all those. So we do have different focus on it.

Since Transco is a large organisation with many functional departments and business units, it is difficult to draw a detailed profile of Transco's culture. On the description given by the interviewees, however, insight into culture among the various



levels of managers<sup>14</sup> at Operations LDZs is possible. Some of the front-line managers (i.e. team supervisors and departmental managers) with an engineering background were accustomed to the use of traditional financial information. In addition, their performance measurements were also set against their departmental (functional) results. This, in one way or another, tended to promote the continuous use of traditional information and demote the introduction of new systems like ABC and ABB.

The following possible scenarios may be described a form of such 'set-culture':

- (i) The managers at Operations may perceive the constant changes as being irrelevant to their routine operations (i.e. Transco was still being regulated at the time of this research).
- (ii) Changes may be perceived to affect the structure at higher level, and the front-line operational units (or teams) at Operations were not affected by these changes.

Constant changes brought constant modifications to the ABC model. It may therefore be difficult for the managers to keep up with these changes. As a result they may also choose to continue to use the familiar traditional information.

On the other hand, a gradual change of attitude occurred among middle-level managers (i.e. LDZ managers, business network managers and LDZ marketing managers) who understood the principles of ABC. For example Interviewees D and E, both of whom have engineering degrees, understood the principles and benefits of ABC and ABB. They were then able to make some effective use of the two sets of financial information – traditional and ABC – to support their operational management tasks. It was notable that their requirements from the ABB system were different from those of the front-line managers. They required more influence, autonomy and ownership of the ABB system. Consequently, issues relating to culture (i.e. existing practice and belief) and the ownership of ABB produced tension (even disagreement) among personnel within Operations and between Asset and Operations.

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<sup>14</sup> Under organisational hierarchy, one LDZ mainly consists of one LDZ manager who is responsible for the whole of LDZ's operation and performance, a few business network managers who are responsible for business activities across a few functional departments and directly report to the LDZ manager, departmental managers who are in charge of various function departments within a LDZ, team supervisors who lead a team of 10-20 people individually to carry out the field work.

Within Operations, as suggested by Interviewee A, ABB was used at a strategic level because of the perceived lack of understanding at local LDZs. However, this suggestion disagreed with the comments stressed by Interviewee E, who believed that the ABB product cost budgets ought to be produced by LDZs due to their knowledge about their own operations. The managers at Operations also wanted to participate in the ABB process, as they did in calculating the traditional budgets.

[Interviewee E, operational network manager] ... We are going to do a 'bottom-up' ABB this year. It will be a more onerous task obviously than we did last year. Because it will be definitely done by responsible manager like myself within each of LDZs. Whereas the ABB done last year (i.e. 1999 for Year 2000's budget) was primarily done by the accountants, rather than the managers.

In addition, views on the use of budgets also varied amongst managers between Asset and Operations. Whilst Operations was more interested in the actual performance among LDZs, Asset, as a budget holder, was more interested in comparing Operations' performance with external service providers. This difference indicated that the different believes (culture) existed between Asset and Operations.

In general, the existence of varied culture within different parts of an organisation (or sub-culture) may affect the level and extent of using an ABB system. The varying use of ABC information for management purposes (including budgeting) at Transco varied considerably amongst managers at various hierarchical levels. Thus these variations and existence of culture differences (i.e. 'set' culture and sub-culture in different departments and business units) made it relatively difficult to infuse ABC and ABB approaches across the whole organisation.

#### **6.5.4      *Other Factors – Budget Participation and External Environment***

##### **6.5.4.1.    The Different Levels of Budget Participation**

Issues arising from budgetary participation have been widely discussed in the budgeting literature (see Chapter 3), for example, 'budgetary participation can increase job satisfaction and reduce tension (Brownell, 1985; Collins, 1978; Milani, 1975)'. The negative effect of this was evident in Transco's ABB experience. The lack of participation during the construction of ABB product cost budget resulted in some

tensions between management accountants and middle line managers like Interviewee D and E. A general sense of participation was regarded as important towards managers' acceptance of the budgets. This was because that managers (like Interviewee D and E) perceived the participation process as a way to understand the construction process of a budget and steps involved in underpinning their knowledge about their own business processes.

The two approaches involved in preparing traditional and ABB budgets suggested two different levels of participation. Under the traditional bottom-up budgeting process managers were able to participate in the calculation of their individual functional budgets (after the top management determined a 'control total' in a top-down manner). However, the ABB product cost budget was calculated based on the derived functional budgets and undertaken at a strategic level. Although the ABB budget was essentially based on the functional budgets, which were prepared with the participation of those LDZ managers, the LDZ managers were not literally involved in the ABB process. As a result, LDZ managers would feel that they were unable to influence the ABB outcomes. Thus they tended to make less use of the ABB budgets.

Some tensions amongst the accountants and the LDZ managers also occurred as a result of this ABB approach. The accountants felt that the LDZ managers did not have the necessary knowledge to construct the ABB product cost budgets effectively. On the other hand the LDZ managers argued that without active participation they would not be able to gain the sufficient knowledge and subsequent use of activity-based information. In contrast to the participative manner used in the functional budgeting process, where managers felt they had greater influence on the final budgets, the non-participative manner used in the ABB process made LDZ managers less motivated nor keen to understand and use ABB information for management purposes. Thus, the participative manner that LDZ managers were accustomed to in the 'bottom-up' budgeting approach created impediment for managers to adopt an ABB system, which was introduced in a non-participative manner.



#### 6.5.4.2. External Environment

As revealed in Section 6.5.2.2-3, the likelihood of the introduction of market competition could change the managers' (particularly those at Operations) attitude toward the use of activity-based information.

[Interviewee E, network manager at West LDZ] ... Eventually Operations is going to move to an open market. Thus to us, product costs provided by ABC models are most important. We are going to budget all product costs based on ABC information.

Over the past 8 years managers at Transco has adopted the ABC/ABB systems in a limited and gradual fashion. However, when Operations was to become an independent service provider to Asset, the importance of ABC/B information was evidently becoming more apparent. This indicates that the introduction of market competition may pose as an external force to help managers to realise and hopeful, adopt ABC/B as a useful tool for decision making purposes.

### 6.6. Summary

The development and implementation of an ABB system at Transco revealed a different application of ABB from that at SCB. It is the use of ABC information in calculating product cost budgets.

Transco's first attempt to implement an ABB system was introduced along the backbone of its ABC implementation, which was similar as the one in SCB. The first attempt, however, was deemed to be a failed one, attributed mainly to a lack of general knowledge on ABC and the use of ABC computer software systems. After a period of three years in which continuous improvements had been made to its ABC model and computer software and hardware systems, Transco had boldly launched its second attempt of ABB project in 1999. To maximise the chance of success, the tasks of designing and implementing the ABB system were then assigned to a group of experienced management accountants.

This ABB system was designed to produce cost budgets for Operations on the basis of data from the traditional budget. This was calculated using a combination of elements: 1999 ABC unit cost, traditional LDZs' budgets and forecasted workloads. The derived product cost ABB budget provided an overall picture of product costs at

Operations. This product cost budget was used by Asset to plan the product costs from the existing workforce and thus to increase the control over product costs from Asset's viewpoint.

During the actual implementation, however, the ABB product cost budget was not as widely accepted. From the information gathered within this case study, it is insufficient for one to state the degree of success for this ABB project in its transition from the adaptation to acceptance stages (where ABB can truly be regarded as a replacement for the traditional/functional budgeting system). Based on the limited use of this ABB budget (only by Asset for the strategic planning purpose), one would suggest that Transco has yet to reach the final two stages of implementation (i.e. routinisation and infusion).

With reference to a variety of factors suggested in the literature relating to the technical, human behavioural, organisational and cultural perspectives, influential factors related to ABB implementation were analysed. In addition, the contribution of the behavioural perspective (i.e. participation) and market competition was also explored in this case study.

The findings are collectively listed below:

- Technical perspective:
  - complexity to users (especially those front-line managers);
  - incompatibility to existing management systems (e.g. forecasts and actual ABC performance measures) as ABB is an annual budgeting exercise;
  - relevance to budgetary planning and control from Asset's but not from Operations' viewpoint.
- Organisational perspective:
  - constant organisational change/structure highlights the importance of ABC and ABB;
  - constant changes also affects the changes in the ABC model during the year, that in fact made ABB constructed prior to this invalid.
- Cultural perspective:
  - a variety of cultural facets exists in various level of management – traditional information oriented among front-line managers;
  - mixed (traditional and activity-based) information used among middle level managers, depending on their knowledge with ABC system;

- awareness among the top-level management<sup>15</sup> .
- Other perspective:
  - Non-participative manner in the ABB approach contributes negatively to the ABB system implementation, especially when it was contrast to the participative manner used in a functional budgeting process.
  - Market competition is an external factor, which has a substantial impact on the future use of ABC/ABB information.

Generally speaking, these factors made their positive or negative contribution towards Transco's current state of usage of ABB information. However a clear message gathered from Transco was that it has made continuous effort on the development and refinement of ABC and ABB systems.

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<sup>15</sup> It was uncertain as to which information the top-level management rely on when they make management decisions, due to no managers at this level being interviewed.



Notes:

Table A6.1 Transco’s Operational ABC Cost Budget for Replacement Expenditure

|                            |                        | UNIT COSTS(£s) |       |       |        | WORKLOAD    |       |       |       | BUDGETED COSTS (£000s) |            |       |       | BUDGETED UNIT COSTS (£s) |             |                    |       |       |       |        |             |
|----------------------------|------------------------|----------------|-------|-------|--------|-------------|-------|-------|-------|------------------------|------------|-------|-------|--------------------------|-------------|--------------------|-------|-------|-------|--------|-------------|
| NIAS Code                  | Product                | Mats           | Wages | Conts | Others | Real Income | DL    | CL    | Total | Mats                   | I= A*(F+G) | Wages | Conts | Others                   | Real Income | Total Direct Costs | Mats  | Wages | Conts | Others | Real Income |
|                            |                        | A              | B     | C     | D      | E           | F     | G     | H     |                        | J=B*F      | K=C*G | L=D*F | M= E*(F+G)               | N           | O                  | P     | Q     | R     | S      |             |
| <u>Mains</u>               | 1111 15.22.17          | 14.2           | 18.0  | 45.7  | 4.0    | 0.0         | 24000 | 40640 | 64640 | 918                    | 432        | 1857  | 96    | 0                        | 3302        | 14.2               | 18.0  | 45.7  | 1.5   | 0.0    |             |
|                            | 1113 15.22.17          | 30.0           | 45.0  | 84.2  | 6.0    | 0.0         | 5000  | 18750 | 23750 | 712                    | 225        | 1579  | 30    | 0                        | 2546        | 30.0               | 45.0  | 84.2  | 1.3   | 0.0    |             |
|                            | Total Policy Mains     |                |       |       |        |             | 29000 | 59390 | 88390 | 1630                   | 656        | 3436  | 126   | 0                        | 5848        |                    |       |       |       |        |             |
|                            | 1112 16.22.17          | 14.2           | 19.0  | 46.2  | 4.0    | 0.0         | 5000  | 6580  | 11580 | 165                    | 95         | 306   | 20    | 0                        | 586         | 14.2               | 19.0  | 46.5  | 1.7   | 0.0    |             |
| Non policy<180             | 1114 16.22.17          | 34.8           | 50.0  | 85.2  | 6.0    | 0.0         | 2000  | 2390  | 4390  | 153                    | 100        | 204   | 12    | 0                        | 468         | 34.8               | 50.0  | 85.2  | 2.7   | 0.0    |             |
|                            | Total Non Policy Mains |                |       |       |        |             | 7000  | 8970  | 15970 | 318                    | 195        | 510   | 32    | 0                        | 1054        |                    |       |       |       |        |             |
|                            | 1108 25.44.18          | 25.0           | 17.0  | 55.0  | 1.1    | -68.4       | 5077  | 6110  | 11187 | 280                    | 86         | 336   | 6     | -765                     | -57         | 25.0               | 17.0  | 55.0  | 0.5   | -68.37 |             |
|                            | 1110 25.44.18          | 25.0           | 17.0  | 55.0  | 4.4    | 0.0         | 1243  | 0     | 1243  | 31                     | 21         | 0     | 5     | 0                        | 58          | 25.0               | 17.0  | 0.0   | 4.4   | 0.0    |             |
| Total Diversions           |                        |                |       |       |        |             | 6320  | 6110  | 12430 | 311                    | 107        | 336   | 11    | -765                     | 0           |                    |       |       |       |        |             |
| Total Mains                |                        |                |       |       |        |             |       |       |       | 2258                   | 958        | 4282  | 169   | -765                     | 6902        |                    |       |       |       |        |             |
| <u>Services</u>            |                        |                |       |       |        |             |       |       |       |                        |            |       |       |                          |             |                    |       |       |       |        |             |
| Domestic-Programme         | 1121 16.23.17          | 28.0           | 51.9  | 225.1 | 4.2    | 0.0         | 925   | 1848  | 2773  | 78                     | 48         | 416   | 4     | 0                        | 545         | 28.0               | 51.8  | 225.1 | 1.4   | 0.0    |             |
|                            | 1122 27.44.18          | 28.0           | 51.9  | 225.1 | 4.2    | 0.0         | 185   | 315   | 500   | 14                     | 10         | 71    | 1     | 0                        | 95          | 28.0               | 51.8  | 224.9 | 1.6   | 0.0    |             |
|                            | Work                   |                |       |       |        |             |       |       |       |                        |            |       |       |                          |             |                    |       |       |       |        |             |
|                            | 1123 04.02.02          | 28.0           | 51.0  | 224.9 | 15.5   | 0.0         | 1500  | 765   | 2265  | 63                     | 76         | 172   | 23    | 0                        | 335         | 28.0               | 50.9  | 224.7 | 10.3  | 0.0    |             |
| Domestic-After Escapes     | 1125 31.06.04          | 39.1           | 83.6  | 455.3 | 11.9   | 0.0         | 1060  | 940   | 2000  | 78                     | 89         | 428   | 13    | 0                        | 607         | 39.1               | 83.5  | 455.3 | 6.3   | 0.0    |             |
|                            | 1126 18.23.17          | 149            | 103.0 | 759.5 | 40.9   | 0.0         | 95    | 89    | 184   | 27                     | 10         | 68    | 4     | 0                        | 109         | 149.1              | 102.9 | 759.5 | 21.1  | 0.0    |             |
|                            | Service Transfers      | 1128 19.23.17  | 17.1  | 50.0  | 96.8   | 1.8         | 0.0   | 1280  | 2077  | 3357                   | 58         | 64    | 203   | 2                        | 0           | 327                | 17.2  | 50.0  | 97.8  | 0.7    | 0.0         |
|                            | Service Relays         | 1132 20.23.17  | 15.0  | 51.0  | 0.0    | 0.0         | 0.0   | 650   | 0     | 650                    | 10         | 33    | 0     | 0                        | 0           | 43                 | 15.0  | 50.9  | 0.0   | 0.0    | 0.0         |
| Total Services             |                        |                |       |       |        |             | 5695  | 6034  | 11729 | 328                    | 329        | 1357  | 47    | 0                        | 2061        |                    |       |       |       |        |             |
| <u>Pipelines</u>           |                        |                |       |       |        |             |       |       |       |                        |            |       |       |                          |             |                    |       |       |       |        |             |
| Relay LTS                  | 1044 06.35.15          | 0.0            | 0.0   | 0.0   | 0.0    | 0.0         | 360   | 0     | 360   | 0                      | 0          | 0     | 0     | 0                        | 0           |                    |       |       |       |        |             |
|                            | Relay NTS              | 1047 10.39.16  | 0.0   | 0.0   | 0.0    | 0.0         | 0     | 0     | 0     | 0                      | 0          | 0     | 0     | 0                        | 0           |                    |       |       |       |        |             |
|                            |                        |                |       |       |        |             | 360   | 0     | 360   | 0                      | 0          | 0     | 0     | 0                        | 0           |                    |       |       |       |        |             |
| <u>Purge &amp; Relight</u> |                        |                |       |       |        |             |       |       |       |                        |            |       |       |                          |             |                    |       |       |       |        |             |
| Wages                      |                        |                |       |       |        |             | 1     |       | 1     |                        | 200        |       |       |                          |             |                    |       |       |       | 200    |             |
| Contractors                |                        |                |       |       |        |             |       |       | 0     |                        |            | 0     |       |                          |             |                    |       |       |       | 0      |             |
| Materials                  |                        |                |       |       |        |             |       |       | 0     |                        | 0          |       |       |                          |             |                    |       |       |       | 0      |             |

| UNIT COSTS(£s) |         |      |       |       |        |                |    |    |   | WORKLOAD |      |         |       | BUDGETED COSTS (£000s) |                |                          |         |   |   | BUDGETED UNIT COSTS (£s) |   |   |  |  |  |  |  |
|----------------|---------|------|-------|-------|--------|----------------|----|----|---|----------|------|---------|-------|------------------------|----------------|--------------------------|---------|---|---|--------------------------|---|---|--|--|--|--|--|
| NIAS<br>Code   | Product | Mats | Wages | Conts | Others | Real<br>Income | DL | CL | H | Total    | Mats | Wages   | Conts | Others                 | Real<br>Income | Total<br>Direct<br>Costs | N       | O | P | Q                        | R | S |  |  |  |  |  |
|                |         |      |       |       |        |                |    |    |   |          |      |         |       |                        |                |                          |         |   |   |                          |   |   |  |  |  |  |  |
|                |         |      |       |       |        |                |    |    |   |          |      |         |       |                        |                |                          |         |   |   |                          |   |   |  |  |  |  |  |
| A              |         |      |       |       |        |                |    |    |   |          |      | I=      | J=B*F | K=C*G                  | L=D*F          | M=                       | E*(F+G) |   |   |                          |   |   |  |  |  |  |  |
|                |         |      |       |       |        |                |    |    |   |          |      | A*(F+G) |       |                        |                |                          |         |   |   |                          |   |   |  |  |  |  |  |
|                |         |      |       |       |        |                |    |    |   |          |      | 2586    | 1488  | 5639                   | 216            | -765                     | 9164    |   |   |                          |   |   |  |  |  |  |  |
| Total REPEX    |         |      |       |       |        |                |    |    |   |          |      |         |       |                        |                |                          |         |   |   |                          |   |   |  |  |  |  |  |

Table A6.2 Objective Input Screen for Replacement Expenditure Woakload Phasing Direct Labour

| NIAS Code                   | Product       | P1   | P2   | P3   | P4   | P5   | P6   | P7   | P8   | P9   | P10  | P11  | P12  | Total | Qtr1 | Qtr2 | Qtr3 | Qtr4 | Total |
|-----------------------------|---------------|------|------|------|------|------|------|------|------|------|------|------|------|-------|------|------|------|------|-------|
|                             |               | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000 | 2000  | 2000 | 2001 | 2001 | 2001 | 2001  |
| Policy<180                  | 1111 15.22.17 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
|                             | 1113 15.22.17 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
|                             | 1112 16.22.17 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
|                             | 1114 16.22.17 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Diversion Recharge          | 1108 25.44.18 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Diversion Non Rech.         | 1110 25.44.18 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Domestic-Programme          | 1121 16.23.17 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Other Associated Service    | 1122 27.44.18 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Work                        |               |      |      |      |      |      |      |      |      |      |      |      |      |       |      |      |      |      |       |
| Domestic-After Escapes      | 1123 04.02.02 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Domestic-Others             | 1125 31.06.04 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Non Domestic                | 1126 18.23.17 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Service Transfers           | 1128 19.23.17 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Service Relays              | 1132 20.23.17 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Relay LTS                   | 1044 06.35.15 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Relay NTS                   | 1047 10.39.16 | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Purge & Relight Wages       |               | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Purge & Relight Contractors |               | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |
| Purge & Relight Materials   |               | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 8%   | 100%  | 25%  | 25%  | 25%  | 25%  | 100%  |





**Table A6.5 Phased Material Cost Activity-Based Budget for Replacement Expenditure**

[illegible]

**Table A6.6 Phased Wages Cost Activity-Based Budget for Replacement Expenditure**

[illegible]

|                               | NIAS Code | Product  | Budget P1 2000 | Budget Wages P2 2000 | Budget P3 2000 | Budget Wages P4 2000 | Budget P5 2000 | Budget Wages P6 2000 | Budget P7 2000 | Budget Wages P8 2000 | Budget P9 2000 | Budget Wages P10 2000 | Budget P11 2000 | Budget Wages P12 2000 | Total 2000   |
|-------------------------------|-----------|----------|----------------|----------------------|----------------|----------------------|----------------|----------------------|----------------|----------------------|----------------|-----------------------|-----------------|-----------------------|--------------|
|                               |           |          | Wages          | Wages                | Wages          | Wages                | Wages          | Wages                | Wages          | Wages                | Wages          | Wages                 | Wages           | Wages                 | £'000        |
| Other Associated Service Work | 1122      | 27.44.18 | 799            | 799                  | 799            | 799                  | 799            | 799                  | 799            | 799                  | 799            | 799                   | 799             | 799                   | 9592 10      |
| Domestic-After Eascapees      | 1123      | 04.02.02 | 6369           | 6369                 | 6369           | 6369                 | 6369           | 6369                 | 6369           | 6369                 | 6369           | 6369                  | 6369            | 6369                  | 76424 76     |
| Domestic-Others               | 1125      | 31.06.04 | 7377           | 7377                 | 7377           | 7377                 | 7377           | 7377                 | 7377           | 7377                 | 7377           | 7377                  | 7377            | 7377                  | 88527 89     |
| Non Domestic                  | 1126      | 18.23.17 | 815            | 815                  | 815            | 815                  | 815            | 815                  | 815            | 815                  | 815            | 815                   | 815             | 815                   | 9775 10      |
| Service Transfers             | 1128      | 19.23.17 | 5328           | 5328                 | 5328           | 5328                 | 5328           | 5328                 | 5328           | 5328                 | 5328           | 5328                  | 5328            | 5328                  | 63936 64     |
| Service Relays                | 1132      | 20.23.17 | 2760           | 2760                 | 2760           | 2760                 | 2760           | 2760                 | 2760           | 2760                 | 2760           | 2760                  | 2760            | 2760                  | 33117 33     |
| Relay LTS                     | 1044      | 06.35.15 | 0              | 0                    | 0              | 0                    | 0              | 0                    | 0              | 0                    | 0              | 0                     | 0               | 0                     | 0 0          |
| Relay NTS                     | 1047      | 10.39.16 | 0              | 0                    | 0              | 0                    | 0              | 0                    | 0              | 0                    | 0              | 0                     | 0               | 0                     | 0 0          |
|                               |           |          |                |                      |                |                      |                |                      |                |                      |                |                       |                 |                       | 1287811 1288 |

### Table A6.7 Phased Contractors Cost Activity-Based Budget for Replacement Expenditure

[illegible]



**Table A6.8 Phased Other Cost Activity-Based Budget for Replacement Expenditure**

[illegible]

### Table A6.9 Phased Other Real Income Activity-Based Budget for Replacement Expenditure

[illegible]



[illegible]

### Table A6.10 Budgeted Staff Cost Allocation to Non-Operational Activities and Products

| Activity | Activity Name  | Time Proportion | LDZ Staff Cost | Attend to Escape | New Mains New Housing | New Services New Housing | New Main Existing Hsg | New Services Existing Hsg | New Main Reinforcement Existing Hsg | New Main Reinforcement Non Domestic | Renew Mains Policy | Renew Mains Non Policy | Renew Service Domestic | Renew Service Non Domestic | Service Transfers | Service Relay Work Meters | Renew Mains Diversion Rechargeable | Renew Mains Diversion Rechargeable | Other Associated Service Work | Mains Leakage Survey | Basis of Allocation (% see Table 6.15)                               |
|----------|--|-----------------|----------------|------------------|-----------------------|--------------------------|-----------------------|---------------------------|-------------------------------------|-------------------------------------|--------------------|------------------------|------------------------|----------------------------|-------------------|---------------------------|------------------------------------|------------------------------------|-------------------------------|----------------------|--|
|          |  |                 | £7,000,000     | 1                | 5                     | 6                        | 10                    | 11                        | 14                                  | 19                                  | 25                 | 26                     | 27                     | 28                         | 29                | 30                        | 32                                 | 33                                 | 34                            | 51                   |  |
|          | and forecasts  |                 | 80,500         | 2,943            |                       |                          |                       |                           |                                     |                                     | 51,371             | 9,259                  | 4,787                  | 957                        | 2,872             | 378                       | 501                                | 509                                | 2,591                         | 5,332                | product  |
| ABC1602  | Provide engineering support (for short term tasks)       | 0.8%            | 52,500         | 1,919            |                       |                          |                       |                           |                                     |                                     | 33,503             | 6,038                  | 3,122                  | 624                        | 1,873             | 246                       | 327                                | 332                                | 1,690                         | 3,477                | Total cost of product  |
| ABC1633  | Produce engineering works invoices                       | 0.6%            | 39,200         | 1,433            |                       |                          |                       |                           |                                     |                                     | 25,015             | 4,509                  | 2,331                  | 466                        | 1,399             | 184                       | 244                                | 248                                | 1,262                         | 2,597                | Total cost of product  |
| ABC1660  | Evaluate network extension proposals                     | 7.9%            | 549,500        | 20,088           |                       |                          |                       |                           |                                     |                                     | 350,663            | 63,201                 | 32,680                 | 6,536                      | 19,608            | 2,578                     | -                                  | 3,418                              | 17,689                        | 36,397               | Total cost of product  |
| ABC1698  | Technical support – instrumentation                      | 0.4%            | 24,500         | 896              |                       |                          |                       |                           |                                     |                                     | 15,635             | 2,818                  | 1,457                  | 291                        | 874               | 115                       | 152                                | 155                                | 789                           | 1,623                | Total cost of product  |
| ABC1699  | Technical support – LP pipelines                         | 3.0%            | 206,500        | 7,549            |                       |                          |                       |                           |                                     |                                     | 131,778            | 23,751                 | 12,281                 | 2,456                      | 7,369             | 969                       | -                                  | 1,284                              | 6,647                         | 13,678               | Total cost of product  |
| ABC1700  | Technical support – NTS/LTS pipelines                    | 5.3%            | 367,500        | 13,434           |                       |                          |                       |                           |                                     |                                     | 234,520            | 42,268                 | 21,856                 | 4,371                      | 13,114            | 1,724                     | -                                  | 2,286                              | 11,830                        | 24,342               | Total cost of product  |
| ABC1704  | Support AGI/PRS/Governor maintenance                     | 9.9%            | 689,500        | 35,417           |                       |                          |                       |                           |                                     |                                     | 304,171            | 90,279                 | 22,226                 | 4,530                      | 29,630            | 15,347                    | 39,958                             | 9,783                              | 97,132                        | 41,026               | Cost of Wages  |
| ABC1705  | Support LP holder maintenance                            | 3.4%            | 234,500        | 12,045           |                       |                          |                       |                           |                                     |                                     | 103,449            | 30,704                 | 7,559                  | 1,541                      | 10,077            | 5,220                     | 13,590                             | 3,327                              | 33,035                        | 13,953               | Cost of Wages  |
| ABC1706  | Technical support – pressure systems                     | 1.3%            | 87,500         | 4,495            |                       |                          |                       |                           |                                     |                                     | 38,600             | 11,457                 | 2,821                  | 575                        | 3,760             | 1,948                     | 5,071                              | 1,241                              | 12,326                        | 5,208                | Cost of Wages  |
| ABC1714  | External liaison   | 1.9%            | 129,500        | 6,652            |                       |                          |                       |                           |                                     |                                     | 57,129             | 16,956                 | 4,174                  | 851                        | 5,565             | 2,883                     | 7,505                              | 1,837                              | 18,243                        | 7,705                | Cost of Wages  |
| ABC1801  | Co-ordinate and monitor service level agreements         | 0.6%            | 38,500         | 1,407            |                       |                          |                       |                           |                                     |                                     | 24,569             | 4,428                  | 2,290                  | 458                        | 1,374             | 181                       | 239                                | 244                                | 1,239                         | 2,550                | Total cost of product  |
| ABC1908  | Develop, deliver and attend internal training programmes | 2.8%            | 192,500        | 9,888            |                       |                          |                       |                           |                                     |                                     | 84,921             | 25,205                 | 6,205                  | 1,265                      | 8,272             | 4,285                     | 11,156                             | 2,731                              | 27,118                        | 11,454               | Cost of salaries & wages   |
| ABC2503  | Manage/administer contractors                            | 0.5%            | 35,000         | 1,067            |                       |                          |                       |                           |                                     |                                     | 21,327             | 3,163                  | 2,582                  | 420                        | 1,260             | -                         | 2,086                              | -                                  | 440                           | 2,656                | Spend to contractors   |
| ABC2505  | Schedule work  | 1.8%            | 126,000        | 7,412            | 7,412                 | 7,412                    | 7,412                 | 7,412                     | 7,412                               | 7,412                               | 7,412              | 7,412                  | 7,412                  | 7,412                      | 7,412             | 7,412                     | 7,412                              | 7,412                              | 7,412                         | 7,412                | Based on number of jobs raised (average of 17 products in this case) |
| ABC2513  | Prepare project >=2k                                     | 3.1%            | 217,000        | 12,765           | 12,765                | 12,765                   | 12,765                | 12,765                    | 12,765                              | 12,765                              | 12,765             | 12,765                 | 12,765                 | 12,765                     | 12,765            | 12,765                    | 12,765                             | 12,765                             | 12,765                        | 12,765               | Based on number of jobs raised (average of 17 products in this case) |
| ABC2519  | Establish & maintain wayleave/easement/CPO               | 0.1%            | 7,000          | 360              |                       |                          |                       |                           |                                     |                                     | 3,088              | 917                    | 226                    | 46                         | 301               | 156                       | 406                                | 99                                 | 986                           | 417                  | Cost of salaries & wages   |
| ABC2520  | Liaise with landowners                                   | 1.7%            | 119,000        | 6,113            |                       |                          |                       |                           |                                     |                                     | 52,496             | 15,581                 | 3,836                  | 782                        | 5,114             | 2,649                     | 6,896                              | 1,688                              | 16,764                        | 7,081                | Cost of salaries & wages   |
| ABC2521  | Support/visit site operations -- direct labour only      | 1.8%            | 126,000        | 6,472            |                       |                          |                       |                           |                                     |                                     | 55,584             | 16,498                 | 4,062                  | 828                        | 5,415             | 2,805                     | 7,302                              | 1,788                              | 17,750                        | 7,497                | Cost of salaries & wages   |
| ABC2534  | Update operational records and statistics                | 7.3%            | 507,500        | 29,853           | 29,853                | 29,853                   | 29,853                | 29,853                    | 29,853                              | 29,853                              | 29,853             | 29,853                 | 29,853                 | 29,853                     | 29,853            | 29,853                    | 29,853                             | 29,853                             | 29,853                        | 29,853               | Based on number of jobs raised (average of 17 products in this case) |

| Activity | Activity Name                       | Time Proportion | LDZ Staff Cost | Attend to Escape | New Mains New Housing | New Services New Housing | New Main Existing Hsg | New Services Existing Hsg | New Main Reinforcement Existing Hsg | New Main Reinforcement Domestic | Renew Mains Policy | Renew Service Non Domestic | Renew Service Domestic | Service Transfers | Service Relay Work Meters | Renew Mains Diversion Rechargeable | Renew Mains Diversion Rechargeable | Other Associated Service Work | Mains Leakage Survey | Basis of Allocation (% see Table 6.15) |  |
|----------|-------------------------------------|-----------------|----------------|------------------|-----------------------|--------------------------|-----------------------|---------------------------|-------------------------------------|---------------------------------|--------------------|----------------------------|------------------------|-------------------|---------------------------|------------------------------------|------------------------------------|-------------------------------|----------------------|--|--|
|          |                                     |                 | £7,000,000     | 1                | 5                     | 6                        | 10                    | 11                        | 14                                  | 19                              | 25                 | 26                         | 27                     | 28                | 29                        | 30                                 | 32                                 | 33                            | 34                   | 51                                     |  |
| ABC2535  | Manage engineering policy & process | 0.4%            | 24,500         | 1,441            | 1,441                 | 1,441                    | 1,441                 | 1,441                     | 1,441                               | 1,441                           | 1,441              | 1,441                      | 1,441                  | 1,441             | 1,441                     | 1,441                              | 1,441                              | 1,441                         | 1,441                | 1,441                                  | Based on number of jobs raised (average of 17 products in this case) |
| ABC2536  | Plan, analyse & design network      | 0.1%            | 4,900          | 288              | 288                   | 288                      | 288                   | 288                       | 288                                 | 288                             | 288                | 288                        | 288                    | 288               | 288                       | 288                                | 288                                | 288                           | 288                  | 288                                    | Based on number of jobs raised (average of 17 products in this case) |
| ABC2542  | Internal communication              | 28.4%           | 1,984,500      | 101,937          |                       |                          |                       |                           |                                     |                                 | 875,456            | 259,838                    | 63,970                 | 13,039            | 85,280                    | 44,173                             | 115,007                            | 28,157                        | 279,562              | 118,081                                | Cost of salaries & wages   |
| ABC2546  | External communication              | 4.3%            | 299,600        | 15,389           |                       |                          |                       |                           |                                     |                                 | 132,168            | 39,228                     | 9,658                  | 1,968             | 12,875                    | 6,669                              | 17,363                             | 4,251                         | 42,205               | 17,827                                 | Cost of salaries & wages   |
|          |                                     | 100.0%          | 7,000,000      | 337,540          | 57,446                | 57,446                   | 57,446                | 57,446                    | 57,446                              | 57,446                          | 3,048,011          | 821,846                    | 287,102                | 100,070           | 298,726                   | 158,219                            | 327,537                            | 125,981                       | 732,021              | 418,271                                |  |



Table A6.11ABB Product Cost Budget – LDZ North

| Product No.                  |   | Operational<br>ABC Cost | Non-<br>Operational<br>Cost | ABB<br>Product Cost<br>Budget | Basis of Allocation<br>(activity mapping rules as to Products)<br>based on Table 6.3 |            |                         |                            |
|------------------------------|---|-------------------------|-----------------------------|-------------------------------|--|------------|-------------------------|----------------------------|
|                              |   |                         |                             |                               | Workload<br>%  | Wages<br>% | Cost of<br>Product<br>% | Cost of<br>Contractor<br>% |
|                              |   |                         |                             |                               |  |            |                         |                            |
| Emergency 1st Call           |   | Table 6.3               | Table 6.14                  |                               |  |            |                         |                            |
|                              |   | £'000                   | £'000                       | £'000                         |  |            |                         |                            |
| 1                            | Attend to Escape                        | 335                     | 338                         | 673                           | 2.45%  | 5.14%      | 3.66%                   | 3.05%                      |
| 2                            | Provide Emergency Services              |                         |                             |                               |  |            |                         |                            |
| Maintenance – Design & Build |   |                         |                             |                               |  |            |                         |                            |
| 66                           | Relay Pipeline LTS                      | 0                       |                             | -                             |  |            |                         |                            |
| 70                           | Relay Pipeline NTS                      | 0                       |                             | -                             |  |            |                         |                            |
| Replacement                  |   |                         |                             |                               |  |            |                         |                            |
| 14                           | New Main Reinforcement Existing Housing |                         | 57                          | 57                            |  |            |                         |                            |
| 19                           | New Main Reinforcement Non Domestic     |                         | 57                          | 57                            |  |            |                         |                            |
| 25                           | Renew Mains Policy                      | 5848                    | 3,048                       | 8,896                         | 63.02%   | 44.11%     | 63.81%                  | 60.93%                     |
| 26                           | Renew Mains Non Policy                  | 1054                    | 822                         | 1,876                         | 12.28%   | 13.09%     | 11.50%                  | 9.04%                      |
| 27                           | Renew Service Domestic                  | 545                     | 287                         | 832                           | 3.00%  | 3.22%      | 5.95%                   | 7.38%                      |
| 28                           | Renew Service Non Domestic              | 109                     | 100                         | 209                           | 1.06%  | 0.66%      | 1.19%                   | 1.20%                      |
| 29                           | Service Transfers                       | 327                     | 298                         | 626                           | 2.23%  | 4.30%      | 3.57%                   | 3.60%                      |
| 30                           | Service Relay Work Meters               | 43                      | 158                         | 201                           | 0.38%  | 2.23%      | 0.47%                   | 0.00%                      |
| 32                           | Renew Mains Diversions Rechargeable     | -57                     | 328                         | 271                           | 10.81%   | 5.80%      | -0.62%                  | 5.96%                      |
| 33                           | Renew Mains Diversions Non-Rechargeable | 58                      | 126                         | 184                           | 1.20%  | 1.42%      | 0.63%                   | 0.00%                      |
| 34                           | Other Associated Service Work           | 295                     | 732                         | 1,027                         | 0.54%  | 14.09%     | 3.22%                   | 1.26%                      |
| 51                           | Mains Leakage Survey                    | 607                     | 418                         | 1,025                         | 3.02%  | 5.95%      | 6.62%                   | 7.59%                      |
| Connections                  |   |                         |                             |                               |  |            |                         |                            |
| 5                            | New Mains New Housing                   |                         | 57                          | 57                            |  |            |                         |                            |
| 6                            | New Services New Housing                |                         | 57                          | 57                            |  |            |                         |                            |
| 10                           | New Main Existing Housing               |                         | 57                          | 57                            |  |            |                         |                            |
| 11                           | New Service Existing Housing            |                         | 57                          | 57                            |  |            |                         |                            |
|                              |   | 9164                    | 7,000                       | 16,164                        | 100.00%  | 100.00%    | 100.00%                 | 100.00%                    |

## **Chapter 7                      Case Study Three: Crown Prosecution Services, Technical, Human Behavioural, Organisational and Cultural Perspectives**

### **7.1.            Introduction**

Various aspects of ABB systems have been examined in the case studies presented in the previous two chapters. These case studies include the development of technical models in SCB and Transco, and the exploration of various influential factors related to the two organisations, mainly from the technical, organisational and cultural perspectives. Given an extensive co-operation and accessibility granted by Crown Prosecution Services (CPS) (see Table 7.1), a relatively complete picture about the ABB experience at CPS can be presented in this chapter.

CPS carries out criminal justice duty in England and Wales. Being one of the governmental agencies, CPS is funded by the Treasury. The cost structure of CPS mainly consists of prosecution costs and running costs. The former refers to the compensation paid out to other parties if CPS loses lawsuits and this area of cost is not subjected to governmental budgetary control<sup>1</sup>. The latter refers to the operational expenditures involved in running CPS's functional departments at Headquarters (HQs) and Area Offices (Areas) across England and Wales (e.g. salaries, bills and rental costs of office premises). Currently CPS has 42 Areas, which have been restructured from its former 13-Area structure in an attempt to align with the Police Force's boundary. The 42 Areas carry out prosecution duties in alignment with the Police Force and Courts under the UK Criminal Justice System (CJS).

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<sup>1</sup> Under the view of UK's Criminal Justice System, it is not viable to put a budget to the prosecution, since the consequence of cost or a budget limit will divert the objectives of carrying out the justice. Thus no budget limit is given to CPS's prosecution cost.

This case study reports and analyses a range of issues associated with the introduction of an ABB model, which was a central aspect of CPS's budgeting allocation process for its Areas' running cost (excluding HQs' running cost) for the financial year 2000-01. During this period of introducing the ABB model CPS also faced a number of constraints. Firstly, the elected Labour government has introduced a 'value-for-money' policy for public funding. This resulted in a step-cut of the overall budget provisions during a 3-year funding period (1998-2001). The funding allocated to CPS for the year 2000-01 was 4.5% less than the previous year (1999-2000) and approximately 8% less than that for the first year of the 3-year funding period (1998-9). Secondly, CPS's workforce structure was inflexible. Given that more than 85% of CPS's running costs are staffing costs, the first constraint has resulted in direct consequences to the workforce. In a sense that the fund for the year 2000-01 was merely enough to pay its workforce. Finally, CPS's efforts to improve its performance were constrained by a relative inefficient interaction between CPS and other agencies in the CJS. As a result, ABB was not used directly to allocate the Areas' budgets for the financial year 2000-01 but as a comparative mechanism to highlight the differences between the budgets based on the ABB allocation and that on the conventional method. The conventional method used in the actual allocation of Areas' budgets was an 'across-the-board' cut approach, i.e. a 4.5% cut of Areas' budgets from the year 1999-2000. However, the value of ABB was soon recognised by CPS during this budgeting exercise and the management decided that ABB was to be the only method for the following areas of budget allocation (see Sections 7.4.3 for detailed explanation).

- (i) An additional fund obtained from the Treasury to ease the budget constraints in the financial year 2000-01,
- (ii) A special fund to promote new initiatives in 'Performance Improvement Programme (PIP)',
- (iii) The entire Areas running costs budget starting from the financial year 2001-02.

This chapter begins with an explanation of the selection to CPS, then proceeds with a brief introduction to CPS background. This is followed by an illustration of CPS's ABC model with the aid of an appropriate demonstration. Analyses of CPS's ABB system implementation from the technical, behavioural, organisational and cultural perspectives, are then presented.



## 7.2. Rational of Choice

### 7.2.1 *Selection of Crown Prosecution Services: Some Background*

CPS responded positively to the initial calls to this research. An initial visit to CPS was then organised in October 1999. During the initial visit, two members of its Activity-Based Cost Management (ABCM) unit described briefly about their ABC experience. During the conversation they also expressed CPS's interest and intention towards the adoption of ABB in the annual budgeting exercise for the financial year 2000-2001. In addition, external projects, such as this research, were perceived to be beneficial to CPS because academic knowledge was considered as an additional input, which would help the development and refinement of CPS's ABC and ABB systems. Thus this perception became a major driving force which helped this case study to gain relatively extensive access to personnel from a wide spectrum and at various level of CPS's hierarchy (see Table 7.1 for the profile of the interviewees at CPS).

On the basis of the mutually agreed time-scale allotted to this research and the work commitments of the selected interviewees, it was agreed that staff members from CPS's 5 Areas (out of the 42 Areas, or a sample size of 12%) should be involved in interviews of this research. Furthermore, three senior members of staff were also involved in this research. They were the chief executive and the finance director (who were members in Chief Executive Management Committee (CEMC)<sup>2</sup>) and the head of Internal Resource Performance Management Branch (IRMPB) (who was in charge of internal resource allocation to 42 Areas and making budget proposals to CEMC for final decision to Areas budgets).

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<sup>2</sup> There are two top-level management boards: one is Directors' Board, and the other is CEMC. The former has the ultimate control over all the activities and issues in CPS. The latter focuses on management issues (e.g. budgeting and ABC) and reports to the Directors' Board.

Table 7.1 Profile of the Interviewees at Crown Prosecution Services

| Interviewee | Position                    | Location                      | Involvement with ABC/ABB |  | Education Background   | No. years with CPS |
|-------------|-----------------------------|-------------------------------|--------------------------|--|--|--------------------|
|             |                             |                               | Producer /User           | Brief Description  |  |                    |
| *Contact    | member of ABCM unit         | Headquarter York              | Producer                 | Design, implement and update/refine CPS's ABC model  | ----   |                    |
| *           | member of ABCM unit         | Headquarter York              | Producer                 | Design, implement and update/refine CPS's ABC model  | ----   |                    |
| A           | Chief Executive             | Headquarter London            | User                     | Oversee the management process and make strategic decisions based on various information, including ABC/ABB.   | BSc in Engineer, MSc in management studies, Ph.D. in industrial sociology                | 2                  |
| B           | Finance Director            | Headquarter London            | User                     | Oversee the financial management process and review Areas' performance and budget positions, make strategic decisions based on information, including ABC/ABB. | BA and MA in Economics.  | 11                 |
| C           | Head of IRPMB               | Headquarter , London          | Producer                 | Create and review annual Areas budget using ABB.   | -----  | 13                 |
| D           | Area Chief Crown Prosecutor | CPS South Wales, Cardiff      | User                     | Total responsible and accountable for the area (including budget and case load)  | Dual degrees in Law, Barrister   | 14                 |
| E           | Area Business Manager       | CPS South Wales, Cardiff      | User                     | Overseeing all business and administrative tasks concerns in the Area, use ABC/ABB information.  | Minimal qualification, Fellow of Institute of Legal Exces, Diploma in Consultancy Skills | 14                 |
| F           | Branch Chief Prosecutor     | CPS South Wales Area, Cardiff | User                     | Managing Branch activities and processes (including budget and case load)  | Degree in Law and Barrister  | 14                 |
| G           | Branch Chief Prosecutor     | Wales Area, Cardiff           | User                     | Managing Branch activities and processes (including budget and case load)  | Law degree and Barrister   | 12                 |
| H           | Area Business Manager       | CPS Lincolnshire, Lincoln     | User                     | Overseeing all business and administrative tasks concerns in the Area, use ABC/ABB information   | Teacher Degree, MA in Human Resource Management  | 12                 |
| I           | Area Chief Crow Prosecutor  | CPS Lincolnshire, Lincoln     | User                     | Total responsible and accountable for the area performance (including budget and case load)  | Degree in Law and Barrister  | 14                 |
| J           | Area Chief Crown            | CPS Merseyside,               | User                     | Total responsible and accountable for the area   | BA in Geography  | 14                 |

| Interviewee | Position                    | Location                          | Involvement with ABC/ABB |  | Education Background                           | No. years with CPS |
|-------------|-----------------------------|-----------------------------------|--------------------------|--|--|--------------------|
|             |                             |                                   | Producer /User           | Brief Description  |  |                    |
|             | Prosecutor                  | Liverpool                         |                          | performance (including budget and case load)   | and Economics, Solicitor                       |                    |
| K           | Area Business Manager       | CPS Merseyside, Liverpool         | User                     | Management of a whole area, use ABC/ABB and other information to assist the operation.       | BA in Geography, Diploma in Management Studies | 14                 |
| L           | Branch Crown Prosecutor     | CPS Merseyside, Liverpool         | User                     | In charge of a branch's business performance, ensure the accurate record of activity-timing. | Degree in Law and Solicitor                    | 14                 |
| M           | Area Business Manager       | CPS Nottingham shire, Nottingham  | User                     | Management of a whole area, use ABC/ABB and other information to assist the operation.       | Diploma in management                          | 6                  |
| N           | Area Chief Crown Prosecutor | CPS Nottingham -shire, Nottingham | User                     | Total responsible and accountable for the area performance (including budget and case load)  | Degree in Law and Solicitor                    | 14                 |
| O           | Area Chief Crown Prosecutor | CPS Suffolk, Ipswich              | User                     | Total responsible and accountable for the area performance (including budget and case load)  | Degree in Law and Solicitor                    | 14                 |
| P           | Area Business Manager       | CPS Suffolk, Ipswich              | User                     | Ensure Area's business performance and budget allocation.                                    | ---  | 14                 |

The CPS's re-organisation exercise (see Section 7.3.1 for details) had resulted in an expansion of number of Areas from 13 to 42, starting from 1st April 1999. The post of Area Business Manager (AreaBM<sup>3</sup>) was created on the basis of some recommendations made in a consultancy report, "The Review of the Crown Prosecution Service" (which is also called the 'Glidewell Report'<sup>4</sup> in CPS).

<sup>3</sup> In CPS, it was abbreviated as ABM. For the purpose of clarification from the same abbreviation for Activity-Based Management, which is commonly known as ABM in activity-based literature, this study uses AreaBM to avoid unnecessary confusion.

<sup>4</sup> The report was published in June 1998, following with a review of practices in CPS. It was commenced by Glidewell working group, thus the report was also called as 'Glidewell Report' in CPS. Within this report, 75 recommendations were made to the Attorney General. Some of the recommendations related to the change of legislation in CJS, which would take a longer time to implement. Some of the recommendations related to the organisational structure, which could be implemented relatively quickly. For example, the move to 42 Areas in order to align with the existing police boundaries was one of them. The need for the new post Area Business Manager was another recommendation made in the Report. The purpose of this post was to work in partnership with the new CCP post to run an Area.



The different responsibilities between Area's Chief Crown Prosecutor (CCP) and AreaBM were clearly described as (Job Profile, internal document): '*... the focus of CCP is seen as the core business of prosecuting, the Area Business Manager enables this, by fulfilling a wide range of management task on their behalf. The CCP is accountable for everything within their Area, and the Area Business Manager is responsible for the CCP alone. For this relationship to be successful, the 2 posts will need to be seen as a partnership in many aspects of Area business....*'

As a result of this re-organisation exercise, all the interviewees involved in this research were either newly appointed or re-appointed to their current job positions. Therefore despite the fact that the majority of the interviewees have been with CPS for ten years or more, technically, they have held their current positions only for about a year or so at the time of this case study.

### 7.2.2 Pilot Test

A pilot test was undertaken prior to the commencement of the main case study. The purposes of this pilot test were to identify issues relevant to CPS, to ensure consistency of terminology used, and to provide information for the formulation of guideline questions which would be used for the interviews in the main case study. The pilot test was conducted in October and November 1999, when CPS was about half way through with the new structure and before the actual attempt to implement an ABB model. Data collected from this pilot test was naturally somewhat different from that obtained when an ABB model was being developed in 2000. Therefore, the data from pilot test is excluded from data used in the main study.

On the basis of the issues reported in the literature (as indicated in Chapter 3), questions were developed for staff members at two main levels of CPS's management hierarchy in the budgeting process, namely budgeters and budgetees<sup>5</sup>. To ensure relevance

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<sup>5</sup> Top, middle and Area managers were the three groups of interviewees in initial requests. It was proved to be a generally correct choice as top managers were in charge of approving the proposed budget from the middle managers, who were in charge of working out budget figures on the basis of understanding of local factors and budget methods, and the Area managers received the budgets issued to them and allocated further down to Branch level.

of interview questions and the use of appropriate terminology (e.g. activity-timing, ABC earning), a CPS Area was selected to undertake as a pilot test site. Two interviewees from this Area were involved in this pilot test (i.e. the AreaBM, and one Branch Crown Prosecutor (BCP) from one of its branches). In terms of the description of various systems, their understandings of ABC and their views about CPS's budgeting process, their answers and suggestions provided invaluable information in the formulation and refinement of the final version of the guideline of questions (see Appendix 3).

As a result of this pilot test, two sets of guideline questions were developed –one set for the top and middle level managers and another set for Area managers (including Areas' Chief Crown Prosecutors (CCPs), AreaBMs and BCPs). It was the intention that some comparison and confirmation between these two groups of managers should be drawn. For example, when a particular question was asked to the senior managers -- 'What kind of targets (difficult, moderate, or easy) do you tend to set for your Area managers?', a corresponding question was also included in the questions for the Area managers – 'Do you perceive your current targets to be difficult, moderate, or easy?' (see the two sets of guideline questions for budgeters and budgetees in Appendix 3). The pilot test had therefore ensured the formulation of sufficiently detailed and relevant questions for the main case study.

### 7.2.3 *A Brief Description of the Case Study Process*

The main case study that involved 16 interviewees at both HQs and Areas required co-ordination. A contact person from CPS, who is a member of the ABCM unit (see '\*Contact' in Table 7.1), acted as a solo co-ordinator in getting the initial consents from a list of selected personnel. The researcher then made appointments with selected interviewees individually. Copies of the guideline of questions were posted to the interviewees accordingly prior to the arranged interview meetings so that the interviewees could prepare themselves for the meetings. In addition to the standard questions in the guideline questions, issues based on selected topics that the interviewees wished to discuss in-depth were also explored during the meetings.

As the research progressed, the researcher was also invited to observe a 3-day CPS's annual budget allocation exercise. During this exercise, it was learnt that CPS operated a top-down or imposed budgeting approach, in that the budget proposal was prepared by the core members from IRPMB and then submitted to CEMC for approval. It was also evident that budgetary requests from Areas were collected prior to this exercise. In addition to the researcher, one of AreaBMs (i.e. Interviewee H) and another member of staff who was in charge of accounts for lawyer agents<sup>6</sup> were also invited to attend this 3-day exercise. The aim of the presence of the AreaBM, according to Interviewee C, the Head of IRPMB, was to *'let the Areas know how their budgets are being constructed, what scenarios are being applied, and how we took individual Area's local factors into consideration. We will continue to invite other Area managers for the next year's budget round.'* This intention was obviously well received (see views from Interview H).

[Interview H, AreaBM after the exercise] ... I did go to that meeting on national budget allocation. ... I enjoyed that budgeting exercise very much. It helped me understand the process. I have not seen it before. I always wanted to see how it worked. ...

During the course of the interviews and the budgeting exercise, a comprehensive array of relevant documents and worksheets was made available to the researcher. Audiotape recording was allowed for the entire duration of all research interviews and these tapes were then transcribed for the purpose of data analysis.

## 7.3. Crown Prosecution Services

### 7.3.1 Company Background

CPS is an UK government agency that carries out legal justice services to the public against criminal offences in England and Wales. It was created by governmental policy act in 1985 and was in full operation in October 1986. As a government agency, CPS

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<sup>6</sup> Lawyer agents provide CPS with self-employed and qualified barristers. When there is a shortage of prosecutors, CPS uses those agency lawyers to attend courts' sessions. CPS has a central unit to look after the

*Footnotes continued on the next page*

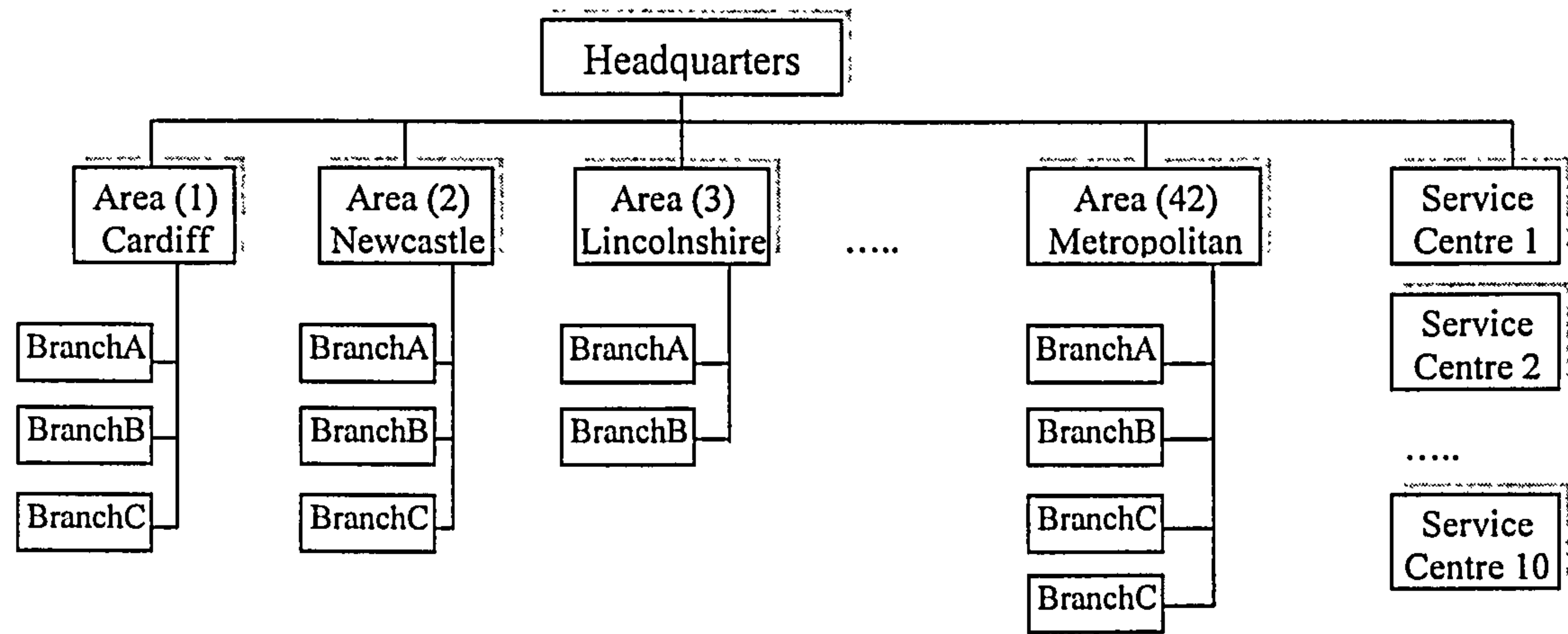


is fully funded by the Treasury on the governmental funding principles in a three-year budget cycle (e.g. April 1998 -- March 2001 for its recent budget cycle, and April 2001- March 2004 for the forth-coming budget cycle).

CPS's operational structure has changed from time to time. However, regardless of these changes, the constant feature is a geographic network of operational units grouped in Areas. Each Area covers a number of metropolises, cities, and rural counties. The nature of CPS work naturally requires the maintenance of close links with the Police Force and the Courts (i.e. the Magistrate's Court and the Crown Court). Formally one Area was geographically linked with two or three Police Forces' boundaries. With an aim to improve efficiency, cost effectiveness and accountability within CPS and between CPS and Police Force, CPS was restructured in April 1999 into a 42-Area structure. At present each Area is aligned with one of the existing Police Force boundaries. An exception is CPS's London Area, which is aligned with the City of London Police and the Metropolitan Police.

The current organisational structure of CPS comprises two HQs (i.e. one is based in London and the other is in York), 42 Areas and 10 service centres. The HQs manage the whole CPS processes to ensure quality and consistency of work and other corporate functions (e.g. corporate planning, strategic management control, human resources, and public relations). Within the 42 Areas, the larger Areas consist of a few branch offices. The smaller Areas consist of two teams, rather than branches, to deal with legal work in the Crown Courts and the Magistrate's Courts (i.e. the Magistrate's Court team and the Crown Court team). CPS has 10 service centres, which had been reduced from 13 in April 2000, and each of them performs various essential supporting functions (e.g. payment of staff payroll, bills, accommodation costs of Areas' premises and management of leasing contracts of those premises) for 3 or 4 Areas. Diagrammatically, CPS's organisational structure is shown in Figure 7.1.

Figure 7.1 Organisational Structure of Crown Prosecution Services



7.3.2 Introduction of Activity-Based Costing at CPS

The introduction of ABB system in CPS can partly be attributed to the confidence in and the general acceptance of its ABC system. Hence a brief description of CPS’s ABC system is included in this section.

CPS regards ABC as a system, which produces improved staff costing information and provides some links between activities and processes. The main activities in the whole process of prosecution include advice, review and case preparation, presentation at courts and case disposal (Internal Publication by Management Audit Services (MAS), ‘The CPS Benchmarking Report 1998/99’, April 1999). ‘The broad concept of activity costs within CPS is that the number of files handled, multiplied by staff time, is equal to the total cost of staff time spent on the prosecution process (Ibid, p.3)’.

The purposes of implementing this ABC system are (Ibid.):

- To identify good practice and more efficient and cost effective working methods which can improve efficiency.
- To provide Area managers with a greater understanding of the costs and efficiency of their business processes/practices.
- To help to prevent each Branch/Area “re-inventing the wheel” in their pursuit of efficiency and effective service.

In that sense, only the activities with direct links to the prosecution processes, which are carried out by Areas, are subjected to be measured by the ABC system.

The attempt of using innovative paradigms to improve cost-effectiveness is not a recent phenomenon in the UK government services. In the 1950s, Office based Work Measurement (OWM), which required the management to measure the workload and to set standards of output, quality and performance, had been introduced to governmental services (Internal Publication by MAS, 'A Guide to Activity Based Costing in the CPS 2000/2001'). In 1976, a review of all the OWM complementing systems was undertaken and found some significant shortcomings (Ibid.):

- The various individual governmental agencies (e.g. employment services, department of social services, and CPS) that implemented the OWM system had shown a general lack of understanding of the system.
- Consequently, various errors had occurred in the calculation of staffing need. These errors had significantly reduced the effectiveness of the OWM system which was designed to be used for management purposes.
- Due to a lack of system maintenance and models updating, changes in an organisation and working practice were not updated. The OWM system model thus ran a risk of becoming obsolete.

The findings of these shortcomings and problems had resulted in improvements being made to the OWM systems at some of the governmental agencies. However, some other governmental agencies (e.g. CPS) had decided to drop the OWM system and use some of the relatively advanced performance measurement and enhancement paradigms such as TQM and ABC.

When ABC was first introduced to CPS in 1995, there was a significant reduction in reported crime cases (i.e. caseload, not workload<sup>7</sup>) in the U.K., accompanied by increases in staff costs. The Treasury raised concerns about this trend. By using ABC information, CPS was able to demonstrate that greater case complexity and additional tasks involved accounted for the increases in staff costs during this period. Besides this, two additional factors were also attributed to CPS's use of ABC (Internal Publication by MAS, 'A Guide to Activity Based Costing', 1999):

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<sup>7</sup> Caseload refers to number of cases that CPS deals with. Workload refers to the complexity of work that one case involves. For example, two cases, Shop-lifting and Murder, the caseload accounts for 1 for each of the two cases, however, the workload involved for prosecuting the former case is obviously straightforward and simpler than the latter one.



- (i) ABC information helped to improve openness and external accountability. For example, CPS constantly faced questions on how the CPS's budget was being spent. With ABC information, CPS was able to demonstrate to the public about the cost differences between a motoring offence case and a burglary, or youth cases as opposed to rape cases.
- (ii) The use of ABC information offered an opportunity to distribute budgets within CPS based on need rather than precedent. This issue related directly to the internal distribution of resources. The perceived imbalance in the distribution of resources was common knowledge in CPS, in that many believed that those who shouted loudest got the most. It was anticipated that ABC was able to address this issue (this was embedded in the attempt to use ABB, see also the Section 7.4).

An ABC implementation team, consisted of 2 full-time members of staff with expertise in the ABC system (i.e. the two personnel from the ABCM unit who were interviewed during the initial visit) and a few prosecutors and administrative staff, was subsequently formed to commence the initial ABC implementation in 1995. At the same time arrangements were put in place for staff within IRPMB to develop an ABC modelling system (that has now evolved to become part of the Corporate Information System (CIS)) that would integrate ABC timings, volumes and staff costs so as to inform the budgeting process for allocating Areas' running costs.

From the lessons learned from the implementation of the OWM system, it was decided that the new ABC system would need constant maintenance and updating to accommodate changes and new initiatives at CPS. In order to do so, an ABCM unit, which consisted of the two full-time members of the ABC implementation team and a few part time members of staff, was set up. One of the members from the ABCM unit stated that *"CPS recognised the fact that constant feedback in respond to the needs from the front line management is critical to the successful implementation of an ABC system. Also, it is equally important to refine the ABC model on a continuous basis. Co-ordination of various activities is also given a high level of attention."* Furthermore an ABC steering group, which consists of members from the ABCM unit, AreaBMs, Areas' CCPs, senior executives, was also formed to oversee the implementation process at a strategic level.

The general expectation from the management was that the use of ABC would enable CPS to model the complexity of the tasks undertaken by CPS so as to reflect the costs associated with the tasks in a consistent and rational manner. Consequently any observed increases in costs would be traceable and justifiable. Another use of the ABC information was for the enhancement of the existing performance management index -- the Performance Indicator (PI) system. Although the PI system was introduced before the implementation of the ABC system, positive opinions were generally held by staff members because 'the ABC information was able to make some elements in the PIs more meaningful.' Simply put, 'ABC does not replace PIs but illuminates them to make their message meaningful (Internal Publication by MAS, 'A Guide to Activity Based Costing', 1999, p. 3).'

#### 7.3.2.1. CPS's ABC Model

The main role of CPS is the prosecution of alleged criminal offenders in England and Wales. This role includes five main functions:

- Advising the police on possible prosecutions.
- Reviewing prosecutions started by the police to ensure that the right defendants are prosecuted on the right charges.
- Preparing cases for prosecution in court.
- Prosecuting cases at the Magistrates' court and instructing counsel to prosecute in the Crown Court and higher courts.
- Working with other agencies to improve the effectiveness and efficiency of the criminal justice system.

These functions thus determine the various activities that CPS's ABC system needs to monitor and measure.

As described in section 7.3.1, many of the 42 Areas have a number of branches. The lowest level of activities that CPS's ABC system reports is at branch level. Thus, the re-organisation of the number of Area does not seriously affect the ABC system, apart from the re-groupings of branches according to new Area structure.

The starting point of the CPS's ABC system involves the construction of workflow process charts, which show the prosecution activities at the Magistrate's Court and

the Crown Court respectively. This is followed by the calculation of average duration of these activities.

In the construction of an ABC system, three bases are considered (Internal Publication by MAS, 'A Guide to Activity Based Costing', 1999):

- (i) Prosecution activities which are directly related to its prosecuting process and can be timed;
- (ii) Relaxation allowance timing which is related to restoration from prosecution activities and can be timed in percentage term on the timing of prosecution activities; and
- (iii) Travelling time.

The timing of prosecution activities is measured in three ways (Ibid., 1999):

- (i) Using the Predetermined Administrative Data Systems (PADS) which are internationally recognised timings for basic actions such as reading, writing, filing and so on.
- (ii) Using Analytical Estimation, obtained from experienced lawyers and caseworkers who provide estimates of time required for actions such as review and court attendance.
- (iii) Using Observed Timing and Activity Sampling undertaken by the ABC implementation team which can be used to validate estimates, particularly court times.

In determining the relaxation allowance timing, CPS allocates an appropriate percentage in relation to the actual timing spent on prosecution activities to the ABC model. CPS believes that regular period of rest, recovery and refreshment will complement and enhance performances. Hence rather than considering it as a 'non-value added' activity, CPS uses a timing allowance to take account of time spent on relaxation in its ABC model in order to measure the activity timings in a more realistic manner.

Travelling time relates only to the time taken in travelling to deal with casework (e.g. attend the courts). It represents around 2% to 10% of the use of the resource in a branch. There are significant differences in travelling time between Areas located in inner cities and those in counties. For example, for some Areas located within the city, it may only take a lawyer 10 minutes on foot to attend a court session and subsequently less resources are



required in those Areas. Whereas for some Areas in counties, lawyers may take up to 2 hours by car to reach a court. The latter case requires more of a lawyer's time in travelling to attend a court session and incurs a higher cost on travelling expenditure, and consequently lesser number of court sessions can be attended by the lawyer. Whilst some mechanisms (e.g. PADS) are applied in the derivation of the timing for prosecution activities, timings for relaxation allowance and travelling are determined using averaged values. Different views do exist on the appropriateness of using averaged measures for travelling time and relaxation allowance to allocate resource. Nonetheless the averaged ABC timings and costs relating to relaxation allowance and travels have been incorporated as standard measurements, called "Should Take" in CPS's ABC terms.

The standard measurements relating to the utilisation of resources are recorded in CPS's CIS (the construction of activity times and costs is shown in Exhibit A1 in 'Notes' at the end of this Chapter). Each branch is required to record its own finalised cases (caseload) on a monthly basis which is then fed into the CIS for the production of its quarterly ABC report. This caseload volume information, together with "Should Take" timings and actual payroll costs, allows IRPMB to conduct ABC analyses. A quarterly ABC comparison report is then produced on the basis of "Should Take" and "Did Take" costs. The accuracy of recording the caseload volumes is thus important since it reflects throughput of prosecution service. This can then be used as a standard measurement to the actual use of resources and performance<sup>8</sup> (to a certain extent).

On the basis of 'Should-Take' ABC information, an Area's ABC ratio is then calculated by comparing its month-to-date ABC outcomes (i.e. ABC performance, in CPS's term) to the entire CPS's month-to-date ABC performance. An Area's ABC performance is calculated by multiplying the 'Should Take' ABC costs per case by its caseload volumes (see Table 7.2, for the purpose of confidentiality, the figures shown are not the actual figures).

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<sup>8</sup> CPS's performance is also deterred by other criteria, such as the difficulties of cases and court adjournment. Thus caseload is only a part of the measure on the overall performance.

Table 7.2 A Sample of CPS’s ABC Report (December 2000)

|                 | Crown Court                 |                                   | Magistrate’s Court          |                                   | ABC Earnings (December) | ABC Earnings (YTD) | ABC Ratio   |
|-----------------|-----------------------------|-----------------------------------|-----------------------------|-----------------------------------|-------------------------|--------------------|-------------|
|                 | *No. of finalised cases (A) | <sup>a</sup> ABC Cost (£’000) (B) | *No. of finalised cases (C) | <sup>a</sup> ABC Cost (£’000) (D) | (E)= (B) + (D) (£’000)  | (F) (£’000)        | (G)         |
| <b>42 AREAS</b> | <b>36</b>                   | <b>4130</b>                       | <b>2046</b>                 | <b>3816</b>                       | <b>7946</b>             | <b>26798</b>       | <b>100%</b> |
| Area 1          | 3                           | 251                               | 20                          | 231                               | 482                     | 914                | 3.41%       |
| Area 2          | 1                           | 131                               | 8                           | 115                               | 246                     | 257                | 0.96%       |
| Area 3          | 0                           | 0                                 | 10                          | 120                               | 120                     | 193                | 0.72%       |
| .....           |                             |                                   |                             |                                   |                         |                    |             |
| Area 41         | 5                           | 320                               | 12                          | 138                               | 458                     | 1372               | 5.12%       |
| Area 42         | 2                           | 205                               | 6                           | 94                                | 299                     | 308                | 1.15%       |

\* ‘no. of finalised cases’ represents the cases that have been finalised in that month. The cases include all types of cases (e.g. shop-lifting, motor offences, murder trial, etc..) being prosecuted at the Crown Courts and Magistrate’s courts.

<sup>a</sup> ‘ABC costs’ are derived from multiplying different types of cases with respective ‘Should take’ ABC timings.

In Table 7.2, Columns A and C are the quarterly finalised cases in both courts (from October to December). Columns B and D are the ‘Should Take’ ABC costs. The ABC earnings in Column E refer to the quarterly ABC performance. The ABC earnings in Column F is the accumulated ABC figures from April to December. Each Area’s accumulated ABC earnings is then used to compare with the total accumulated ABC earnings to derive the ABC ratios in Column G.

7.4. Activity-Based Budgeting System at CPS

CPS regards ABB as the use of ABC information in its budget allocation process. CPS’s ABC system only models the activities undertaken by Areas (but not activities carried out by the HQs and Service Centres). Therefore, its ABB system is used for informing the Areas’ annual running costs<sup>9</sup> budgets during the budget setting process.

<sup>9</sup> Areas running costs include all expenditures to run an Area, such as salary costs and photocopying, and rental costs. CPS considered the latter as ‘ring-fenced’ costs and excluded for ABB purpose. Because CPS recognised that Areas have little influence on costs of the leased office spaces in the annual budget term and the rental costs have to be paid, although Areas can plan to reduce the unit cost of rental in long-term.

It is notable that CPS's budgeting process does not follow the usual budgeting route (i.e. from forecasting to resource allocation). CPS's future workload, i.e. the prosecution cases, is largely dependent on the actual number of police arrests in the coming year. Thus it is not a common practice at CPS (or indeed in the field of legal practice) to forecast any future criminal offences as it does not have capacity nor expertise to enable such forecast<sup>10</sup>.

#### **7.4.1      *The Circumstances and Rationale for the Introduction of the ABB system***

##### **7.4.1.1.      The Budget Pressure CPS Faced in the Financial Year 2000-01**

In an attempt to increase 'value-for-money' in public spending, the Treasury introduced a continuous reduction target for budget provision to CPS over a three-year budgeting period (e.g. an approximately 8% actual reduction on fund over 1998-2001). Therefore, the CPS budget for the fiscal year 2000-01, which was the end of this three-year budgeting period, was £13 million or a reduction of 4.5% as compared to the budget in 1999-2000.

The pressure of this budget reduction was compounded by the fact that an increase of CPS's running costs for both HQs and 42 Areas were estimated as £1.6 million in 2000-01, as compared to those in the year 1999-2000. This increase yielded the budget reduction pressure for another 0.17% to 4.67%. The forecasts of a minimum inflation rate 2.5% for the year 2000-01 indicated an additional pressure for the demand for pay increase to keep up with the inflation. The net impact of all these circumstances was a general budget reduction of 7.8% for the Areas and HQs in the year 2000-01.

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<sup>10</sup> During the course of this case study, CPS has developed a 36 rolling ABC ratio in an attempt to better predict future criminal offences by learning from pattern built on the past 3 years.



#### 7.4.1.2. The Rationale for the Introduction of the ABB System

The ABB system was originally planned to be used in CPS's budgeting process for the allocation of its Areas' running costs budget for the year 2000-2001. As indicated during the 3-day budgeting exercise (see Section 7.2.3), the rationales for this introduction of ABB were classified into three areas: firstly, to address some problems associated with its conventional budget allocation process; secondly, to meet the need of increased accountability from the re-organisation; and finally, to capitalise on the growing knowledge and confidence on its relatively well established ABC system.

According to Interviewee C, the Head of IRPMB, CPS had been employing a conventional budgeting method since it was set up in 1986. The conventional budgeting method was established on an incremental and line-by-line basis and undertaken in a bottom-up fashion. Some problems that were associated with the use of conventional budget allocation methods were listed as follows (Internal Publication by MAS, 'A Guide to Activity Based Costing in the CPS', 2000/01; discussion with Interviewee C):

- Difficulty in linking performance (e.g. timeliness of committal papers to defence, replies to complaints in 10 days) to expenditure,
- A lengthy budgetary process,
- A lack of budgetary negotiation criteria and lack of an objective criteria for budget allocation.

Firstly, CPS's management found that the conventional budgeting method did not establish any links between performance and expenditure. The bottom-up approach used by CPS started with individual branch constructing its initial budget based on its previous year's expenditures with a correction factor of plus or minus x%. The branches' budgets were then submitted to the respective Areas. The Areas then submitted the Areas' budgets based on the consolidation of all the branches' budgets. They then began their budget negotiation with the higher level management. The conventional method provided no clear links between expenditure and Areas' or branches' performance.

Secondly, the budgetary negotiation process using the conventional budgeting method was rather time-consuming. After each Area submitted its initial budget to the higher level management, a lengthy negotiation (or bidding) process was required between

the higher level management and individual Area's CCP and area's chief administrators (which later became a part of the role undertaken by AreaBMs since 1999). This process, under the 13 geographical Area structure, would normally take approximately 3 to 4 months before the final budget could be reached. Hence under new structure of 42 Area offices, the negotiation time required to reach a final budget could potentially be tripled (simply from the arithmetic point of view to the length of its previous practice). This lengthy period was clearly not acceptable, and an imposed budget was adopted in 1999 when CPS moved from a 13-Area to a 42-Area structure, simply to avoid this lengthy negotiation process.

Thirdly, no criteria or standard guideline for negotiation existed in the conventional budgeting process. Some Areas that had better negotiation skills would simply receive more than the others. According to 13 of the 16 Interviewees, the budget allocation process, which was in a 'bottom-up' bidding fashion, was a typical case of 'Who shouts the loudest gets the most.' (this phenomenon was also indicated in CPS's internal document, see Crown Prosecution Services, 1999, p.3).

Finally, the conventional budgeting method did not have justifiable criteria for the budget allocation. Interviewee C, the head of the IRPMB and in charge of the allocation of Areas' running cost budgets, revealed that there were no established justifiable criteria for him to allocate budget to each Area. He commented on the budgeting process before the implementation of the ABB model:

[Interviewee C, the head of IRPMB] ... I used to create a number of assumptions in order to allocate the budget. During the budgeting period, I would receive a lot of phone calls asking me to consider their difficult situations. After the budgets were allocated, a lot of complaint letters were sent to me and our finance director, complaining how unfair their budgets were. ...

In addition to the above-mentioned problems, the move from 13 to 42 geographic Areas in April 1999 added to the need for more stringent criteria for budget allocation. The reason was that it exposed mis-matches between resource provision and usage that were previously hidden by an operational structure comprising larger and fewer Areas. Moreover the CCPs in the 42 Areas reported directly to the Director of Public Prosecutions and became more accountable for resource usage in their Areas. Although members in IRPMB had conducted various ABC analysis to inform its Areas budgets since 1997, a need to adopt an ABB model only became apparent when such accountability become a real need. There was

also an increasing demand for an appropriate budget allocation mechanism to be able to allocate available resources across all the Areas on a cost-effective manner (according to Interviewee C, Head of IRPMB).

With the successful implementation of the ABC system since 1995, ABC information has gradually been utilised and applied in an attempt to provide some performance measures. The ABC ratio (see Table 7.2), for example, is used as a form of benchmark (or 'league table' as it is fondly called in CPS) and has now been generally accepted by most of the Area managers. With the growing knowledge and confidence on ABC, CPS then decided to develop and implement an ABB model in its budgeting process to address the above-mentioned needs in an effective and rational manner. The introduction of the ABB model, which basically uses the ABC ratio as an unified and understandable basis in its budgeting process, is perceived to be a 'fairer tool to inform the budget allocation across the Areas', according to the Interviewee C and some of the Interviewees.

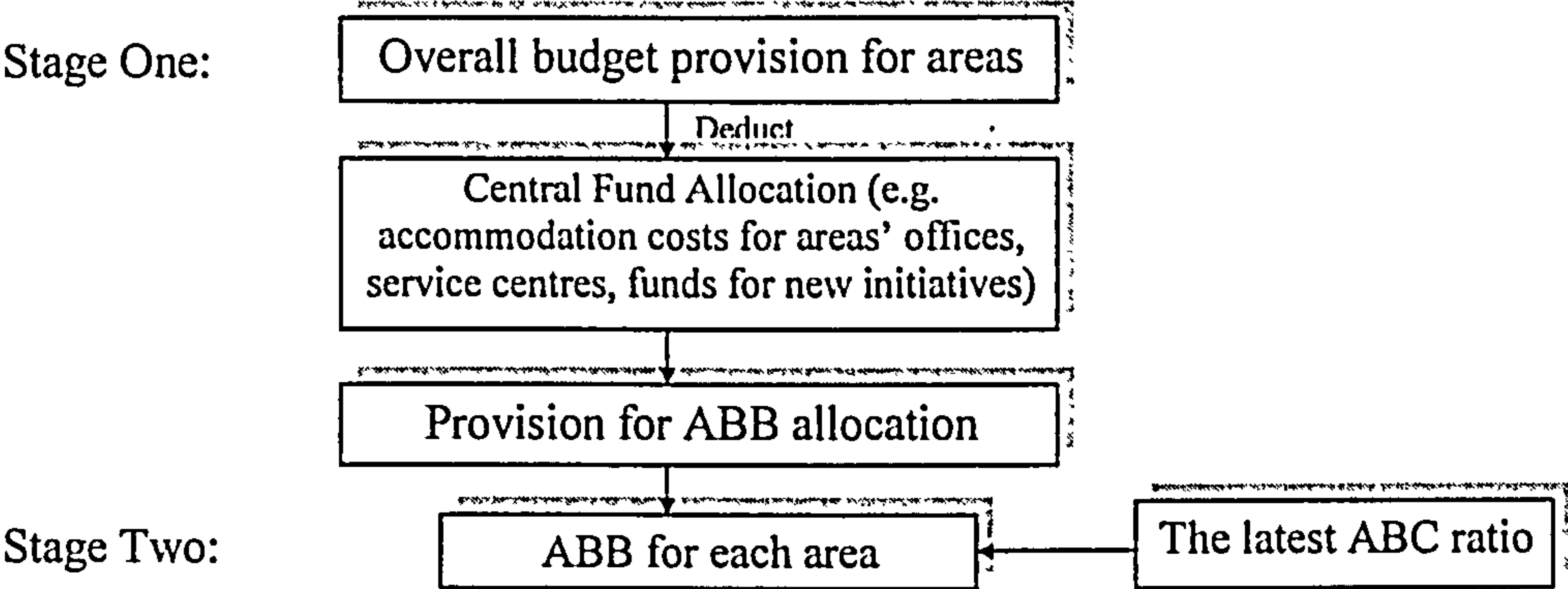
#### 7.4.2 *A Detailed Illustration of CPS's ABB Process*

The reasons that ABB system was not introduced for the fiscal year 1999-2000 were, according to Interviewee B (the finance director), *"it was the first year of re-organisation and the ABC ratio for 42 Areas was not readily available. In addition, we, the members of the CEMC that oversee the budgeting process, wanted to make the transition period after re-organisation as smooth as possible, thus we did not encourage the use of ABB in 1999."*

The ABC ratio, which is based on the multiplication of 'Should take' ABC timings, payroll costs, and the actual caseloads during the period of 1999-2000, is subsequently made available to be used for the allocation of Areas' budgets for the year 2000-01. Based on this 1999-2000 ABC ratio and the budget provision available for Areas' budget allocation, the process in the ABB system, which is shown in Figure 7.2, is fairly simple and straightforward.



Figure 7.2     ABB Process in CPS



As shown in Figure 7.2, the CPS annual budgeting process starts with the overall budget provision for the Areas and decides on a number of funds that are to be centrally retained. The current centrally retained funds are:

- (i) □ Accommodation costs for Areas’ premises are to be paid out directly and are not subjected to the rule of ABB calculation.
- (ii) □ Costs to run the 10 service centres are excluded from ABB calculation.
- (iii) New initiatives raised by CPS, the central government and European Union would require additional funding and therefore a contingency fund is reserved for those unforeseen circumstances.

After the deduction of those centrally kept funds, a provision which is subjected to ABB allocation can then be derived. At stage two, ABC ratio is used as a standard to calculate budgets for all 42 Areas.

As an illustration, a sample of CPS’s ABB budget is shown in Table 7.3<sup>11</sup>.

Table 7.3     A Sample of CPS’s Budget Based on the ABB System

|          | ABC Ratio<br>(see Table 7.2) (A) | 2000-01   | 1999-00                                       |                 | Budget Reduction (E) |
|----------|----------------------------------|---|---|-----------------|----------------------|
|          |                                  | Available provision<br>allocated on ABB<br>basis (£') (B) | Budget on<br>traditional<br>basis<br>(£') (C) | % share*<br>(D) | [(B) – (C)]/(B)<br>% |
| 42 AREAS | 100%                             | 80,000,000  | 83,600,000                                    | 100%            | -4.50                |
| Area 1   | 3.41%                            | 2,728000  | 2,758,800                                     | 3.30%           | -1.13                |
| Area 2   | 0.96%                            | 768,000   | 710,600                                       | 0.85%           | 7.47                 |
| Area 3   | 0.72%                            | 576,000   | 744,040                                       | 0.89%           | -29.17               |
| .....    |                                  |   |   |                 |                      |

<sup>11</sup> For reason of confidentiality, the figures used in Exhibit 7.3&4 do not reflect the actual figures used in CPS.

|         | ABC Ratio<br>(see Table 7.2) (A) | 2000-01   | 1999-00                                       |                 | Budget Reduction (E)     |
|---------|----------------------------------|---|---|-----------------|--------------------------|
|         |                                  | Available provision<br>allocated on ABB<br>basis (£') (B) | Budget on<br>traditional<br>basis<br>(£') (C) | % share*<br>(D) | $[(B) - (C)] / (B)$<br>% |
| Area 41 | 5.12%                            | 4,096,000   | 4,974,200                                     | 5.95%           | -21.44                   |
| Area 42 | 1.15%                            | 920,000   | 919,600                                       | 1.10%           | 0.04                     |

\* '% share' represents the proportion of an Area's budget to the overall budget allocated in 1999-00. These budgets were not allocated on the basis of the ABB model.

In Table 7.3, ABC ratio is shown in column A, the budget allocated based on the ABB system is shown in column B and the budget allocated in 1999-00 which was done without using the ABB system is shown in column C. Further, in column D the percentage share of an Area represents the final proportion of an Area's budget to the overall budget. The ABC ratio shown in column A is derived from the ABC system which uses average ABC timings in conjunction with actual caseloads (see Table 7.2). It is apparent in Column E that despite a 4.5% reduction of the overall budget provision, Areas 1, 2 and 42 would suffer less under the ABB allocation. In fact Areas 2 and 42 could receive more budgets in 2000-01 than they did in the previous year (i.e. a respective increase of 7.47% and 0.04%). Whereas other areas (e.g. Areas 3 and 41) would be severally affected as the result of the overall budget reduction. For example, if a strict ABB system was applied, Area 3's budget would be reduced by 29.17%. Given that more than 85% of an Area's running costs are staffing cost, Area 3 would not have sufficient fund to pay staff salaries. In the light of various budget pressure CPS faced (see Section 7.4.1.1) and other difficulties (e.g. the issue of the perceived accuracy of the ABC model; further details are explored in Section 7.5), a compromise approach, i.e. across-the-board cut or 'equal share of misery between HQs and Areas', was decided by CEMC.

On the basis of CEMC's decision on the final budget, the Head of IRPMB (i.e. the Interviewee C) circulated a minute (called 'Areas Budget Allocations: 2000-01') to inform Area managers about the budget decisions. In this minute, he described the various pressure CPS faced and stated clearly various considerations/criteria<sup>12</sup> that were taken into account in the derivation of the final budget. He also attached the worksheets (as shown in

Table 7.4) to indicate various budget figures under three different scenarios (i.e. Column B is based entirely on ABC ratio or ABB model, Option 1 on ‘across-the-board’ cut, and Option 2 on the indicative figures which based on various local factors and provisions for staff salaries).

Table 7.4 A Sample of Final Budget

|          | (A)<br>Share from<br>latest ABC<br>Model<br>(1999) | 2000-01 (B)<br>(£')<br>Budget<br>based on<br>straight<br>ABC basis | 1999-00 baseline   |          | Option 1 Pro rata reduction<br>(i.e. 4.5% cut)       |   | Option 2 Indicative<br>figures    |  |
|----------|--|--|--------------------|----------|--|---|-----------------------------------|--|
|          |  |  | Budget (C)<br>(£') | % share* | 2000-01<br>budget<br>allocation (£')<br>(D=C x 4.5%) | Change on<br>1999-00<br>budget (£')<br>(E= D-C) | Indicative<br>figures (£')<br>(F) | Change on<br>1999-00<br>budget (£')<br>(G=F-C) |
| 42 AREAS | 100%   | 80,000,000   | 83,600,000         | 100%     | 80,000,000   | -3,600,000                                      | 80,000,000                        | -3,600,000                                     |
| Area 1   | 3.41%  | 2,728,000  | 2,758,800          | 3.30%    | 2,634,654  | -124,146  | 2,670,340                         | -88,460  |
| Area 2   | 0.96%  | 768,000  | 710,600            | 0.85%    | 678,623  | -31,977   | 643,105                           | -67,495  |
| Area 3   | 0.72%  | 576,000  | 744,040            | 0.89%    | 710,558  | -33,482   | 745,120                           | 1,080  |
| .....    |  |  |                    |          |  |   |                                   |  |
| Area 41  | 5.12%  | 4,096,000  | 4,974,200          | 5.95%    | 4,750,361  | -223,839  | 4,810,223                         | -163,977                                       |
| Area 42  | 1.15%  | 920,000  | 919,600            | 1.10%    | 878,218  | -41,382   | 798,410                           | -121,190                                       |

7.4.3 ABB Implementation at Crown Prosecution Services

The following sub-sections describe the ABB implementation process at CPS using the same framework as has been employed in the previous two chapters, i.e. Kwon and Zmud’s (1987) six implementation stages (i.e. initiation, a doption, a daptation, a cceptance, routinisation and infusion). It should be noted that the essential component of CPS’s ABB model is the ABC ratio. Thus CPS tends to use the terms ABC and ABB interchangeably, which has been reflected in the interviewees’ responses.

7.4.3.1. The Initiation Stage

Owing to the difficulties encountered with the use of the conventional budgeting method (as mentioned in Section 7.4.1.2), a search for a better budgeting method was always on the CEMC’s agenda. The growing knowledge and confidence over the use of ABC data in CPS was manifested in the gradual increase in understanding and acceptance of ABC

<sup>12</sup> The various considerations and criteria were the different scenarios being worked through during the budgeting exercises, such as the amount of budget being reduced by the Treasury to CPS and allocation  
Footnotes continued on the next page



principles amongst the members of staff (see the following comments from the finance director, Interview B).

[Interviewee B, finance director] ... In concept, ABC provides a way of looking across areas in a consistent/fair way, to be a transparent system. I also think people felt that it would be possible to use the ABC system to assess the impacts on different working practices. And for CPS that is very important. Because if the Home Office produces the legislation or there is a new initiative, CPS will be able to know how to respond to that, how to assess resource consequences. And I think we also felt that ABC would provide the means of spreading/sharing good practice in terms of the things that help you to get ABC cost down. ...

The refinement of the existing ABC models enabled '*the use of ABC data, perhaps for the first time, offered the opportunity to distribute funds within CPS based on need rather than precedent* (Crown Prosecution Services, 1999, p.3)'. Top management (i.e. members of the CEMC) and middle management (i.e. staff members at the IRPMB, who were in charge of the Areas' budget allocation) shared this view and saw the feasibility to implement ABB for the Areas' running cost budget allocation for the year 2000-01. Interviewee C, the head of IRPMB, explained the reason for not implementing ABB prior to 2000-01 (i.e. the fiscal year 1999-2000) and initial option chosen for implementing ABB.

[Interviewee C] ... Last year (i.e. 1999-2000), which was a very exceptional year, because we have just introduced the 42 Areas and there was a whole load of 'unusual' factors. We actually adjusted budgets about 6 times during the course of the year. ...

Although this year (i.e. 2000-01) we quite deliberately decided not to invite Areas to have a series of bids, since our money situation was quite bad, and also we would have to spend time on reviewing every one of these bids if bidding round was used. There were time and resource constraints. Since Areas wrote to us on a regular basis to inform us their local factors, we then took the option of a Top-Down informed by local factors, as opposed to use a bottom-up approach.

... The members of ABCM unit are going out and actually measuring each Area's work. At least I have got all the case outcomes' data from the ABC model. ... The proposed ABB model actually quantifies the relative position of each Area, for example, one Area 2.3% of the cake.

After one year's experience under the 42-Area structure, managers throughout the whole organisation gained understanding on managing business in this new structure. The expansion of Areas from 13 to 42 prompted the need to find a cost-effective method to allocate Areas' budgets. This need became more apparent when CPS was facing resource constraints in the financial year 2000-01, which was directly attributed by the 4.5% reduction of budget provision from the government. In the light of all the above-mentioned factors, the top and middle management felt it was the time to introduce an ABB model.

#### 7.4.3.2. The Adoption Stage

Following with the initiation stage, an ABB model was developed during the 3-day budget setting exercise, starting on 4<sup>th</sup> April 2000, when CPS had already entered into the financial year (i.e. April 2000- March 2001). The reason for this delay was mainly due to the re-organisation.

[Interviewee C, the head of IRPMB] ... What we normally do is that we get most of our budgets out at the beginning of the year, and do some marginal adjustment half way through the year, with the final bits of adjustment, say, in January before the end of our financial year. Last year (1999-2000) was an exceptional year, we adjusted the budget 6 times during the course of the year... and the final figure of last year's allocation was only made available on 31<sup>st</sup> March 2000. ...

The actual allocated budgets to the Areas in the financial year 1999 –2000 was crucial, because it was used as a reference: (1) to measure the actual spending in the last year, especially over 85 % of the Areas' spending (excluding accommodation costs) was staff costs and (2) to compare the budget with actuals in order to assess the seriousness of the shortage of fund.

In order to allocate the budget during this short period of time, adequate background work and all relevant materials needed to be prepared beforehand. Members of staff at the IRPMB<sup>13</sup> collected a comprehensive range of information (including local factors from the 42 Areas, payroll information, the latest ABC ratios, etc.) and prepared these

materials in an electronic form, which were then used by all the participants during the exercise. This allowed all the participants to work through the calculations in their own notebook computers, which were provided for the purpose of this 'hand-on' exercise. Each step of the ABB calculation process was performed and projected on a screen.

The budget setting exercise involved the core members in the budgeting team (i.e. the head and three members from IRPMB), an AreaBM, a member of staff who was dealing with lawyer agents and the researcher. The latter three participants were invited to be observers of this budgeting exercise. The purpose of involving an external observer was to promote the idea of openness of the imposed budgeting process. This notion was articulated by interviewees B and C in the interview sessions:

[Interviewee B, finance director] ... It was a good idea to open up the budgeting process, but I think that more debates will occur if we invite 4 or 5, or even more AreaBMs and CCPs to the process. ...

[Interviewee C, the head of IRPMB] ... By inviting one AreaBM, who may act as the representative for AreaBMs, and one member, who is liaison with agents for barristers, our intention is to demonstrate transparency and no secrecy of deriving the budget. Although we would like to invite more AreaBMs to attend this process, we feel that it is not feasible since we are under tight time constraints –we need to come out of a budget within 3 days.

The exercise began with some introductory explanations on the pressures faced by CPS and the need to 'ring fence' accommodation costs and a small amount of fund as contingency reserves<sup>14</sup> (see Figure 7.2). This then led to the derivation of a budget provision that was to be allocated for 'Areas non-ring fenced running costs'. The latest ABC ratio, which was based on December 2001's ABC information, was then used to inform the budget allocation. Interviewee C justified the adoption of the ABB approach:

[Interviewee C, the head of IRPMB] ... at the end of the day, we would issue some budgets. In the past I would be inventing a whole series of factors, such as how many lawyers per Magistrate's court case per Area, how many case worker per Crown Court

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<sup>13</sup> Besides IRPMB has other responsibilities, such as maintenance and updating of the CPS's management information system (called Corporate Information System, or CIS), mid-year review and adjustment of budget allocated to Areas.



case per Area.... But it was a rather hidden myth. And people didn't accept it. With ABC, at least I know the work has been measured, and I have got payroll data. ... I get what I regard as not a perfect, but a reasonable, in all the circumstances, orders of Area's (performance) earnings. ....

Now my problem is that an AreaBM or a CCP always tell me how difficult his/her Area is ... How do I make a judgement about resource allocation? This --ABC system -- quantifies in some way the relative positioning of each Area. And because it quantifies it, and I think it is the crudest quantification, i.e. Area A earns 2.3% of the overall cake. Now because that is quantified and is based upon the range of casework. Areas hate it. Because they cannot pull the wool over one's eyes. The Area can say to me how difficult his casework is. I will use the fact -- his Area's share of 2.3% of the overall cake -- to justify the amount of budget his Area should get, rather than based on anything else. And they do not like it. The ABB has pinned them down....

If another 25 staff spending another 6 months also, I can get right down to the detail. Not prepare to waste money on that. It is a question of a management decision that has been taking to save time, resources and effort by making an assumption. And we think it is semi-reasonable assumption to make.

All the participants (apart from the researcher) were actively engaged in the discussion during the budget setting exercise, making suggestions and questioning rationales behind the use of various scenarios. A particular issue that attracted most attention was the salary costs, which accounted for 85% of the overall non-ring fenced running costs. The proposed budget, which was derived from a direct multiplication of ABC ratios with the budget provision, resulted in a rather problematic situation for some Areas. For example, in some Areas with less finalised cases (thus low caseloads) and more staff members, the proposed ABB budgets were less than the required fund to cover salary costs for permanent full-time staff (e.g. Area 3 and 41 in Table 7.3). There was no short-term fix for this situation. Thus other alternatives were considered, including the 'ring-fencing' some grades of the salary costs from the ABB budget allocation. For example AreaBM's salary costs were considered to be fixed since their work was not measured in the current ABC model. With the same rationale (i.e. the job duties of some posts cannot be satisfactorily quantified

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<sup>14</sup> The contingency reserve was justified as immaterial as stated in CPS's minute of 'Area Budget Allocation: 2000-01' as *'an Area unallocated budget (a contingency reserve) will be held at the Headquarter. It will amount to 0.4% of the overall Area provision.'*

using the current ABB model), this consideration was then extended to salary costs of a certain grade of lawyer and CCPs. In addition to the consideration of salary costs, various other local factors were also considered during the budget calculations. This included Areas with special factors, such as an Area in Wales required additional funding for Welsh language training. As a result of the active group participation, budgets under a number of scenarios were developed. All scenarios constructed were then presented to the CEMC for making a decision on the final budget.

The exercise was regarded as an informative process by all the participants.

[Interviewee H] ... although I am worrying about the budget of my Area, which is going to be rather tough in some of those scenarios, I find these 3 days are worthwhile. I have a good understanding about all sorts of considerations they (IRPMB & CEMC) have taken into account during the budgeting process. ...

[Interviewee C] ... I personally feel more confident in it (the ABB model). ...

#### 7.4.3.3. The Adaptation Stage

The adaptation of the ABB model took the form of a delayed application. Various factors (relating to budget pressures and accuracy of the ABC model) that were arguably not represented by the ABB model prompted the decision that the ABB budget should be used in the near future. This ABB exercise, however, was an important learning experience which enabled the successful application of ABB in the coming years.

The CEMC<sup>15</sup> met at CPS's London Headquarter on the 10<sup>th</sup> April 2000 to make decision on the final budget. After the Head of IRPMB presented the various budget proposals under different scenarios, CEMC took all internal and external circumstances into consideration. They finally reached a decision that an equal reduction of 4.5% over the 'non-ring fenced running cost' budgets should be appropriate. This 4.5% overall budget reduction was then applied across the whole organisation, i.e. both the HQs and 42 Areas. The chief executive, Interviewee A, analysed the real constraints which resulted in this budget decision.

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<sup>15</sup> CEMC, which consist of members from top management and several CCPs and AreaBMs, is a management committee that makes major decisions (e.g. Areas' budgets) in CPS.

[Interviewee A, Chief Executive] ... the Head of IRPMB did a lot of analyses based on the ABC system and made recommendation to the management committee accordingly. The CEMC thought about it quite hard. And in general, the management committee's view, certainly in my view, is that we need to try to move towards the allocation system, which more closely replicates the ABC analysis. But there is a number of reasons for getting for this stage 'flat rate' reduction, and they are roughly these: the budget available to the area is much reduced next year (2000-01). The available spend is down 4.5% in cash term, which in real term represents 7 or 8% cut<sup>16</sup>, which means lost of staff. The capacity of CPS to lose staff is heavily constrained by relatively low turnover, relatively low levels of staff movement. These are real limits, quite apart from pressure at work, which I set on one side, because clearly the work is not falling by 7 or 8%. And there is a fundamental question about whether we can cover the work with that sort of allocation, which is why we are in discussion with the Treasury in the moment. But the practical difficulties of the allocation emerged as recommended by the budget team were that we, as a committee, doubted it was actually practically possible for areas to live with much more than a 4.5% cash cut. With this budget, giving the staff they have in post, premises commitment they had, the overheads they can not avoid, they just could not do with less. And those circumstances when you are bumping up against what is actually practically achievable. You have to revisit your allocation. And we decided that at this stage, on the available budget, the only sensible thing to do was that, for this year, we must freeze the redistribution and have a 'flat rate' cut subject to, this is very important, subject to the discussions we are currently in with the Treasury about trying to secure bit of additional resources to help us over this potential great difficulty. Now if we are successful in that, we will certainly use the ABC system to allocate anything above that minimum level. But we are heavily constrained this year in terms of what we can do by way of movement towards ABC relativities by the size of the cut.

After the final budget was decided, a minute called 'Area Budget Allocation 2000-01' (Budgets\0001\General\Budget1) was circulated to all 42 Areas, informing Area managers about their budgets for the prosecution and running costs respectively. In this minute, explanation of various scenarios was detailed and a worksheet which listed the calculated budgets under the 'across-the-board' cuts and the ABB methods was also attached

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<sup>16</sup> This real term reduction includes the 4.5% cash cut and a minimum 2.5% pay rise, which should be in accordance with national inflation index.



(see Table 7.4). This minute, especially the worksheet, provided the Area managers with a fairly good idea about entitled budgets in other Areas under these two different allocation methods. This minute sent out a strong message for the first time to all the Areas about the top management's serious consideration to use the ABB application.

Arguments were put forward when some Areas were better off under the ABB method than the 'across-the-board' cut, or vice versa. Throughout the interviewing sessions with the 5 selected Areas (which took place after the budget had been allocated), the researcher learnt that all AreaBMs and CCPs had sent letters to the top management explaining their considerable budget constraints. It was also noticeable that the ABB model was used as one of the supports or defences to their arguments. Concerns were also raised on the issues of the accuracy of ABC measures, the suitability of the use of ABB as a budget allocation basis and the urge for the refinement of the ABC model.

[Interview P, AreaBMs] ... In the minute, here is the one highlighted my share of the national budget, in terms of what I have earned under ABC, i.e. I am entitled to 1.08% of the national cake. What I have actually got this year, in my budget, is 90.2% of the 1.08% of the national cake. Therefore, I am approximately 9.8% under-funded from my entitlement. ...

And I think what ABC does, I suppose, ABC is the way informing you how much money you need to run your organisation. It will probably work fine in a private sector company. Where it does not work in the public sector is because we do not set our budget, the budget is set for us by the Treasury. What we then use ABC to do is to internal allocate what we have been given, which may have been insufficient in the first instance. So we are not actually given our required running costs always. ...

[Interviewee K, AreaBM] ... At the moment we are working on averages. And there are a lot of other factors that coming to areas, efficient or not, not just the gap between its ABC earnings and its actual spending. Thus the ABC is not accurate.

A positive response towards the ABB was evident based on the fact that some Areas adapted the ABB model in allocating budgets from Areas to branches.

[Interviewee K, AreaBM] ... We devolve our budget responsibility to branches. The budget we got from our Headquarter is fixed and this year is cut by 4.5%, however, we allocate the budget to branches on the basis of the ABB model. ... Because we have the ABC figures down to branch level. So we use those to determine what proportion of budget is going to be for branches.

Because of the serious consequence of the budget pressures which would significantly affect the sustainability of CPS's operation, Treasury decided to provide CPS with additional fund. In 12 July 2000, a supplementary minute to the 'Area Budget Allocation 2000-01' (Budgets\0001\General\Tranche 2) was circulated to all Areas, setting out additional budget provision for Areas' 'non-ring fenced costs' allocations. In this document, it was stated that the additional budget was allocated partly on the basis of the indicative figures (shown Option 2 in Table 7.4), with following conditions set by CEMC.

- Narrow the range of variance between Areas in terms of ABC.
- Cap increases above the sum allocated in Tranche1 (i.e. budget1) at 10%.
- Set minimum threshold of 2.5% increase over the amounts allocated in Tranche1.

The criticism of the accuracy of the ABC information had been taken into consideration by the ABCM unit. During interview with one of the five Areas, it was notable that the members from ABCM unit were also at present to carry out a re-examining exercise of the timing, caseloads and workload information at this Area. The ABC model was updated during the year 2000-01 to derive revised ABC ratios for the 42 Areas, thus the Head of IRPMB was able to use the revised ABC ratios to allocate the budget provision for the Areas' running cost for the following year, 2001-02.

#### **7.4.3.4. The Acceptance Stage**

As indicated at the previous two stages, a gradual trend of acceptance of the ABB model was observed. Moreover, within the minute of additional 'Area Budget Allocation 2000-01', a new initiative – Performance Improvement Programme (PIP) challenge fund -- was also set out for bidding from all Areas and HQ directorates. Within a list of criteria set to rectify this bid, it was made clear that CEMC also set out the following conditions (as listed in Annex 3 of the minute):

As well as the strength of the bid, CEMC will also take account of the following:

- The relative position of the Area against its ABC share, i.e. whether and to what extent it had more or less than its ABC share;
- The relative score of the Area in the staff survey and stress audit;
- How well the Area managed its budget in 1999-00;
- And the relative position of the Area in the performance league tables.

Two out of the four from the above criteria were directed related to the ABC (i.e. ABC share and league tables). Again, this has sent a second and even stronger message, elaborating the proposed budget options (i.e. the strict ABB model, across-the-board cut 4.5% and the indicative ABC budget), and indicating the determination of the top management in using ABC (and hence ABB) as a reflection of performance management and budget.

[Interviewee A, chief executive] ... we are currently discussion with the Treasury about trying to secure some additional resources to help us over this potential great difficulty. Now if we are successful in that, we will certainly use the ABC system to allocate anything above that minimum level. ... Any budgetary allocation system in a period of very heavy resource constraints is going to be a controversial system. In a 42-structure with not much scope to move money around, it is bound to be -- you always shoot the messenger -- with blaming the message. And so the ABC system has both matured and improved and got more complicated and become more important for us as an organisation, equally it has become more controversial, more discussed, more challenged, more central to dispute between areas and so on. So it is getting into the culture but in a rather ford, a rather tense and controversial way. But it is absolutely essential for us. It is the only way to sort out our budgets on a 42 structure.

[Interviewee B, finance director] ... Activity-based budgeting offers a way of saying 'we tell Areas how we are going to do it in advance: this is how it is going to be, the Areas understand all the inter-analysis on this, think about it in advance.' When we come to the budget discussion, Areas already know what this is going to be about, no surprises. So in other words, it should allow Areas to set the budget more quickly than if they use a bidding system.

At the Area level, the use of ABB model was generally accepted by the interviewees, albeit with different degrees of agreement. Some preferred the budget allocation under the ABB model, others preferred to see some fine-tuning of the ABC system.

As a result of this budget allocation, a mixed feeling towards the use of activity-based application existed among the Area managers. For example, some felt de-motivated from putting diligent efforts to recording case/work load throughout the last year. On the other hand, some understood the logic behind the decision on budgets in 2000-01. Therefore some frustrations arose due to the shortage of budget being given to the Treasury funding



system; and some rationalise it by addressing the common knowledge of ‘imbalance distribution of resources’.

[Interviewee E, AreaBM] ... I think ABB is more accurate. It gives you data that you can trust to inform your decisions that you have to take. ...

[Interviewee D, CCP] ... ABB is better than what used to be. It is more refined, widely used and distributed. ... It certainly allows a more open approach within CPS and with outside bodies, such as Trade Union, Police.

[Interviewee J, CCP] ... ABB is an improvement, because at least you can demonstrate why the budget is divided in the way it is. The old system was a lot of bilateral arguing across the table, it was more of a ‘who shouts the loudest gets the most of it.’ Now arithmetic tells you a lot more of the answers. ...

[Interviewee I, CCP] ... I got reservations about ABC, because I just think the model does not measure things correctly. It only deals with average. But my Area covers a lot of rural Areas, it is unfair to use the average ABC timings to measure. ... However, budgets from the Old system was must of ‘guessed and by-gone’. ABC is sufficiently scientific to give us a basis. ... I would not fancy going back to the old system. What I prefer is a ‘ABC plus’, which can measure my caseload more accurate according to my local factors.

[Interviewee K, AreaBM] ... ABB does not help you to manage your budget. Because managing the budget was affected by all the things we need to spend money on. If accurate allocation of a budget helps you to manage it, the ABC helps. ... I use ABC to allocate budget to branches on the basis of percentage they got under the ABC system.

[Interviewee L, BCP] ... ABC seems to be a start, but I do not think it is very precise. Therefore I do not think it measures sufficiently the problems that we have. So to that extent, I think the ABC or ABB is a bit artificial. ...

[Interviewee M, AreaBM] ... ABC does not help budget management, however, it does inform best practice, such as ‘Should Take’ information.

[Interviewee N, CCP] ... I would have more faith in the ABB system if it was fairly applied and if it was better informed by quality measures.

[Interviewee P, AreaBM] ... ABC is better than the Old system. I think we should have the same measures across every single part of the CPS to see who is under performing and who is over performing. Under the Old system, it was ‘who shouts the loudest gets the most.’ Now we can use the ABC system to share the best practice in our regional group. ...

Acceptance does not mark an end to a success of the implementation of any system. In fact the success of a system is to be justified on whether or not it has been utilised on a routine basis. With the progressed level of acceptance and determination at the top management, CPS is ready to move on to its next stage – routinisation.

#### **7.4.3.5. The Routinisation Stage**

The researcher was again invited to observe another budget exercise for the year 2001-02 on 14 December 2000. The exercise was of the same nature as the one held in April 2000, i.e. to conduct a comprehensive range of analyses and to make recommendation to CEMC for the final budget allocations. The participants consisted of three members of IRPMB, two AreaBMs and the researcher.

During the exercise, it was learned that two revisions had taken place prior to this exercise: (1) a revised set of ABC timings; and (2) a set of ABC ratios on the basis of 3-year ABC information. As also indicated in the report of 'Area running costs budgets 2001-02: an options paper' (Budgets\0102\General\Report) produced on 17 December 2000, the revised ABC timing was delivered in October 2000 as a routine updating ABC model exercise each year. The changes related in the following areas (under section 7.2 in this report):

- Basic task times;
- Timings applied to London magistrates' courts
- Travel times; and
- The conversion factor.

After assessing the impact of these changes on the ABC timing, a variety of scenarios (similar to the ones used in April's budget exercise) was analysed. This exercise was conducted within a day, which was significantly shorter than the previous 3-day exercise. This time-scale of one-day did not include time taken for all the earlier analyses done by the IRPMB, the production of this Report, and finalisation of the 2001-02 budget.

The reason for the adoption of a set of ABC ratios on the basis of a 3-year rolling ABC information (e.g. July 1998-June 2001 or October 1998 - September 2001) was also explained in this reports;

‘It is proposed that the caseload volume data used in the ABC model is the annual average over the last 3 years. This has the effect of reducing the impact of short-term caseload and workload variation on the resource allocation process. In a sense this is unavoidable because it is simply impractical to apply strictly the range of variation that may occur on an annual basis. That said, adopting this approach will not solve all the problems immediately because it will initially create a new playing field that will almost certainly not be level. But used on a regular and consistent basis in the future it should reduce the difficulties caused by trying to adjust budget allocations to significant annual caseload variation between Areas.’ (under Section 4.5 in this CPS’s report)

It was also evident in this report that the Board and CEMC had agreed on the policy of working towards an allocation which related more closely to the ABB figures.

The use of 3-year rolling ABC information, which required quarterly updating of the ABC ratios into a 3-year period and routinely updating its ABC model by ABCM unit, suggested that the use of ABC and ABB has evolved into the routinisation stage. During the routinisation process, the top management’s determination to move towards ABC and ABB had a clear impact to line management across 42 Areas. As a result, a form of organisational learning was observed among Area managers. This marked CPS’s entering to the infusion stage of ABC and ABB implementation.

#### 7.4.3.6. The Infusion Stage

The statement in the conclusion of the report (i.e. the above-mentioned report ‘Area running costs budgets 2001-02: an options paper’, Budgets\0102\General\Report) indicated the CPS’s determination to infuse the use of ABC in budgeting:

‘.... it is possible for the CPS to move to an Area resource allocation based on ABC in 2001-02 with very little difficulty because of the sheer size of the increase in resources. Some requirements might be required round the fringes but they would be entirely marginal and if for example confined to those Areas that would as a result receive less than a 10% increase over baseline would impact on no more than 6 of 42 Areas.’

It was apparent that the Treasury had increased the CPS budgets to a realistic level for the new 3-year funding period (i.e. from April 2001 to March 2004). In addition, CPS had made continuous refinement to the ABC model by including the local factors and



improving the accuracy of timing measures for individual Areas. This led to a significant improvement of the appropriateness of the ABC ratio. During the year 2000-01, the ABC ratio was derived based on a 12-month ABC performance figure of the last financial year (i.e. Areas' accumulated ABC performance results from January to December 2000). The IRMPB, together with ABC steering group, recognised that the ABC ratio could be distorted by some seasonal factors and incidental cases that took place in certain Areas within this 12-month period. Thus the 12-month based ABC ratio may not be representative of the repetitive activities that the Areas normally carry out. Subsequently, a feasibility study, which was undertaken by members of staff in IRPMB, found out the possibility of extending the 12-month to three longer periods (i.e. 12-month, 24-month and 36-month). The result of this feasibility study suggested that the norm of an Area's performance was best represented by an ABC ratio that was based on a 36-month ABC performance. After an extensive consultation to ABC steering group, ABC advisory group<sup>17</sup> and the CEMC, it was agreed that the use of a '36-month rolling ABC ratio' was most suitable to reduce the influence of those unusual and seasonal factors to a reasonable level.

The scenarios that went through in the budgeting exercise for the year 2001-02 were primarily the same as that for year 2000-01 budgeting exercise. Optional budget proposals in the Report ('Area running costs budgets 2001-02: an options paper) included one budget option based on the 'strict ABB model' (i.e. the multiplication of the '36-month rolling ABC ratio' with the budget provision for Areas' budget allocation) and other options based on individual scenarios.

A following-up telephone interview with the Interviewee C shortly after the December (2001) budgeting exercise revealed that CEMC accepted the budget proposal based on the 'strict ABB model'. Another telephone interview with a member of IRPMB in May 2001 confirmed that CPS board had made the decision to allocate Areas' budgets for the fiscal year of 2001-02 on a 100% ABB basis.

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<sup>17</sup> The ABC advisory group, consists of AreaBMs, CCPs and members from the ABCM unit, aims to provide feedback and advises to ABCM unit in order to improve to the ABC model.

The ABC steering group, consists of AreaBMs, CCPs, head of IRPMB, head of the ABCM unit, aims to provide strategic suggestions to the ABCM unit and to make suggestions about the improvement of the ABC/ABB models which are subject for approval to CEMC.

At this stage, it is notable that ABB has been implemented in the 2001-02's budget allocation. With the use of ABB as the only budget allocation method for the coming years, CPS's evidence also suggested that the concepts of ABB have been gradually infused in the organisation.

## **7.5. Analysis of ABB System Design and Implementation at CPS**

With reference to the influential factors related to the technical, behavioural, organisational and cultural perspectives drawn from the literature (as outlined in the research framework in Section 3.5 of Chapter 3), the factors that emerged from CPS's ABB implementation experience are analysed in this section:

- Technical perspective: simplicity of CPS's ABB model to its users; compatibility of the ABB approach with organisational structures and existing systems; technical improvement over the existing budgeting methods; accuracy of ABC variables and budget situations related to the use of the ABB model.
- Behavioural perspective: the impacts of ABB on managerial behaviour in terms of promoting proactive learning and stimulating new initiatives in process re-engineering; the use of ABB information as a common communication platform in a top-down budgeting process.
- Organisational perspective: the importance of top management support and user training at various stages of the implementation process; budget devolution related to an increased responsibility and encouragement for creative management versus a top-down budgeting approach; varying degrees of relevance of ABB information to different levels of managers; the positive impacts of establishing visible links between organisational goal and sub-goal development; the influences of administrative inflexibility, budget availability and uncontrollable external factors on the ABB adoption.
- Cultural perspective: the varying culture influences on the ABB and ABC implementations pre- and post- re-organisation exercises.

### **7.5.1      *Technical Perspective***

#### **7.5.1.1.      *Simplicity, Compatibility and Improvement: the ABB Model as a Basis for Budget Allocation***

In the literature, empirical findings from the implementation of PPBS, ZBB and ABC systems suggested that those systems with simpler design specifications can be adopted more widely in practice (Barkman, 1997; Bellamy & Kluvers, 1995; Grasso, 1997; Norkiewicz, 1994; Kleinsorge and Tanner, 1991). Technically speaking, CPS's ABB model was the simplest amongst the three models studied in this research. It was based on a method of multiplying the ABC ratio with the Areas' budget provision for the coming year. Once the ABC information became available, the calculation of Areas' running cost budgets could be undertaken with the aid of computer spreadsheets in a relatively short period of time (i.e. 3-days for the financial year 2000-01 and 1 day for the financial year 2001-02). Moreover, the ABB method was so simple to understand that some Areas applied it in allocating their branches' budgets. Thus it was apparent that the simplicity of this model increased the possibility for adopting ABB at CPS.

CPS's ABB model was also relatively compatible to its organisational structure and the existing systems. The ABB model was used to allocate the budgets to the 42 Areas, therefore the implementation of the ABB system had no interference with its existing organisational structure (i.e. HQs and Areas). Moreover, the ABB calculation was done in a stand-alone computer system by inputting ABC ratio and payroll costs data (which were processed in the CIS). Thus the interruption between the ABC and ABB systems was kept at a minimum level.

In comparison to the previously adopted budget allocation methods, the ABB model was considered as an improvement over those methods. Such improvement became apparent when CPS faced some special circumstances. The budgeting process in CPS was somewhat different from that in other sectors. As noted in the literature (Likierman, 2001), the allocation criteria from the Treasury (to fund CPS's resource need) and the CPS's HQs (to fund the Areas' needs) were not based on any means of forecasts. Thus CPS's budgeting process was basically an allocation of budget provision to Areas. When CPS was



restructured from a 13- to 42-Area structure in 1999, the budget allocation across 42 Areas would be more time consuming. This was compounded with a situation *where 'who shouts the loudest gets the most'* that existed in its budgetary negotiation process. Thus, when the CPS Board decided to use a top-down or imposed budgeting approach, a more cost-effective allocation method became an urgent need (as indicated at the Initiation Stage, see Section 7.4.3.1). In addition, there were internal and external demands for establishing links between resource deployment (expenditure) and performance. The traditional budgeting methods (e.g. line-by-line budgeting) that CPS adopted did not meet these demands. Thus a more stringent and unified allocation method was required to enable a 'fairer' and cost effective justification of the resource deployment, utilisation and performance across the 42 Areas. CPS's ABC information established a causal link between performance (e.g. number of finalised cases), core activities and resource utilisation in CPS. Based on these past ABC information, the ABB model was considered to be a 'fairer' and cost effective means of allocating Areas' budgets than other allocation methods. This improvement was relatively well recognised by interviewees, since 50% of them considered the ABB system to be *'simple and easy to understand, clearer information for decision making.'*

[Interviewee A, chief executive] ... indeed I believe it is essentially on my authority that the Board gets recommendations on allocations of budgets, that uses the mechanisms we have got, of which the ABC system is most important and most obvious. ... we use the ABC system as our essential guide when we are allocating the budgets. ... However, the way we use the ABC system is to determine relativities between the Areas rather than to determine the absolute quantum. ...

[Interviewee B, finance director] ... We apply the latest version of the ABC timing, etc ... all these factors come up what the budget might be. In another words, ABC has played very big part in getting to that figure, provisional idea what the budget should be....

[Interviewee C, head of IRPMB] ... although the ABC system is not a perfect one, it is the best one we have got. I personally feel more confident in it, whereas before I have to invent all sort of criteria...

[Interviewee J, CCP] ... ABB is the only transparent measure we got, that enables you to justify the resource. ... According to this formula (ABB model) we then divided it up locally among our branches. We also apply a bit of judgement on top of that. ... You use the formula not as apiece of simple re-affirm tape that tells you answers, but as a guide to lay your judgement over it. ...

Due to the overall budget reduction, the use of ABB model was limited in its the initial budget allocation for 2000-01. However, because of the simplicity and cost-effectiveness of the ABB model, it was evidently used in the budget allocation of (1) the additional budget allocated by the Treasury during 2000-01, (2) the PIP fund and (3) the financial year 2001-02's Area budgets.

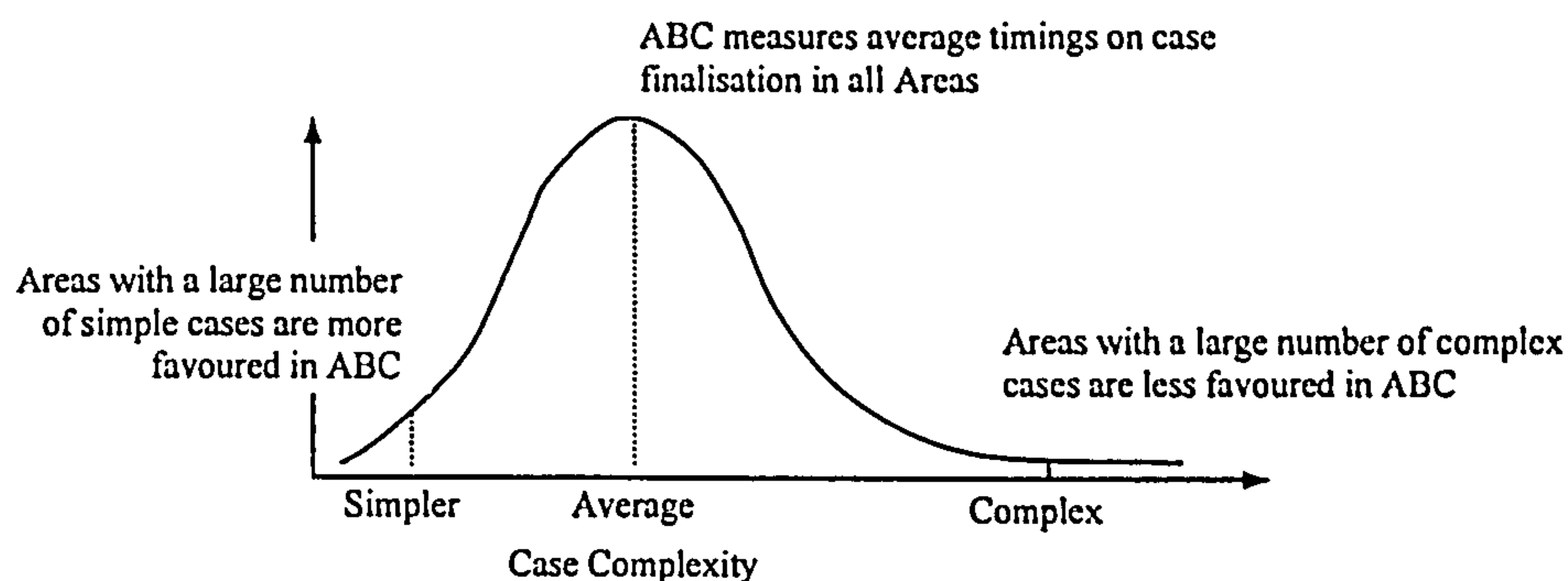
After all, the simplicity of the ABB model played an important role in the success of ABB system implementation at CPS. Because of the simplicity, the ABB model was fine-tuned with relative ease to suit CPS needs and external demands. This, in turn, helped the ABB system to gain general acceptance from the staff members.

#### **7.5.1.2. The Level of Accuracy of ABC Variables and Budget Situations to the Use of the ABB Model**

Area managers generally accepted the relative improvement of the ABB model over other budget methods that CPS previously adopted. However, they also recognised that the current ABB model could only provide a generalised (not precise) measure or a 'slice of cake'. When CPS faced with budget scarcity (as experienced in the year 2000-01), this lack of precision ('fairness') became a serious threat to the adoption of the ABB system.

This lack of precision was directly attributed by the variables in the ABC system. Since CPS's ABB model was designed and implemented on the basis of the ABC information, the various system variables that were built into the ABC model inevitably affected the ABB budget allocation. Because of the averaged timing adopted to measure ABC system variables, some AreaBMs' and BCPs raised their concerns regarding the accuracy of these variables, particularly timing allowances for travelling and case complexity among Areas (see Section 7.3.2.1). For example, timing allowance for travelling measured the time taken for members of staff to travel from offices to courts. It was fixed between 2% - 10% of the actual timing for core prosecution activities. The actual travel time from office to court differed greatly from one Area to another, ranging from a mere 5 minutes of walking in an urban Area to 3 hours of car journey in a rural Area. The 2% - 10% factor adopted by the ABC model was therefore not considered as a satisfactory way to model the diverse range of travel timing in reality.

**Figure 7.3 A Demonstration of Case Complexity in ABC System**



Case complexity was another ABC system variable that affected the ‘fairness’ of budget allocation using the ABB model. The case complexity in the CPS’s ABC model was measured on the basis of an average timing on case finalisations. Although different weights were built-in to differentiate the complexity and seriousness of cases, these weights were not sufficient enough to represent the precise situations at an Area level. For example, some complex criminal cases involving serious offences like murder and trafficking of drugs could take more than a year to be finalised, whereas simpler cases like shoplifting would require an average of only half a day to be finalised. It was argued that a simple weighting factor applied to a complex case was not able to represent the exact amount of resource applied in the actual case. As demonstrated in Figure 7.3, the ABC timing only modelled the average times in finalising cases. It was weak in measuring activity timings in Areas in which caseloads fell into the two extreme ends: i.e. a large number of simple cases or complex cases. This average timing in the ABC system naturally favoured Areas with higher numbers of simple cases and penalised Areas with fewer but higher incidence of complex cases.

Furthermore, as a result of the increased number of Areas, the size of an Area was reduced significantly, so did the Areas’ budgets. Compounded with the overall budget reduction, a fraction of difference (e.g. 0.1%) in ABC ratio that amounted for £40,000 difference in budgets would have different impacts to Areas. To a larger Area with a budget of, say, £7,000,000, the £40,000 difference would not result in substantial impacts on the Area’s operation. However, to a smaller Area with £250,000, this difference would cause serious consequence (e.g. staff retrenchment). Before the imprecision of system variables was dealt with sufficiently, CPS was not prepared to impose a budget that could cause some



serious impacts. Further evidence revealed that CPS's adoption of the ABB budget allocation for 2001-02 was partly contributed by some revisions made to ABC variables. In particular, the major contributor to the adoption was evidently the (relatively substantial) increased government budget for 2001-02.

Hence, on the basis of varying budget situations, the accuracy of ABC variables affected the use of the ABB model to different extents. In the case of budget scarcity, the accuracy of ABC variables had serious impacts on the actual adoption of the ABB model in the budget allocation. When budget situation was improved, the accuracy of ABC variables became less important to affect the adoption of ABB model.

### 7.5.2 *Behavioural Perspective*

From the literature review on behaviour, factors such as participation and resistance have been identified as influential factors to the implementation and adoption of an ABC or a budgeting system (see Chapter 2 & Section 3.4.2 in Chapter 3). Findings from CPS's ABB experience revealed that participation was not at present during the initial budget setting process because of the top-down budgeting approach adopted by CPS. However, evidence suggested that CPS adopted other means of participation during the budget period (i.e. the establishment of a common communication platform via the use of ABB, the introduction of bidding for the additional budget and PIP challenge fund based on activity-based information). This encouraged the use of the ABB model in management decision making. As a result managers were engaging themselves in learning proactively in an attempt to understand the activity-based information and its applications in process improvement. That latter attempt resulted in some initiatives of process re-engineering taken by some Area managers. In addition, behaviour issues such as motivation, resistance and job satisfaction, which were discussed vastly in the participative budgeting literature, were also observed in CPS's ABB implementation experience.

On the basis of issues emerged from CPS's ABB experience, this section discusses the following two main behavioural issues:

- The impacts of the implementation of ABB system had on managerial behaviour, including proactive learning and initiatives on process re-engineering;

- The ABB information provided a common communication platform to complement the top-down budgeting process and encourage participation in the allocation of additional budgets. The relationship between budget-related behaviour (e.g. job satisfaction, motivation and performance, slack and task complexity) and the use of ABB information was found.

#### **7.5.2.1. The Impact of the Implementation of ABB on Managerial Behaviour – Proactive Learning and Initiatives on Process Re-engineering.**

Emphasis on the use of the ABC system was stated in the minute of 'Areas Budget Allocation 2000-01'. This was the first time that the HQs stated their inclination of linking budget allocation with Areas' ABC performance. This minute had caused some concerns, particularly amongst those Areas with poorer ABC performances and those Area managers who had not previously paid much attention to understand the ABC information. Following the circulation of this minute, Area managers started to take the ABC figures much more serious as they realised that their future budgets would be determined by the ABC figures. An observation was that the Area managers made more proactive efforts to learn the ABC principles. They particularly focused on the use of ABC information for management purposes.

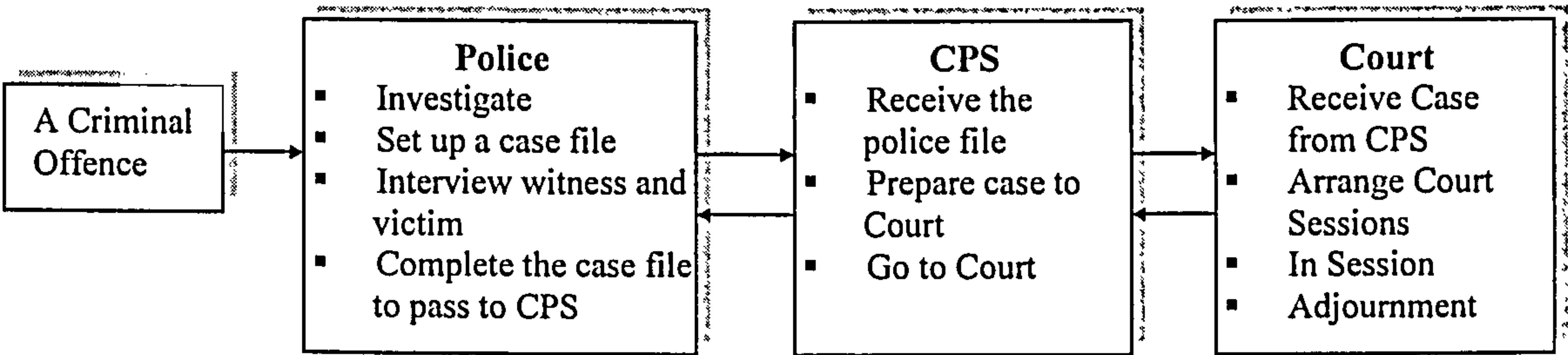
[Interviewee P, AreaBM] ... next week, we are going to start a regional meeting. The intention is to learn from each other and to see how we apply the ABC information to improve performance. ...

Consequently Area managers, who were accustomed to managing the 'bottom line' figure, felt the need to change the way that they managed the Areas' activities. Some of them began to use activity information in critically analysing their activities and processes. As a result, some new initiatives were taken in re-engineering business processes. An example of a re-engineered process was the deployment of designated caseworkers, which was an initiative taken by CPS top management to improve the quality of the case finalisation. Under this initiative the designated caseworkers were deployed to deal with less complicated cases so that lawyers could concentrate on preparing relatively serious

cases. As a result, the overall quality of CPS’s service and performance was able to be improved.

Another example of the process re-engineering, which involved external co-ordination, also produced a favourable outcome. The ABC information revealed the existence of inefficiencies in some Areas. Area managers found that some of the inefficiencies were attributed externally. For example, if a case file was not prepared properly by the police, a CPS’s lawyer would spend more time on revising the case file. The same inefficient situation applied to the arrangement of court sessions. For example, if two court hearing sessions were arranged at the same time, it would take up two lawyers to attend the sessions. The above-mentioned two instances demonstrated that an Area’s performance was closely reliant on the police and the courts, whose efficiency was considered to be beyond CPS’s control. The significance of the influence on Areas’ ABC performance exerted by these uncontrollable external inefficiencies prompted some Area managers to take some proactive actions. A visit to one Area (which involved Interviewee H and I) revealed that they had initiated a joint-exercise with the police and the crown court. This exercise included a mapping exercise of the entire legal process from the police, the CPS’s Area and the crown court in an attempt to streamline various interactions (see Figure 7.4).

Figure 7.4: A Sample of Process Flow across the UK Criminal Justice System



As shown in Figure 7.4, the mapping exercise produced a model that depicted the legal process and series of interactions across the three agencies (the police, CPS and the crown court) in that Area. As a result, improvements in the legal process could be introduced and implemented in a holistic manner. Although this exercise was still at its early stage at the time of this case study, some improved interactions between the CPS and the police were already observed. For example, the CPS assigned caseworkers to prepare case files jointly with the police. As a result, the quality of case files were improved and



resource utilisation for both agencies was also optimised. Most of all the mapping exercise helped to visualise the three agencies' activities and streamline interactions between them (e.g. reduce duplication work, improve or eliminate ineffective practices).

In this respect, the introduction of the ABB model has significant impacts on managerial behaviour. The managers paid more attention to managing processes and activities and began to take initiatives to improve internal and external processes.

#### **7.5.2.2. ABB Information as a Common Communication Platform to Encourage Participation in a Top-Down Budgeting Process**

One of the prior studies about behavioural impacts on budgeting processes mainly centred on the budget participation. A great variety of aspects in this area has been revealed: job satisfaction and tension reduction through participation (Collins, 1978; Milani, 1975), relationship between performance and participation (Argyris, 1952; Brownell, 1982/85; Hofstede, 1972; Hirst, 1983; Lyne, 1988; Magner, et al, 1995), propensity to create slack in relation to participation and organisational commitment and task complexity (Dunk, 1994; Merchant, 1985; Nouri, 1994; Todd et al, 1994), and motivation and performance (Brownell and McInnes, 1986). These issues are all discussed briefly in this section. However, the discussion of these issues was primarily based on CPS's top-down or imposed budgeting approach.

Job satisfaction and tension reduction through participation. A diverged range of attitudes towards budget participation was observed amongst CPS's interviewees at different hierarchical levels. Top/middle managers did not support the idea of budget participation. According to Interviewee A, budget participation was not considered to be a viable and cost-effective way to allocate Areas' budgets. Rather some forms of Areas' representation on the CEMC and constant dialogues between HQs and Areas were considered to be more effective.

[Interviewee A, chief executive] ... With the structure of 42 Areas, it is just not possible to have a detail negotiation with every Area about its budget. We do have a number of structures in place which help us understand general pressures and concerns coming up from the field organisation. The Board which has every region represented, the management committee (CEMC) which has an area business manager, a CCP as well as finance director, we have discussions and conferences where we meet up with every area

managers. ... We have dialogue with Areas, but it can not inevitably be a systematic process of one by one bilateral agreements and negotiations. The budget has to be largely determined by HQ, bear in mind all the things we know, and then subsequently dealt with if necessary bilaterally. ...

Amongst Area managers, two different attitudes to participation were held. 10 out of the 13 interviewed Area managers expressed their strong preferences to participate in the allocation processes of Areas' budgets. Such strong preferences were particularly obvious amongst BCPs, who wanted 'to bid and make my cases, not to be told the budget'. Among the 3 Area managers who preferred not to participate in the budgeting process, their reasons were somehow interesting. One chose to accept the imposed budget passively because '*it was no point to waste time and energy to bid, when there was not enough money there*', one chose to '*follow the formula (the ABB model) because participation tended to favour those who could make a better case*', whilst the other accepted the imposed budget unconditionally.

[Interviewee N, CCP] ... Until the budget system is more sophisticated, I need to participate to try and get a fairer share of the CPS's budget.

[Interviewee F, BCP] ... We do not work on the basis of proposing budget. ... we do not sit down and work out what we need to do the job, and then bid for it. We are, the truth from our perspective in the branches, we have always been told this is the amount of money that is available, now you must work out what you are going to spend on. ...

[Interviewee G, BCP] ... At one stage, to the mid 1990's, the CCP who was the area head would put his case forward for this budget for the following year. And then what he received he would then allocate to the branch heads – BCPs. That situation seems to have gone now. ... As far as I understand there is not any actual factor of budget bids from the Areas now. To a substantial degree, this year, the only room for negotiation was a special bid for £50,000 for the whole Area budget £4.5 million. That represented realistically no flexibility at all. So no bids were made from this Area to CPS HQs on the basis of anticipated need for next financial year. ...

The levels of budget participation within Areas varied considerably, depending on whether or not the Areas were divided into branches or teams. Among the 5 Areas involved in this case study, 3 Areas that were divided in teams (i.e. one team for Magistrate's Court cases and the other for Crown Court cases) did not allocate budgets or devolve budget responsibilities to the team leaders. The 2 Areas with branches allocated the budgets to

BCPs, adopting the same approach as the one used by HQs. A slight difference was that the 2 AreaBMs consulted BCPs about their resource needs before and after the allocation of the branch budgets. For these 2 Areas, budget responsibility was also devolved to BCPs. Amongst 5 Areas, budget-related issues were raised and discussed in the monthly Area management meetings involving all levels of Area managers (i.e. CCPS, AreaBMs, BCPs or team leaders).

Area managers were not involved at the budget allocation process before commencing a financial year, but became involved during the financial year, through formal and informal budget-related meetings at national and Area levels. At national level, budget reviews were held formally twice a year: a mid-year and end-of-the-year review.

[Interviewee C, head of IRPMB] ... Area managers become involved in a mid-year review, which is to review Areas' performance including financial performance. At the end of the year review, they become involved in a review of the whole year's and previous year's performance. ...

Informal budget-related discussions were also held between Areas and IRPMB during the year. Evidence suggested that these two forms of discussions helped to reduce some tensions that incurred as a result of the imposed budgets.

Relationship between performance and budget participation. Areas' financial performance was measured by whether they could 'staying within the budgets'. Correspondence and telephone conversations between top/middle management and Area managers were used as an informal way to communicate between HQs and Areas about individual Areas' financial performance throughout the year. Evidence suggested that the effectiveness of this form of participation was perceived largely on the basis of the outcomes of this sort of budget discussion. If an Area received additional budget as a result of the discussion, then this form of participation was perceived as effective (see responses from Interviewees N & I). Otherwise, dissatisfaction was observed (see response from Interviewee E). Correspondingly, Areas that received additional budgets appeared to achieve their financial performance targets (stay within the budgets) better than those Areas that did not receive additional budgets. On the basis of interviewees' responses, it was not apparent that this form of participation related directly to other performance improvement.

[Interviewee N, CCP] ... we got some money through the participation process last year so it was worthwhile....



[Interviewee I, CCP] ... HQs decided how much we should have. Now if we were not happy about how our budget was allocated, we could go back and argue for it. My AreaBM did quite successfully last year, we stayed within the budget. ...

[Interviewee E, AreaBM] ... I initiated all kinds of budget related discussions with HQs all the time. ... I feel I am banging my head against a brick wall really. ... you get the feeling that it is Area that mourns the most get the most assistance. ...

Motivation related to the use of the ABB system and budget pressure. As a result of the 'across-the-board' budget reduction in the year 2000-01, some interviewees felt that there was a lack of budget incentive in using ABC information.

[Interviewee K, AreaBM] ... This year's budget is just so unrealistic. I do feel de-motivated. I think we should use the ABC system. Although it needs refinements in someway, it is a 'fairer' system of allocation than just chopping 4.5% off. ...

[Interviewee L, BCP] ... This year's budget de-motivates me to use ABC. We were told recording properly to get more money, but this is not the case at the year-end. ...

[Interviewee E, AreaBM] ... We adopt ABC or whatever means to improve the efficiency. I think we deserve to be taking a bit more seriously than some of the Areas do just that are not using these tools. ... But you just feel though you bang your head against wall, and after a while, it hurts....

The increased budget pressure also resulted in an increased sense of de-motivation amongst Area managers, as observed during this case study. Although some interviewees insisted that non-correlation between budget and performance was found in the past (see response from Interviewee K), the increase budget pressure could still have an impact on Area managers' motivation to learn proactively and improve the quality of service, which was often hard to quantify. However, the de-motivation did bring some obvious consequences in CPS, such as increased stress level and low morale (as stated in the following discussions).

[Interviewee K, AreaBM] ... When our Head of IRPMB did some statistic analysis work a while ago, we found no correlation at all between performance against CPS targets and resources, looking at individual Area. ... I would say that is probably a reduction in resource, like phasing out, could well have a negative effect on performance. But I am not certain that have more money would necessarily improve performance. In theory there should be a relationship between the resources and the quality and performance. But it is hard to find it statistically. ...

Performance, budget pressure and task complexity. CPS's performance targets, which were built into the PIs in CPS's national and Areas' business plans, were divided into two main categories: financial and non-financial. The financial targets for an Area included items such as 'stay within the budget' and 'reduction of unit cost to accommodation'. The non-financial targets were the main measures of the performance targets, including items such as 'paying witness expense claims during 10 days of receipts', 'replying to complaints within 10 days' and 'sending out brief to counsel within 14 days of the receipt'. These targets had no direct links to the budgets and resources deployment in CPS. In another words, the budget pressure would not cause immediate impacts on the quality and performance. However when the budget pressure persisted, tasks such as the achievement of budgetary targets became more difficult, and adverse impacts on the quality of services began to emerge. These adverse impacts had already been manifested in the increased rates of sick and absences. Results from a 'Staff Survey and Stress Audit'<sup>18</sup> (CPS News, 2000, internal document) revealed that the stress level in the CPS was one of the highest among the organisations audited. This stress had a detrimental impact on the ability to deliver quality services. For example, when one lawyer was sick, his cases would have to be passed on to another lawyer, who would have to handle more cases on top of his/her own caseload. The consequent chain effects resulted in delays of case finalisation and aggravated the already high stress level. A vicious cycle was formed as a result of the budget pressure (see Figure 7.5).

Figure 7.5 Impact of Budget Pressure on the Quality of Performance

|                                      |      | Budget Pressure                        |   |
|--------------------------------------|------|--|---|
|                                      |      | Short-term                             | Long-term   |
| Impact to the quality of performance | High |  | Resources are too stretched and problems will emerge (e.g. shortage of right skill of staff). |
|                                      | Low  | Resources are stretched but manageable |   |

Propensity to create slack in relation to job commitment, the use of ABC/B and budget pressure. In the past, Areas tended to make relatively frequent use of lawyer agents

<sup>18</sup> This stress audit was conducted by a Consultant firm called Organisational Stress Audit (OSA), which was  
*Footnotes continued on the next page*

in place of their own prosecutors to attend the courts' sessions. According to the interviewees, some Areas had genuine reasons (e.g. staff shortage) to do that, but others did not. In some way, the latter one arguably suggested the existence of a slack. In the face of the budget pressure in 2000-01, the resultant allocated budgets provided Areas with only a fraction of surplus over the costs of existing staff. Thus, as all of the interviewed Area managers pointed that this 'luxury' to appoint agency lawyers was not possible in 2000-01.

Evidence suggested that the use of ABC/B information helped to quantify the existence of slack. For example, within the minute of 'budget allocation 2000-01', to an Area with higher staff costs but lower level of ABC performance, its slack was represented by an addition<sup>19</sup> to the fair share in the ABB budget.

Nouri (1994) found that the high level of job commitment and involvement were associated with decreased propensity to create budgetary slack. The observation in CPS partly supported Nouri's suggestion that highly committed managers tended to engage themselves actively in managing performance within the existing budgets. These managers tended to seek voluntarily for better management tools (e.g. ABC and ABB) and often make new initiatives, such as the initiatives of re-engineering internal and external processes. Their efforts were made apparent in the minute of 'budget allocation 2000-01' as their Areas' budgets were shown higher on an ABB allocation than on the 'across-the-board' allocation. Evidence indicated that the adoption of ABB allocation in the additional budget and PIP challenge fund were perceived as a reward to those efforts.

Thus the reduced propensity to create budgetary slack was directly attributed to managers' commitment and budget pressure in CPS's 2000-01 budget allocation. In addition, the use of ABC/B information provided a transparent measure to highlight the existence of slack in some Areas. The budget allocation based on the ABB model could be used as a reward to managers' commitment.

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specialised in examining Organisational Stress in public and private sectors.

<sup>19</sup> The addition was derived by the difference between the budget derived by the 4.5% 'across-the-board' cut and the one based on ABC (performance) ratio.



### **7.5.3      *Organisational Perspective***

#### **7.5.3.1.      Top-Down Budgeting Approach & Training as Influential Factors Affecting the Implementation of ABC and ABB Systems in CPS**

Top management support and training have been identified as two of the main organisational factors that influence the success of ABC implementation in the literature (see Section 2.2.3 in Chapter 2). The finding in CPS's ABB experience supports this view, in that the top management support acted as a main driving force towards CPS's ABB infusion. However HQ and Area managers remained sceptical about the effectiveness of the training sessions and held different opinions about the extent of appropriate training required.

CPS's 'top-down' budgeting approach, together with a number of initiations, has helped to steer the implementation of both the ABC and ABB systems into the current operational states. The two members of ABCM unit had revealed that the introduction of the ABC system was directly resulted from the requirements of accountability and 'value-for-money' by the government. These requirements prompted CPS to implement some stringent measures to justify its resources requirement and performance. The implementation of ABC system received a relatively high level of general support and commitment from the top management. The ABC/B systems were also generally perceived as suitable management tools by the majority of the interviewees. During this case study, 12 out of 16, or 75%, of the interviewees endorsed the value of the ABC and ABB systems in satisfying CPS's needs.

[Interviewee E, AreaBM] ... There is an external pressure from the Treasury, as well as a pressure from management for more information and accurate data on what is happening and why. ... I do not feel obligated to use it, instead, I find it useful as a management tool....

[Interviewee K, AreaBM] ... I use it as a resource allocation tool. Because I choose to, not because anybody told me to....

There was a further indication that the top-down approach (i.e. the decision made by CEMC) was a main factor that secured the general progression towards the use of ABB at the infusion stage (see Section 7.4.3.6).

In terms of, ABC literature suggested that ABC education (e.g. training) is one of the steps towards successful ABC implementations (Cooper, 1990b). At CPS, managers'

knowledge and understanding on matters relating to practical implications and the use of ABC in management decisions were relatively limited during the ABC implementation process and at the adoption stage of ABB. During the initial visit to CPS in 1999, the two members of the ABCM unit revealed that *'it was a rather long and painful process to pursue people to sign up to the use of the ABC system, despite of a number of in-house training courses and presentations.'* On the other hand, data gathered from interviewed Area managers suggested that they were keen to learn about ABC/B, however, the training courses and presentations provided (usually in a one-day session) were often too brief for them to have an adequate understanding on the subject matters. This conflict in perception towards training resulted in the formation of two different expectations. Members at ABCM unit and top/middle management expected the Area managers to be able to apply the ABC information effectively in making their decisions after they attended to the ABC training sessions. A basic assumption was that the Area managers should have a general management knowledge and only require training to grasp the essences of the ABC system. Whereas Area managers, who came from a legal professional (as solicitors) and different educational background (as shown in Table 7.1), did not have sufficient management knowledge. They experienced some difficulties in understanding the application of ABC for management purpose and therefore were not able to use ABC information as an effective management tool.

[Interviewee H, AreaBM] ... we are expected to get on with our job and the requirements that the job encompasses. However, to use ABC properly, we need more workshops that will help use to learn how to use ABC to solve practical problems. ...

[Interviewee F, BCP] ... we only had odd one-day presentations on ABC, that was it. We did not understand it, nor did we know how to interpret the results from ABC. ... perhaps, what we need is general management training.

On the basis of above analysis, it was notable that the effectiveness of ABC trainings was perceived differently between managers with or without general management knowledge. To those with general management knowledge, once they understood the ABC principles, they were able to adopt the ABC/B information with relatively ease. On the other hand, those managers without general management knowledge would require training not only in the ABC principles but also in general management. Otherwise, they were left with two hurdles, one was the interpretation of ABC information and the other was the various

application of ABC information in solving practical problems. Therefore because of different managers' background, ABC training had a divergent effect on the Area managers' acceptance and ability to use ABC/B information.

**7.5.3.2. Relevance of and Reliance on ABC/B Information to Performance Evaluation, Decision-Making Processes, Budgetary Purposes, and Other Contingency Variables (Divergent Opinions at Areas and HQs)**

No unilateral conclusion was able to be drawn to the relevance of accounting information to performance evaluation, control, decision-making processes and other contingency variables in the literature (see Section 3.4.3 in Chapter 3). In CPS, different levels of users at the Areas and HQs perceived the relevance of ABC/B information differently. The levels of reliance on ABC/B information also varied amongst them. Further analysis revealed that the occurrence of these different perceptions was related to the divergences in job functions and information required in managing activities at different managerial levels.

Thus, the following examination of the relationships between the above-mentioned contingency variables and the usefulness of ABC/B information was primarily based on two viewpoints, i.e. HQs' (top/middle management) and Areas' (CCPs, AreaBMs and BCPs).

Performance evaluation. From top/middle management's viewpoints, management information should enable them to identify individual Area's general performance and benchmark one Area's performance against another and overall Areas' performance. In meeting the government's demand for 'value-for-money' on public service, the required information should also be used as a base to justify performance and resource deployment/utilisation. The ABC/B information, which established a causal link between resource deployment/utilisation and performance, thus was thought by top/middle management to be more relevant to meet their needs. In addition, Areas' activities, which mainly consisted of the prosecution of criminal cases and handling of police inquiries, were



repetitive in nature. Therefore it was applicable to the use of ABB<sup>20</sup> (Kaplan and Cooper, 1999). In other words the ABC/B information provided top/middle management with the necessary information for justifying Areas' work (performance) and relevant budget (resource) requirement/deployment. It was evident from IRPMB's 'Quarterly Reports on Area Performance in 1999-2000 to CEMC' that ABC ratios were used to monitor Areas' actual expenditure against their performances. Top management also used the ABC/B information to assess Areas' budget positions and ascertain their needs for budget adjustments during the mid-year budget review. Thus from HQs' viewpoints the ABC/B information was perceived as an essential guide to allocate budgets across 42 Areas. Opinions from interviewee B and C provided a glimpse into the general views held by top/middle level management at HQs.

[Interviewee B, finance director] ... A group in HQ for central casework is not subject to ABC. Now the main reason I think is because the work that central case work does include the largest cases and the most serious cases, so their case load mix is not the same as the case load in Area. So what is appropriate for Areas may not be if apply for central casework. ... Though I am convinced anyway that I may be sensible to have some sort of ABC system for central casework. But it would not be the one that applies to areas. Because, you know, it will be the wrong tool. One of the things, this is flagged up very much, is that for, you know the buck of CPS' expenditure which is on Areas, ABC does provide a way of bring together the work and the resource...

[Interviewee C, head of IRPMB] ... For last 3 days you have seen what I work out the budgets that are allocated effectively to 85% of our front line business. But you have not seen is the same process applied to Headquarters. And in HQs, we do not use ABC, because the units in HQs are so much smaller and diverse. And it will simply not be economic to invest all resources required maintain an ABC in Headquarters. ...

From Areas' viewpoint, evidence suggested that Area managers required detailed and accurate information as far as performance evaluation was concerned. Such information should enable them to understand current operational status and identify weaknesses in performance. In addition, they also needed information that could help them to justify their resource needs in meeting the actual performance requirements. Some Area managers

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<sup>20</sup> According to Kaplan and Cooper (1999, p. 533), 'ABB is most useful for resources performing repetitive activities.'

argued that ABC/B information was not sufficiently detailed and accurate enough to reflect actual performance and situations at individual Areas, because the ABC system was based on averaged measures. They further argued that the ABC information was not timely enough because it was produced quarterly. Based on these two arguments, they concluded that the ABC/B information were unable to meet the information needed for planning and managing performance at the Area level. Therefore Area managers tended to be less reliant on ABC/B information in managing and evaluating their own Areas' performance.

[Interviewee M, AreaBM] ... Speaking for the experience in CPS, there is no matching up between budgetary plan and budget allocation. Budgetary plan is for performance measures. And budget allocation is based on resource availability, but there is limited resource available in CPS. ABC just gives rough estimates. Some factors do not need to use ABC. Although the 'Should take' time gives estimates to the job and indications of the way to management, it is only a basic information. I do not know there is any linkage between the ABC and its assistance to the improvement of working practice. ...

[Interviewee K, AreaBM] ... I do not think that the performance will improve by having more money. It all depends on the sorts of performance indicators, whether or not on time and costs in those indicators, or whether or not on quality of case work. In theory there should be a relationship between resource and quality, but it is hard to find statistically. ...

[Interviewee H, AreaBM] ... In terms of planning, I use manpower planning rather than use ABC information.

Decision making process and reliance between financial and non-financial information. As evident from the 'Area Business Plans' of all 5 Areas, no obvious activity cost -- or budget -- related targets was found. An Area's performance targets were set in a percentage term against the organisational objectives and key performance indicators. An example of the 'Area Business Plan' of an Area is listed below:

Objective: To deal with prosecution cases in a timely and efficient manner in partnership with other agencies.

Performance measured by: Complying with the time guidelines for advance information, committal papers and delivery of briefs.

Key Area targets

- To meet the time guidelines for advance information to the defence in 87% of cases

- To meet the time guidelines for committal papers to the defence in 79% of cases
- To meet the time guidelines for delivery of briefs to counsels in 94% of cases.

Non-financial indicators (e.g. the time guidelines) were mainly used as performance targets. The information disclosed in the performance report was based on both non-financial (see Table 7.5, a sample of Areas’ performance summary report) and financial data (e.g. expenditure against budget in a traditional form).

Table 7.5 A Sample of Areas’ Performance Summary Report Ended in March 2000

| Areas   | Advance information sent within 7 days % <sup>1</sup> | Committal papers sent % <sup>2</sup> | Briefs sent to counsels % <sup>3</sup> | Complaints replied to within 10 days % <sup>4</sup> |
|---------|---|--------------------------------------|--|---|
| Area 1  | 82  | 59                                   | 68                                     | 86  |
| Area 2  | 73  | 60                                   | 90                                     | 100   |
| Area 3  | 81  | 68                                   | 68                                     | 67  |
| ....    |   |                                      |  |   |
| Area 41 | 94  | 88                                   | 75                                     | 73  |
| Area 42 | 57  | 51                                   | 74                                     | 81  |

Note:  
1 is the actual performance ‘percentage of advance information sent within 7 days of CPS being aware of name of defence solicitor and in possession of a file in either way cases’.  
2 is the actual ‘percentage of cases where committal papers were sent to the defence within 14 days (10 days in custody cases) of receipt from the police of a full file from committal where certified as trial ready’.  
3 is the ‘percentage of cases where the brief was delivered to Counsel within 14 days (21 days in non-standard fee cases) of committal/transfer’.  
4 is the ‘percentage of complaints replied to within 10 days of receipts’.

The reliance on ABC/B information in the decision-making process tended to vary amongst Areas. For example, when Areas were asking to bid for PIP challenge fund, those Areas that achieved below the national average in the ‘ABC league table’ chose other sources of information to justify their bidding proposals. However, those Areas that achieved above the national average showed greater reliance on the ABC/B information in support of their bids.

As indicated in CPS’s internal documents (i.e. Quarterly Areas’ performance reports, ‘Area Business Plan’ of the 5 Areas and other internal reports), managers at HQs and Areas generally relied on a range of other information, besides ABC/B information, to manage activities and assist decision-makings.

[Interviewee E, AreaBM] ... I have a range of information to help me monitor my Area’s operation: key performance indicators, joint performance statistics, corporate



performance measures, budget and complaints. Plus I meet informally with staff at all levels to talk generally about the operations. ....

[Interviewee B, finance director] ... I use all sorts of information: feedback from external sources and staff visits, Areas discussions and performance information. ...

Thus, from the above analysis it was notable that managers at HQs relied more on using ABC/B information in managing the overall performance of 42 Areas performance (i.e. benchmark or 'league table') and making budget-related decisions. On the other hand, Areas managers had less reliance on the ABC/B information since they perceived the averaged (general) ABC/B information as less sufficient in assisting the decision-making on their operational activities. In addition it was also found that both financial and non-financial information (e.g. PIs, targets and performance reports) were used by all levels of managers in their decision making processes.

The relevance of the ABB information to meet budgetary purposes. The purposes of budgeting can generally be described in as follows (Drury, 1996):

- (i) To aid the *planning* of annual operations.
- (ii) To *co-ordinate* the activities of the various parts of the organisation and to ensure that the parts are in harmony with each other.
- (iii) To *communicate* plans to the various responsibility centre managers.
- (iv) To *motivate* managers to strive towards the organisational goals.
- (v) To *control* activities.
- (vi) To *evaluate* the performance of managers.

CPS's top/middle management anticipated that the use of ABB model would be a cost-effective means to improve the budgeting process.

With an aim to quantify interviewees' general perception on the success of this anticipation before and after the implementation of the ABB model<sup>21</sup>, a question with a scale of 1-5 (i.e. 1 is lowest and 5 is excellent) was administrated (see Table 7.6). The results<sup>22</sup> indicated that interviewees generally held positive opinions towards the use of the ABB

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<sup>21</sup> The use of ABB had not actually taken effect during the first round of this budget allocation, but the intention to allocate the additional budgets using ABB was announced prior to these interviews. Indeed, some Areas already allocated their budgets to branches using the ABB model at the Adaptation stage. Thus, interviewees' responses to this question are considered as valid.

model in achieving the six budgeting purposes, on the basis of higher averages (means) value in column A than those in column C in Table 7.6.

Table 7.6 A Mean Test of the Effectiveness to Achieve the Purpose of Budgeting between Systems using With/Without ABB Model

| Purpose of Budgeting | System using with the ABB model ('New' System) |                        | System using without the ABB model ('Old' System) |                        |
|----------------------|--|------------------------|---|------------------------|
|                      | Mean (A)                                       | Standard Deviation (B) | Mean (C)  | Standard Deviation (D) |
| Planning             | 3.00   | 1.25                   | 2.00  | 1.07                   |
| Co-ordination        | 3.20   | 1.32                   | 1.80  | 1.08                   |
| Communication        | 3.13   | 1.36                   | 1.93  | 1.03                   |
| Motivation           | 2.80   | 1.37                   | 1.87  | 1.13                   |
| Control              | 3.20   | 1.08                   | 2.40  | 1.55                   |
| Evaluation           | 2.73   | 1.39                   | 1.93  | 1.22                   |

By dividing the results from the mean test into two groupings, one for top/middle and the other for Area management (a sub-grouping between AreaBM/CCPs and BCPs), a different dispersion pattern emerged (see Table 7.7). As shown in Table 7.7, a higher mean of opinions amongst top/middle management confirmed their views towards the use of ABB model. A lower and more diverse mean of opinions amongst Area management suggested that AreaBM/CCPs were reasonably in favour of the use of ABB model. However, the mean results for BCPs showed a pattern of reversed preference to the ABB system: a higher mean in volume C than that in volume A. This indicated that the 3 interviewed BCPs generally preferred the budget allocation without the use of the ABB model.

Table 7.7 A Mean Test based on Positions

| Purpose of Budgeting  | No. | System with utilisation of the ABB model |                        | System without utilisation of the ABB model |                        |
|-----------------------|-----|--|------------------------|---|------------------------|
|                       |     | Mean (a)                                 | Standard Deviation (b) | Mean (c)                                    | Standard Deviation (d) |
| Top/Middle management | 3   |  |                        |   |                        |
| Planning              |     | 3.33                                     | 0.58                   | 1.67  | 1.53                   |
| Co-ordination         |     | 4.00                                     | 0.00                   | 1.67  | 1.53                   |
| Communication         |     | 4.00                                     | 0.00                   | 1.33  | 1.15                   |
| Motivation            |     | 3.33                                     | 0.58                   | 1.00  | 1.00                   |

<sup>22</sup> The test result is based on 15 out of 16 interviewees. One interviewee from top/middle management declined to give scores to avoid distortion to the result, since he joined CPS during the period of the implementation of ABC and subsequent ABB.

| Purpose of Budgeting   | No. | System with utilisation of the ABB model |                        | System without utilisation of the ABB model |                        |
|------------------------|-----|--|------------------------|---|------------------------|
|                        |     | Mean (a)                                 | Standard Deviation (b) | Mean (c)                                    | Standard Deviation (d) |
| Control                |     | 4.00                                     | 0.00                   | 2.00  | 2.00                   |
| Evaluation             |     | 3.67                                     | 0.58                   | 1.33  | 1.53                   |
| <i>Area management</i> |     |  |                        |   |                        |
| <i>AreaBM/CCPs</i>     | 10  |  |                        |   |                        |
| Planning               |     | 3.40                                     | 1.07                   | 1.90  | 0.99                   |
| Co-ordination          |     | 3.50                                     | 1.18                   | 1.60  | 0.97                   |
| Communication          |     | 3.40                                     | 1.26                   | 1.90  | 0.99                   |
| Motivation             |     | 3.00                                     | 1.33                   | 1.90  | 1.10                   |
| Control                |     | 3.30                                     | 1.06                   | 2.40  | 1.65                   |
| Evaluation             |     | 3.10                                     | 1.29                   | 2.00  | 1.25                   |
| <i>BCPs</i>            | 3   |  |                        |   |                        |
| Planning               |     | 1.33                                     | 0.58                   | 2.00  | 1.73                   |
| Co-ordination          |     | 1.67                                     | 1.15                   | 2.00  | 1.73                   |
| Communication          |     | 1.67                                     | 1.15                   | 2.00  | 1.73                   |
| Motivation             |     | 1.33                                     | 0.58                   | 2.00  | 1.73                   |
| Control                |     | 2.33                                     | 1.15                   | 2.00  | 1.73                   |
| Evaluation             |     | 1.00                                     | 0.00                   | 1.67  | 1.53                   |

Responses from different levels of managers provided some detailed explanations to these different perceptions.

[Interviewee E, AreaBM] ... In the early days of the government funding to CPS was generous and the Areas were very much independent units based on the 'Old' local government departments. There was only a very loose structure and Areas were very insular with little perception of the wider perspectives. As the CPS matured as a unit of central government so accountability and the concept of collective responsibility for the performance as a whole began to be understood. Governmental decisions on cutting public expenditure forced local managers into evaluating performance and communicating across the Service to identify best practice and adopt new methods. Thus in that sense, ABC is a useful tool to managers. ...

[Interviewee B, finance director] ... ABC provides better understanding through greater transparency and a stronger link between outputs and inputs can be expected to improve co-ordination, communication, motivation and evaluation.

[Interviewee D, CCP] ... Basically, we now have better information basis as oppose to what we had before. It is a way of moving forward. ...



[Interviewee K, AreaBM] ... Because in the old system, we only had our performance indicators, which just count total number of cases, and do not give any sorts of weighting of the different types of cases. You just count your total number of defendants, effectively you are counting, you know, guilty plea to a motoring offence is the same as a trial for murder. Whilst in ABC, making allowances for different types of cases, and different kinds of outcomes. So you can actually identify that even though one Area might have more cases in total than another, and in fact a lot of those cases are more fractional or minor offences than them. So it is very useful and by comparing ABC earnings with actual spend, you can get a feel for which areas are better off or under-resourced. ....

Those Area managers who held adverse preferences also gave their reasons.

[Interviewee N, CCP] ... I think the 'old' system was more responsive to local needs, the 'new' system should be fairer but is not applied consistently. ABC does not take account of quality. It took a quickest way to do a job. It is asked to apply it on MACRO level to all Areas. But when to apply in MICRO level, ie. Area's improvement, team decisions, how many lawyers do I need to do a job, ABC is a crude measure not helpful. When money become tighter, the ABC is 'a system' to share them. ABC is a crude measure, it is sometime applied as it wasn't overall splitting a budget in an area, not use to allocate resource by ABC. 'Old' system was based on historical spend. Looked across all the expenditures and extra money I want to spend then go to 'bidding' process to HQ. Fund was based on historical, staff discussion. This is only available when money is available.

[Interviewee F & G, BCPs] ... Generally the 'Old' system is simple and easy to understand with clearer information for decision making and flexibility for planning and control. ...

[Interviewee L, BCP] ... ABC is a very imprecise science measures and often the ABC figures vary with the seasons. ...

Therefore, the above evidence suggested that the ABB information could meet budgetary purposes of top/middle managers better than those of Area managers.

Level of management as a key determinant to the use of ABB information. On the basis of the above-mentioned analyses on the effectiveness of ABC/B information to performance evaluation, decision-making process and relevance to budgetary purposes, it was apparent that the level of management was a key determinant to the use of ABB information.

The ABC/B information helped to draw a comparative picture of performance amongst Areas and establish a causal link with budget allocation. Thus it was perceived to be more applicable to those managers at HQs and Areas who needed to view performance in a holistic manner and allocate budgets on a consistent ('fairer') basis. However, the ABB information, which was generated from the averaged ABC measures, was not able to give the precise indication of situations related to individual Areas and branches. Thus to those managers who needed more accurate information for their daily operations, the ABB information was perceived as less useful.

[Interviewee E, AreaBM] ... So in this ABC report, it shows I need 14 lawyers. In the actual fact, I have got 24 lawyers in that grade. ... So to that extent, ABC is only limited use. However, I can use this information to look at my lawyers' distribution across 3 branches. Now this is the comparison of Magistrates and Crown courts case weighting from the ABC system. Now what this tells me is that in the 3 offices, the number of Magistrate's courts cases received per lawyer is 60 in Branch 1, 74 in Branch 2, and 58 in Branch 3. ... Because Branch 2 are still receiving almost quarter more cases than all the lawyers in the other two branches, the efficiency in terms of finalising cases is almost 25% more and so on and so forth. So what I can do is to do 'what-if': what if I move 3 lawyers: 2 from Branch 1 and 1 from Branch 3. Now you can see the figures begin to even out. They are much more even in terms of both receipts and finalisations. And that is in fact we have done. ... We have a meeting with Union's tomorrow to say we intend to move 2 lawyers. ...

[Interviewee K, AreaBM] ... there is awful lot of other things as well that go into it. That is the problem. Because ABC itself is not sufficiently refined to make allowances, you probably heard people saying that it does not give sufficient allowance in a city Area for the sort of high proportion of big drugs conspiracies and organised crimes, that sort of thing. Because the way the ABC system works, the way the PI system works, we are not able to count those sorts of cases separately and give a separate timing for them. At the moment, although the members of ABCM unit are working on that, I think. ...

[Interviewee F, BCP] ... The Courts in Branch 1 maybe more inefficient. The cost of prosecuting a case at Branch 1 may be more than that at other 2 Branches for this reason. You know this from being locally based. Under the Old system this would inform my

budget bid. I made an allowance 5 percent here, 10 percent there for staff levels. So I based my budget very much on my own local knowledge. ... There is a problem with ABC in the public sector, it utilises on a general formula which applies almost the same in Branch 3 as it were doing in Branch 1. ... ABC assumes a series of perfect issues: you can prosecute a case in a court immediately and the court and everybody else will co-operate, therefore you will get the result done, and that is how many people you need to do it. Now I am not aware, that is clear what happens in a perfect world, that it can ever happen in a real world. ... So ABC gives us figures which to us are unhelpful....

The above evidence generally suggested that the use of ABB information was effective for the purpose of budgetary planning. It provided top/middle management with a comparative picture of activities and performance across 42 Areas. This was also applicable at an Area level when the AreaBMs and CCPs wanted to compare performance between branches. The effectiveness decreased when the requirement for accurate information increased, particularly at the branch level. Managers with full understanding of their operations needed more precise information for their management control purposes. Consequently they were more sceptical towards the effectiveness of the ABB information.

#### **7.5.3.3. Budget Devolution with Increased Responsibility and Encouragement for Creative Management**

Some issues related to the positive relationship between budget devolution, better responsibility and encourage creative management (Bourn & Ezzamel, 1987; Keen & Murphy, 1996) are discussed in this section.

CPS operated a devolved budgetary system. Once budgets were decided, top management devolved full budget responsibility to CCPs, in an attempt to motivate managers and increase budget attainability. The finance director explained the philosophy behind this devolution.

[Interviewee B, finance director] ... When it comes to control, we got a devolved system of budgeting. So we actually give Area a budget for running costs. ... As far as we are concerned, areas can really do it as they wish. ... This accent of the devolved budgeting system is that someone says 'I agree this money, I agree this output, that is it.' So they are left to spend the money and deliver these outputs. It is not quite simple as that, but I



mean in accent it is. And you can understand why that may be so for 42, it is just about possible to monitor/investigate/examine a small number of budgets. ... So the devolved system fitted in very much with the philosophy that CPS wanted to adopt, which was less, smaller centre, smaller HQ, more power in the areas. Devolved budgeting system mirrors that.... What that does is to put a premium on Areas budget holders to stay within budget, because they want to stay within budget, doing their job.

CCPs were effectively the budget holders with full budget responsibilities. Areas' budget performance (i.e. to stay within the given budgets) was directly linked to CCPs' performance appraisals and bonuses. AreaBMs were responsible for executing budget responsibility on behalf of the CCPs. An AreaBM's performance was appraised on his/her managerial performance but not on the Area's budget performance.

[Interviewee K, AreaBM] ... My CCP and I work as a management team. ... We devolved our budgets for some years to the BCPs. In theory, each BCP is responsible for his or her own budget. And they have delegated branch authority to spend money from the budget. In practice, they do not have very much flexibility, really. Certainly now, when we are so short of funds, the BCPs won't take decision, for example, to fill vacancies. It has to be within reference through Area management team or me. ...

[Interviewee M, AreaBM] ... The 42 new structure was only formed since last year. The money available was fairly limited. Even there is a surplus, HQ is keeping a very close eye on it. ... I knew there was a surplus in my budget because one maternity leave and one lawyer left, I want to use the salary to recruit 2 case workers, the recruiting process take so long, about 3-6 months. By the time I wanted the money to recruit staff, HQ might have asked to use the money to help some other areas. ... Moreover, there is limitation in CPS in terms of how much an Area can do to generate incomes (e.g. providing legal courses to the public), which can subsequently influences performance.

The increased sense of responsibility was also partly attributed to the reduced hierarchical structure introduced after the re-organisation and the comparison made by Interviewees with their previous positions before the re-organisation.

[Interviewee O, CCP] ... In 1993 when we have larger Area. I was a BCP in that set-up. I was responsible for my budget and to the Area's management. Now I am totally responsible to London. ...

Some Areas also delegated budget responsibilities to BCPs. Throughout this case study, it was observed that budget devolution increased a sense of responsibility

amongst Area managers, but only to a certain extent which was due to the frustration related to the increased budget pressure and a lack of devolved budget authority. The latter evidence was also revealed in the Keen & Murphy (1996) study.

The budget devolution meant that AreaBMs had the day-to-day responsibility of running Areas' business activities. This responsibility tended to motivate AreaBMs to look into new ways of management, or creative management. For example, the 'what-if' planning by Interviewee E (see Section 7.5.1.5) and re-engineering initiative taken by Interviewee H & I (see Section 7.5.2.1) were the good examples of such creative management.

In addition, it should be noted that all managers were newly appointed as a result of the re-organisation in 1999. Feedback from interviewees revealed that the enthusiasms about their new jobs had also encouraged managers to seek more innovative ways to 'do a better job'. This was especially apparent amongst AreaBMs. One example was their spontaneous search for better management tools.

Therefore budget devolution attributed to the increased level of responsibility amongst CPS's managers. The fact that these managers were newly appointed also contributed to a strong sense of responsibility to a large extent. This strong sense of responsibility then resulted in various ways of creative management.

#### **7.5.3.4. Organisational Goals and Sub-Goal Development within the Budgeting Process**

Livingstone (1975) suggested that organisational goal development, sub-goal specification, budget allocation, effectiveness measurement, and review of actual performance were interdependent and interactive processes. Evidence gathered from CPS was generally in agreement with this suggestion. In particular, a clear procedure of the development of organisational goals and Areas' sub-goals was of significant importance, in that it helped to draw Area managers attention to the organisational overall objectives and led to the achievement of behavioural congruence.

The existence of a set of closely linked organisational goals and sub-goal was observed in CPS. Each year CPS HQs set up its national objectives based on current policy, past performances and a number of other criteria. A clear format of mirroring the national

objectives in individual Areas' 'Area Business Plan' was in use. This helped to draw Areas' attention towards the achievement of the overall goals of CPS. Views from interviewees confirmed that a clear understanding of close linkages between organisational goals and Areas' objectives and targets has been established through this formal procedure.

[Interviewee C, head of IRPMB] ... The budgets have got to be linked with business needs. Now we have objectives, targets, and measures. And these are formulated and reformulated every year....

[Interviewee F, BCP] ... we are pretty good in CPS at determining overall objectives and in determining sub-objectives and targets, which drive you towards the overall organisational goals. ...

[Interviewee G, BCP] ... Yes, that is something that has been developed very well in the last two years, and actually getting the message across to people with goals in the organisation as a whole. ... That aspect has been developed very well. ...

[Interviewee E, AreaBM] ... It is not the way to say that my Area's goal is more important than national ones. It is contribution to. For example, my Area does well on 'Advance Information to Defence', which is a weakness in another Area. So obviously it is contribution to the national targets. ...

In terms of the relationship between different levels of goals and performance, CPS's evidence was in contrast to the suggestion that explicit and difficult goals lead to better performance than moderate or easy goals despite the lower probability of achieving them (Locke, 1968). The general responses from the CPS's top and Areas management, were generally in agreement with the suggestion that challenging but achievable (moderate) budgetary targets could motivate managers to put on consistent efforts to achieve them (Merchant & Manzoni, 1989). All CPS's interviewees perceived 'challenging but achievable targets' as the most viable and effective ways in achieving better performance results.

[Interviewee A, chief executive] ... we set pretty specific targets, which are based on last year's performance and resources. ...

[Interviewee B, finance director] ... At a rule, we do not set a target that is so challenging is not achievable. ...

[Interviewee H, CCP] ... Targets need to be realistic and achievable. ...



[Interviewee I, CCP] ... Moderate targets give me something to aim at. However, because of the budget pressure, this year's targets are impossible to achieve, frankly I just give up ...

In light of the budget pressure under the 4.5% reduction for the financial year 2000-01, both HQs and Areas were fully aware that it was difficult to achieve their budget-related goals. The resultant budgetary targets were perceived to be too difficult to achieve and resulted in some detrimental impacts on motivation, stress and performance (see Section 7.5.2.2).

#### **7.5.3.5. The Influences of Administrative Inflexibility and Budget Availability on Budgeting Process**

As suggested by Xavier (1996), political and administrative structures are the strongest influences in the way a budgeting process operates. Budgetary reforms (e.g. the implementation of ABB systems) needs to take into consideration of all administrative arrangements that impinge on budgetary and financial management (Forrester & Adams, 1997; Xavier, 1996).

From the demonstration in Table 7.3, if the budget was allocated on the basis of the 'strict ABB model', CPS could face some serious and immediate problems in some Areas. In CPS, the allocated budget was to meet the cost requirement, i.e. salary costs of full-time staff members (i.e. crown prosecutors, caseworkers, area managers and administrative staff) and other costs including travelling, photocopying, utility and telephone. Among these costs, the staffing costs accounted for more than 90% of its budget. In addition, as all full-time members of staff in CPS were on permanent contracts, unless they voluntarily choose to resign, the workforce structure generally had little flexibility.

This problem of inflexible workforce structure that was associated with Areas such as Area 41 derived from some historical reasons. When CPS was formed in 1986, it had been expanded considerably in order to meet increased caseload demands at that period. Thus Area 41 could have recruited a large number of lawyers to deal with the relatively high levels of caseload then. Staff members were also offered permanent contracts. When the caseloads were significantly reduced in recent years, the Area 41 became over-staffed (as also indicated by the ABB model). Nevertheless, Area 41 was not able to retrench its

prosecutors or '*create criminal offences*'. The reduced budget derived from the 'strict ABB model' was thus not feasible to be administrated in CPS's current situation. On the other hand, when the budget was increased to a certain level so that the use of ABB model would have minimum effects on workforce arrangements, the use of the ABB model then became possible. This was found the case in CPS's budget allocation for the financial year 2001-02. Hence the budget availability and the existence of inflexible workforce structure in CPS were the determinant factors to the ABB implementation.

CPS's ABB experience did not support the notion of the restricted usefulness of activity-based information for decision making in a low cost variability situation (Bromwich & Hong, 1999; Noreen, 1991). Because of the inflexible workforce structure, CPS's costs, which staffing costs contributed to a large fraction, had very low variability. The ABB information, presented in the minute of 'Budget Allocation 2000-01', quantified the variance between the 'should-be' budget based on the 'strict ABB model' and the allocated budget based on the 4.5% 'across-the-board' cut. This variance drew managers' attention to the existence of inefficiency in those Areas with a relatively large number of staff but low caseloads. The resultant pressures had been put to Area managers and top management to devise an action plan, such as secondment of staff members to other Areas and recruitment of short-term contractual staff. Hence, CPS's ABB information had some positive influences on decision makings even though CPS's cost (workforce) structure was inflexible.

#### 7.5.3.6. Uncontrollable External Factors

The uncontrollable external factors were mainly associated with the functional procedures and the fluctuation of the quality of services in the police and the two courts. CPS carried out prosecution against criminal offences based on case files prepared by the police. The quality of these files, which contained the records, details and evidences of the criminal offences, affected directly the quality and efficiency of CPS. A well-prepared case file could save significant time on the part of a prosecutor in preparing a court hearing. On the contrary if a case file were not well prepared the prosecutor would have to spend a significant amount of additional time to revise and validate the case files. The quality of

police case files (with sufficient evidence) would also reduce significantly the court time to reach final verdicts.

During a court hearing, a prosecutor would have to wait for available courts' sessions. Because of the courts' arrangement, some unforeseen delays on the hearing would occur. Excessive time delays contributed by these factors demanded additional resources (e.g. CPS prosecutors) inevitably.

In the light of these 'pass-on' inefficiencies that were generated by the police and two courts, one of CPS's Areas took a proactive action and initiated a process mapping exercise in association with the police and the courts. If implemented successfully, this initiative should have some positive impacts on the overall improvement of efficiency in the entire UK criminal justice system (see also Section 7.5.2.1).

#### 7.5.4 *Cultural Perspective*

From the literature review in Section 3.4.4. in Chapter 3, it was ascertained that organisational culture has certain influences on the design and operations of organisational control systems, on the basis that culture was either one of the important contingent variables that influenced a successful system (Flamholtz, 1980), or complementary to the budgetary system's effectiveness (Goddard, 1997), or 'clan' or coherent cultural systems that exist in a complex organisation (Gagliardi, 1990; Ouchi, 1977; Smircich, 1983).

Evidence suggested that there was a certain divergence in values (which formed a part of organisational culture) after a series of changes being introduced to CPS over the years (e.g. re-structuring from the 13 to 42-Area structure and implementation of the ABC system). Such divergence in values became more apparent when the intention to link ABC system with the budget allocation was made.

According to Brimson and Antos (1994, p. 269), 'the organisation culture should encourage sustaining benefits. ... These benefits should change the way the people in the organisation think and act.' Although top level management's support was always a crucial factor in ensuring successful introduction of a new system to an organisation (Brimson & Antos, 1994; Preston, 1995), in comparison to the period before 1999 and after 1999, other variables (i.e. the re-organisation, the refinement of the ABC system and the introduction of



the ABB system) also played a role in changing the organisational culture, which influenced the successful implementation of ABB after 1999.

Before the implementation of the ABB model, the adoption of the ABC system (which was implemented in 1995) was rather a slow and controversial process. This slow rate of adoption was also compounded with the old Area structure. Before the re-organisation in 1999, CPS had the 13 larger Areas (as oppose to 42 smaller Areas) for a number of years. Those managers had formed a set of culture which was establised from their working practice over the years. However, the implementation of scientific knowledge (i.e. ABC) posed a challenge to the assumption and basic value (i.e. the 'set' culture) that managers had been established and accustomed to over the years (Gagliardi, 1990). Thus the impediment from those managers to accept an ABC system was high. This was evident from the interviewee A's comments.

[Interviewee A, chief executive] ... when ABC system has both matured and improved and got more sophisticated and become more important for us as an organisation. Equally it has become more controversial, more discussed, more challenged and more central to dispute between Areas and so on. So it is getting into the culture (organisational belief) but in a rather tense and controversial way. But it is absolutely essential for us. It is the only way to sort out budgets on a 42-Area structure.

After 1999, an increased rate of adoption of ABC and ABB system was noticeable. This was due to a number of factors. Firstly, the real challenge to the Area managers' assumption and basic value took place after the re-organisation to 42 Areas. Along with the re-organisation, a whole set of newly appointed managers (see also Section 7.5.3.3) was formed in an attempt to establish new working practice. Such attempt was evident in their search for some suitable and cost-effective tools in assisting their performance management and decision making process. Secondly, with top management support and committment, activities measures and cost drivers in the ABC system was continually refined and updated. Although the ABC system still measured average, it had already taken account of more comprehensive ranges of local variables that were previously neglected. Finally, the intention to use the ABB model as an essential reference to Areas budget allocation was made in financial year 2000-01. Together with the refined ABB system (i.e. 36-month ABC ratio) the decision to use ABB as the only determinant to Areas budget allocation for 2001-02 was subsequently made.

Change of culture in the workplace was also observed in a logical progression to an open management style in CPS. Civil servants and government agencies were conventionally viewed as being conservative, and CPS was no exception. This view was even shared by some interviewees.

[Interviewee M, AreaBM] ... A culture existed in this Area before was that lawyers in two branches did not talk to each other, even though there was a need in terms of handling crime cases.

[Interviewee H, AreaBM] ... Some people did not like open-plan working environment, they would like to keep their status and wanted the respects to them from what they had ....

With the implementation of the ABC system, indeed the reinforcement through links between ABC and the budget allocation, changes were obvious at Areas.

[Interviewee E, AreaBM] ... I think ABC system is a logic progression of what we were. It coincided with the development of our knowledge: we need to know what is happening, more importantly, we need reliable data as to what is happening. This side effect of this ABC/ABB system partly contributes with the open management.

[Interviewee H, AreaBM] ... Now we are all treated as employees and work to improve efficiency...

[Interviewee M, AreaBM] ... The implementation of ABC in CPS meant a change of legal work place, for example, recording time for providing legal advice over the phone. This became more important if it is going to affect our next year's budget.

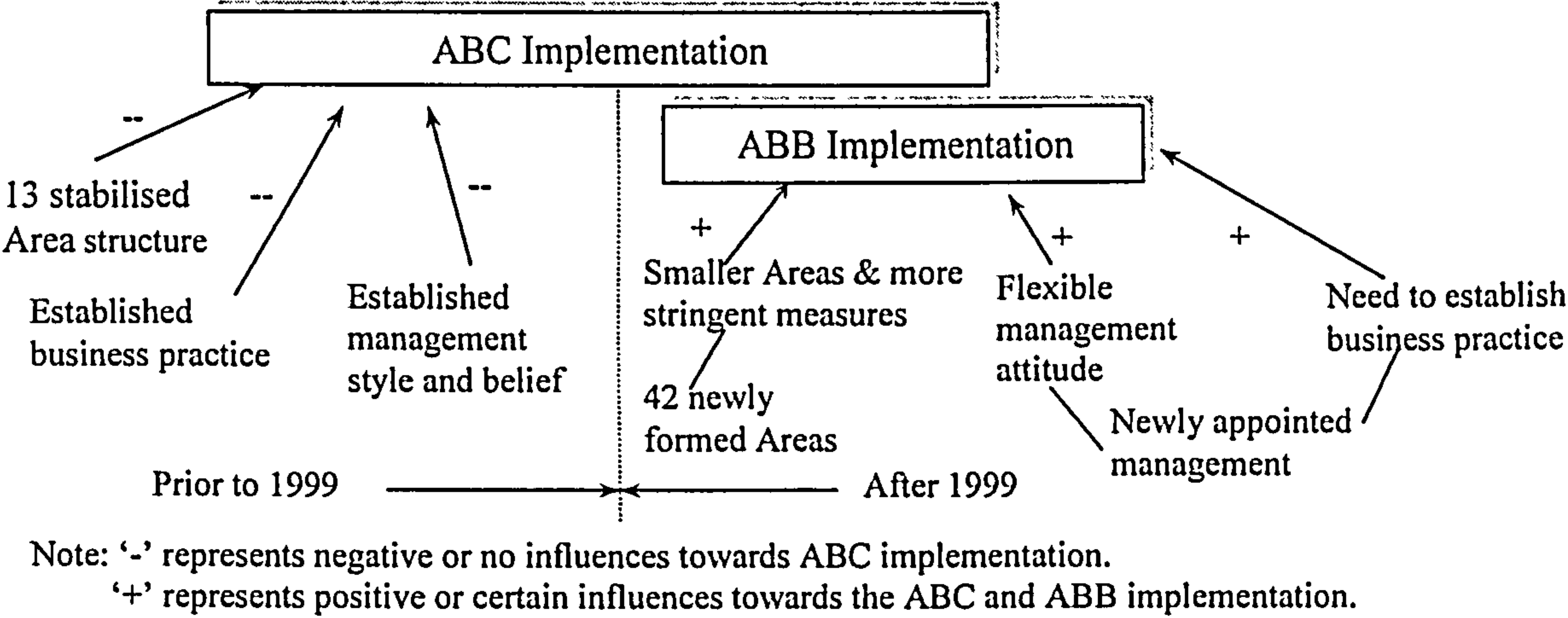
[Interviewee J, CCP] ... ABC has caused some incentives: people recorded better of what they do and finalised cases more promptly, because they realised that they would get more earnings/points for each case they do, which is going to affect their budget eventually.

Further the situation of limited co-operation amongst government agencies started to change as a result of the ABB implementation. CPS's new initiative to streamline its operations with the Police Force and the Courts was, according to the AreaBMs, '*a significant move to look at the long-halted process and start to make changes which are long-overdue.*'

Generally speaking, the formation of CPS's organisational culture was informed by two aspects: the permanent employees and the nature of being a governmental agency since 1986. The long established beliefs and values existed amongst the employees had

inevitable impacts on its organisational culture, which could influence the chosen business practices and systems. Prior to 1999, such beliefs were too strong to allow the ABC to take relatively significant effects. In order to introduce change to improve the working practice, more destabilising actions were needed (which was one of the reasons led to the re-organisation, also indicated in the Glidewell Report). CPS's success of the implementation of ABB and ABC systems was the results of a combination of the re-organisation in 1999, new systems' implementation, changes of organisational culture and managerial attitudes towards new management systems (see Figure 7.6).

Figure 7.6 A Mixture of Cultural Influences and ABB Implementation in CPS



### 7.6. Summary

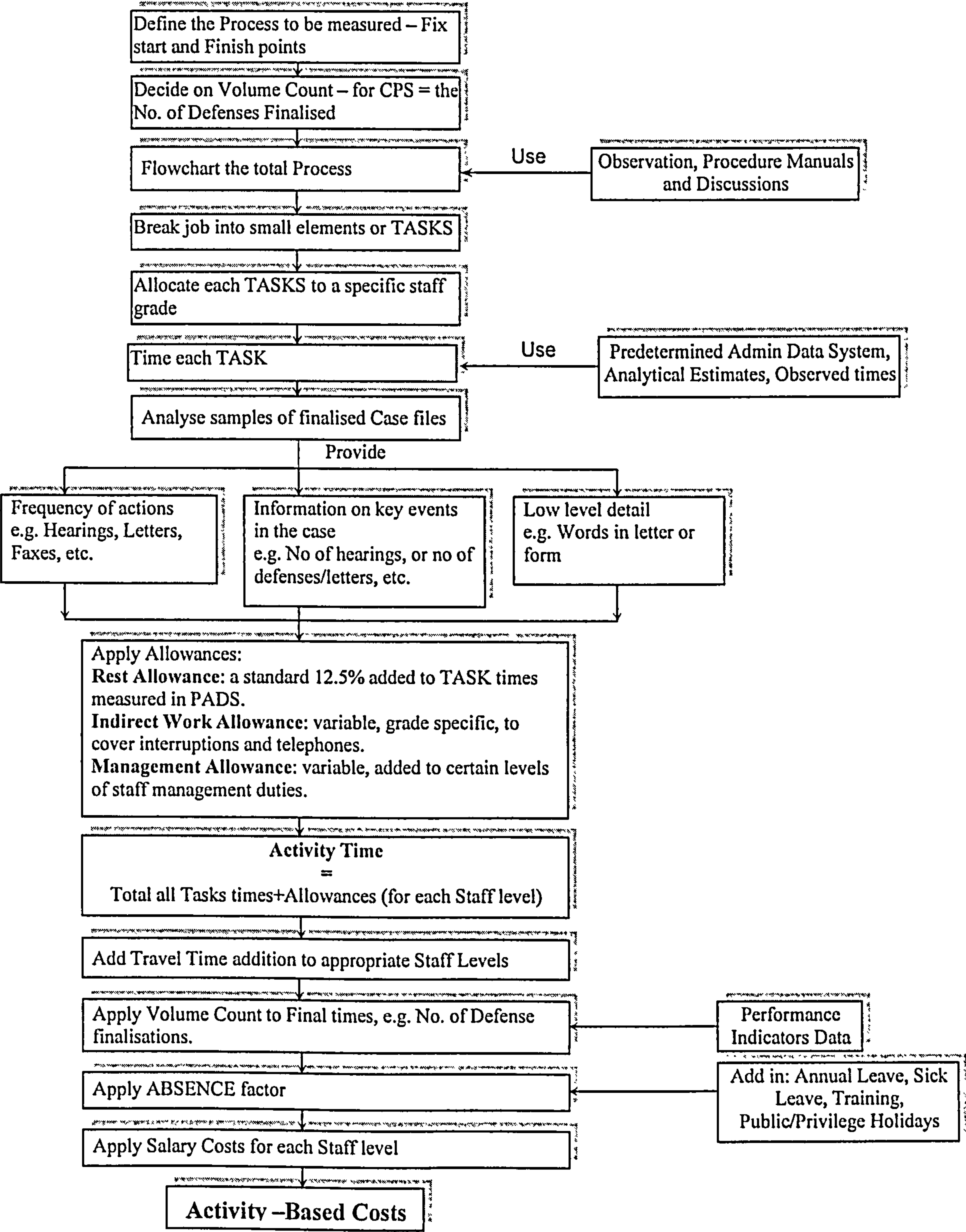
This case study presented in this Chapter focuses on the implementation of ABB at CPS. From the data collected (i.e. interviews with 16 managers and 2 members at ABCM unit at hierarchical level, observations during Areas' budgeting exercises, internal documents and reports), CPS's implementation experience has been detailed using the six-stage process. An analysis of influential factors relating to the four research perspectives has been undertaken in this case study.

The following chapter compares the results of analysis of the three case studies, discusses the implications of the four perspectives with in the context of the 3 organisations, and indicates further studies needed in this area of research.



Notes:

Exhibit A1: Construction of Activity Times and Costs



## **Chapter 8                    A Comparison of Activity-Based Budgeting Systems in the Three Case Studies**

### **8.1.            Introduction**

According to some published literature an ABB approach has the potential to improve an organisation's planning and control processes since it utilises ABC information derived through activity analyses (Brimson, 1991; Borjesson, 1997). These activity analyses help to establish clear causal links (via cost drivers) between resource, activities and products (Brimson & Antos, 1994; Kaplan & Cooper, 1998). The overall experience from the three case study organisations in this research unanimously confirms that activity analysis is an important first step towards the realisation of these ABB potentials. It is also important that organisations handle carefully the various issues arising mainly from technical, behavioural, organisational and cultural perspectives, in order to withstand the whole implementation process.

The purpose of this chapter is to identify the common and uncommon strands related to ABB experience at SCB, Transco and CPS, by bringing together the three ABB models and their respective underlying factors that have been critically analysed in Chapters 5-7. Although some brief analyses had been alluded to in the previous chapters, this comparative analysis aims to provide a better understanding of different ABB approaches by synthesising the various factors in the three different organisational contexts.

This chapter examines the design of the three ABB models, compares influential factors stemming from technical, behavioural, organisational and culture perspectives, and addresses external factors that are deemed to have substantial influences on an ABB implementation.

## 8.2. Technical Perspective

Two approaches to the ABB design specifications have been proposed in the existing ABB literature, i.e. a 'reverse ABC process' (Kaplan & Cooper, 1998) and the adoption of ABC information in budgeting processes (Brimson & Fraser, 1991). With reference to Raffish's (1991) two dimensional ABC logical model (i.e. cost assignment and process views, see Figure 2.4 in Chapter 2), a closer examination of the likely outputs of the above two ABB approaches reveals a clear difference. In essence, Kaplan and Cooper's ABB process (which is in line with the cost assignment view) is associated with a likely output of a functional budget. Brimson and Fraser's ABB approach (which provides a general framework and is in line with the process view) may lead to a functional or product cost budget, dependant on organisations' objectives. Within the three case study organisations, SCB's ABB model fits into Kaplan and Cooper's description, whilst the ABB models developed at Transco and CPS are in line with Brimson and Fraser's suggestion.

This section summarises two issues related to a common strand and examines the three distinctive ABB model specifications and implementation processes in respective organisational contexts. With reference to the technical issues raised in the literature on ABC/M and budgeting system implementation (see Sections 2.4.4 and 3.4 in Chapters 2 and 3 respectively), these technical factors are compared as follows:

- Two common factors: objectives of the system implementation and simplicity of a system design approach for users.
- ABB model specifications in relation to existing ABC systems, anticipated budget outcomes and accuracy or 'fairness' requirements.
- Technical improvement over the existing budgeting processes.
- Compatibility of ABB systems over existing systems and structure.
- Effectiveness of ABB information in meeting budgetary purposes and market competition.



### 8.2.1 *Two Common Factors – Objectives and Simplicity*

Empirical findings from the ABC implementation literature suggested that objectives of an ABC implementation determines the variations of such an ABC system (Cooper, 1990b; Innes & Mitchell, 1998; McGowan & Klammer, 1997; Shield, 1995). The evidence of the ABB implementation exercises in the three case study organisations supports this suggestion, in that the prime determinant of ABB systems design specifications is based on organisations' objectives of such system implementations. Within the three case study organisations, SCB's ABB system aimed at producing information that could eventually be used to produce its functional budgets. The aim of the ABB system at Transco was to determine product cost budgets. CPS's ABB system was to be used as a 'fairer' tool to allocate annual budgets to its 42 Areas.

Another commonly cited factor found in the ABC and budgeting literature is the simplicity of these approaches for users (including simplicity in operation, user interfaces and concepts). Empirical findings suggest that simpler budgeting systems tend to be adopted with relative ease by the users. This observation has been widely reported in the budgeting literature, for example, the popularity of simple techniques in capital budgeting systems (Haka et al 1985; Pike, 1983) and in budgetary control systems (Armstrong et al., 1996). The simplicity factor of a system design is also one of the commonly cited considerations in ABC and ABCM literature (e.g. Cooper, 1990b, Norkiewicz, 1994, Miller, 1990; Kleinsorge & Tanner, 1991). Within the three case study organisations, the evidence from CPS provides strong support to those published empirical findings in ABC and budgeting literature, in that the CPS's relatively simple ABB model has enjoyed more success than the relatively complex models implemented in SCB and Transco.

### 8.2.2 *ABB Model Specifications in Relation to ABC Systems, Anticipated Budget Outcomes and Accuracy Requirements*

The three case study organisations' ABB model specifications can be listed in accordance to the following aspects (see Table 8.1):

Table 8.1 Three Models’ Specifications Compared

|  | <i>SCB</i>   | <i>Transco</i>  | <i>CPS</i>   |
|--|--|---|--|
| Nature of organisation                           | Brewing  | Utility Service (regulated)   | Public Service   |
| ABB model  | ABC process in reverse   | Reallocation of its functional budget on the ABC allocation rules           | The use of ABC ratio <sup>+</sup> to allocate Areas’ budget provisions                                       |
| Type of budgets                                  | Functional budget  | Product cost budget   | Areas’ running cost budget (excluding Areas’ accommodation cost)   |
| Implementation stages                            | 1. Initiation<br>2. Adoption<br>3. Adaptation  | 1. Initiation<br>2. Adoption<br>3. Adaptation<br>4. Acceptance              | 1. Initiation<br>2. Adoption<br>3. Adaptation<br>4. Acceptance<br>5. Routinisation<br>6. Infusion            |
| Involvement of functional units in ABB           | Production unit (i.e. the six breweries)   | Operations & Asset (i.e. the two front-line business units)                 | 42 Areas (i.e. the front-line functional units)  |
| Developed from/link to ABC systems               | yes<br>(developed within the same ABC system)  | yes<br>(linked but independent from the ABC system)                         | yes<br>(linked but independent from the ABC system)  |
| ABC knowledge prior to the implementation of ABB | Developed at the same time as ABB*   | 8 years of ABC experience prior to the introduction of ABB                  | 5 years of ABC experience prior to the introduction of ABB   |
| Software system specification                    | “Cost Control” (in-house designed & link with general ledger and breweries’ spreadsheet models for variable costs) | “Budget Plus” (link with ABC systems called “EssBase” & “HyperABC/ Metify”) | Computer Spreadsheet (link with an in-house built ABC software system called “Corporate Information System”) |
| No. of activity/product involved in ABB model    | 250 activities, 100 products and 500 types of resources  | 350 core activities and 76 products   | 130 activities and 11 core products  |
| Complexity/ simplicity                           | Complex  | Complex   | Relatively simple  |
| Budget outcome                                   | Unrealistic functional budget information  | An approximate product cost budget  | An approximate Area (functional) budget  |

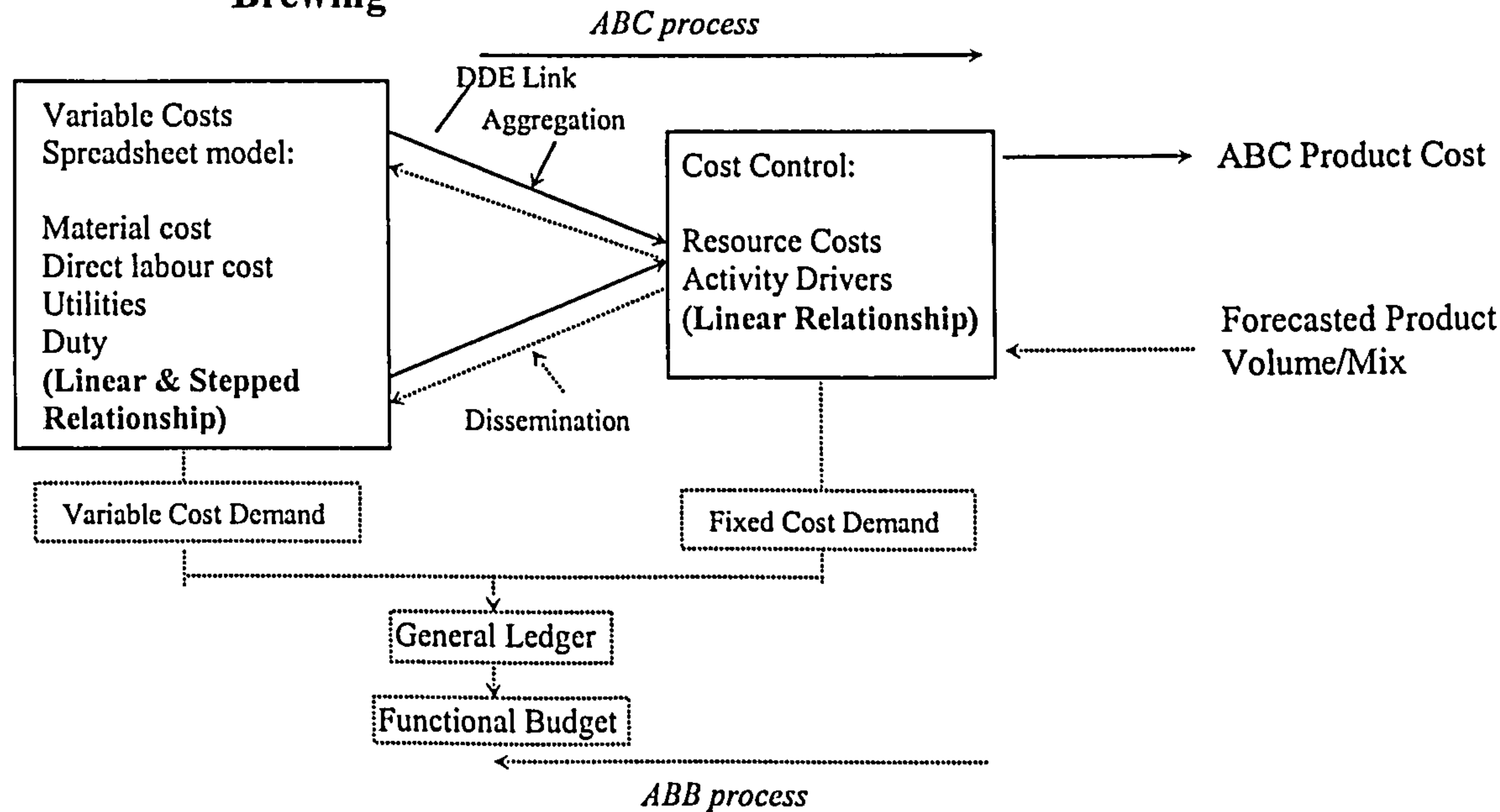
<sup>+</sup>The ABC ratio refers to the ABC performance of one CPS’s Area over that of overall 42 Areas’ performances. One Area’s ABC performance is the multiplication of average ABC activity standard measures with the Area’s actual caseloads.

\*Despite its pilot ABC in 1991, SCB’s actual implementation of ABC with full functionality in ‘Cost Control’ took place at the same period of that of ABB in 1995.

Referring to Table 8.1, SCB’s ABB model was designed on the basis of ‘ABC in reverse’ principle, in line with Kaplan and Cooper (1998)’s proposition. This

was implemented using a customised dual-purpose computer model (i.e. ‘Cost Control’, which was designed to perform both ABB and ABC processes). Whilst this principle was theoretically sound and straightforward, the application of this principle into practice was unexpectedly complex (see the column of ‘SCB’ in Figure 8.1). This complexity arose from both the computer system and data modelling. Owing to computer software constraints<sup>1</sup> two computer models (i.e. spreadsheet models to deal with variable cost data and a customised computer software package called ‘Cost Control’ for fixed cost data) were required to handle the combined ABC and ABB processes via a database interface transfer system (i.e. DDE link as shown in Figure 8.1). Whilst it was able to perform satisfactorily the data aggregation and transfer functions during an ABC process, the system was unable to undertake the reverse calculation exercises during an ABB process. The data dissemination during the ABB calculation process resulted in a combinatory exploration (i.e. the existence of a huge number of possible permutations). This slowed down the computation process to an unacceptable level even for today’s high-speed computers (see a supplementary explanation for this problem, referred as ‘NP hard problems’ in Appendix 4).

Figure 8.1 Difficulties Associated with the Model Design in Scottish Courage Brewing



SCB’s ABB process was also hindered by complexity in data modelling. The costs with a ‘stepped’ nature were not appropriately modelled in ‘Cost Control’ (see

<sup>1</sup> Its computer software – ‘Cost Control’ – is only designed to deal with fixed cost data, but not cost with variable and stepped nature. The data from spreadsheets models for variable costs has to be transferred to Cost Control via an electronic data link (i.e.. the ‘DDE’ link).



Section 5.5.1.2 in Chapter 5 for detailed explanation). Whilst these costs could be adjusted manually before inputting during ABC calculations, it was impossible to perform such manual adjustments during the reverse direction of ABB calculations. As a result some unrealistic budget information was produced.

The objective of Transco's ABB project, on the other hand, was primarily to derive a product cost budget for controlling the product costing in its Operations. The ABB model was built on both its traditional budget and the developed 'ABC mapping rules'<sup>2</sup>, in that the ABB product cost budget was a reapportion of the traditional budgets (under the functional cost codes) to associated products based on these rules. Transco's ABB system (Budget Plus) was a stand-alone system that was linked but not integrated to its ABC systems (i.e. EssBase and Hyper ABC/Metify). It has to note that amongst the three case study organisations, Transco had the most sophisticated and integrated ABC systems (e.g. the ABC system is integrated with its resource planning system, SAP<sup>TM</sup>, see Figure 6.5 in Chapter 6). The sophisticated ABC system, with its technical complexities in system design specifications, has resulted in some difficulties during the development of the ABB model. One of the difficulties was the large and continuous investment<sup>3</sup> required to sustain the complex ABC and ABB systems and to update these models on a regular basis. Further resources were also required to meet the cost for training users (e.g. accountants and managers at all levels). Another difficulty was the distortions in input data. The calculation of ABB product cost budgets used the previous year's ABC unit costs, which were determined by previous year's workloads. The workloads were affected by a series of routine and non-routine factors (e.g. council housing demands and weather conditions). Non-routine factors, in particular, seriously distorted the accuracy of these ABC unit costs. As a result, a large discrepancy existed between ABB product cost budgets and actual ABC results (which were associated with current year's workloads and both routine and non-routine factors). This seriously reduced the usefulness of the ABB product cost budgets for cost control purposes (as perceived by Local Distribution Zones (LDZs) managers). Furthermore, the ABC and ABB approaches, in terms of not only involvement of complex systems, but also the underlying principles, were proven to

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<sup>2</sup> The rules include 'one-to-one' relationship between direct cost items and ABC operational cost items and 'one-to-many' relationship between overhead cost items and ABC support and sustain cost items.

<sup>3</sup> Transco has invested in two consecutive ABC systems (i.e. the first set of ABC software package and HyperABC) and a network of computer hardware system (including a larger capacity network server). HyperABC was upgraded to HyperMetify in 1999. A full-time management accountant was also required

*Footnotes continued on the next page*

be too complex for many users, particularly managers and accountants at LDZs level. This complexity in underlying principles became apparent when compared with those principles in the traditional functional accounting and budgeting systems. Many managers tended not to make full use of activity-based information. As a result, the predominant financial information for Transco's decision making was still taken from the traditional accounting systems. The activity-based information, in the meanwhile, was only used as a supplement to the conventional financial accounting information.

Amongst the three ABB models, CPS's ABB model was the simplest in terms of its underlying principle, which was to apply ABC information in its budget allocation. The core element of CPS's ABB model was the ABC ratio, which was extracted from the ABC system. By applying this ABC ratio to the budget provision for Areas, the computation process was undertaken with the aid of simple computer spreadsheets. In this respect, relatively minimum investment was required for the ABB model<sup>4</sup>. The underlying principle of its ABB model was so simple that it was adopted readily by Area managers in allocating budgets between their branches. Time spent on producing a budget was also significantly improved in comparison to the traditional budget methods (i.e. 2-3 months in a traditional budgeting process to a 3-day budgeting exercise for the financial year 2000-01 and 1-day for the financial year 2001-02).

The criticism of CPS's simple ABB model relates to a lack of accuracy. This was contributed by two factors that were inherited from its ABC system. The first factor was related to the use of averaged ABC information. Owing to the large geographical coverage of CPS Areas and resource constraints, average ABC timing measures were used in the construction of the ABC model (i.e. the system parameter value which was derived based on data from core prosecution activities at a few selected CPS branches). A commonly known problem of the use of an averaged parameter value is that it tends to over-compensate Areas with actual value below the average, and undermine Area with actual value higher than the average. Being arithmetic mean values, these averaged ABC timing measures naturally favoured some Areas and penalised others. Concerns were raised over the fairness of the budget allocation. The second factor was related to non-routine factors. The ABC ratio that was used in the 2000-01's budgeting exercise was

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to process ABC data centrally. Additional resources have also been put in to collect input data. Transco also has a very large management accounting team to oversee the updating the ABC/ABB models.

<sup>4</sup> CPS did invest in maintenance and updating its ABC model in order to update the ABC ratios on a regular basis.



based on a '12-month rolling ABC performance' from the previous year. This problem deepened the concern over the 'fairness' of such budget allocation across the Areas, some of which could be under- or over- performed due to these non-routine factors<sup>5</sup> occurred in a 12-month period. Whilst these concerns existed, Area management did not cast serious doubts over the basic principle of the ABB model, which was to benchmark one Area's performance with the overall 42 Areas' performance, as a 'fairer' means of budget allocation. As a result, once the above-mentioned two factors were adequately dealt with<sup>6</sup>, CPS's management took the decision that the allocation of Areas' budgets should be based on the ABB model from year 2001-02 onwards.

Generally speaking, CPS's ABB model, which is the simplest among the three models, enjoys the highest level of success in practical implementation by delivering optimal results and achieving the objectives of the ABB project. There is also an added advantage associated with simplicity, in that revision, updating and modification of the simple ABB model can be undertaken effectively and requires only modest efforts. On the other side of the scale, ABB models in Transco and SCB are significantly more complex. Correspondingly, these two models are more difficult to implement. Attempts to implement these complex models, which are based on a new budgeting concept, have brought unexpected problems and significantly increased the required efforts from the organisations, the implementers and users. These difficulties, coupled with other influential factors associated with the individual organisations, have prevented the SCB and Transco from achieving the respective objectives of ABB implementations satisfactorily.

### 8.2.3 *Technical Improvement over the Existing Budgeting Processes to Achieve Strategic (Budgetary) Objectives*

A budget is generally regarded as a short-term planning and control measure to streamline business operations, devolve top management's strategic objectives into business processes, and evaluate proper executions of these objectives by business units

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<sup>5</sup> For example, a big drug case, which may not occur on a regular basis in one Area and tend to take longer time and consume more resource to prosecute, brings an increase in the ABC performance of that Area. The subsequent ABB budget of this Area will be more than it should get in normal circumstances.

<sup>6</sup> Average measures (e.g. travelling time) were revised during the year 2000 by the inclusion of a more diverse form of timing measures across 42 Areas and a '36-month rolling ABC ratio' was adopted to reduce impacts brought from the non-routine factors.



in an organisation (Drury, 1996; Krallinger & Hellebust, 1993). Organisations often find that conventional budgeting methods achieve little in terms of bridging the linkage between strategic planning and business activities/processes. The empirical studies in the literature find that some previous attempts to improve this linkage (i.e. PPBS and ZBB) are sound in theory but have failed in the actual implementation. The most common problem in PPBS and ZBB is that both systems are too time-consuming and labour intensive to either implement, utilise or maintain, and therefore are technically impractical (Barkman, 1997; Wilhelmi & Kleiner, 1995). It has also been found that greater attention is often placed on the technical sophistication when constructing a budget, which may outweigh the objectives for the use of a budget. As a result, simple budgeting methods, such as incremental budgeting, are still in use despite their pitfalls (Drury, et. al., 1993; Newing, 1994).

The objectives of ABB projects in the three case study organisations are generally to make improvements to their existing budgeting processes. Theoretically speaking, SCB's ABB model had the potential to achieve the strategic planning and control objectives and reduce the labour intensity caused by its existing ZBB process. This would be feasible if the technical problems in the model specification were properly addressed and rectified before, or at an early stage of the actual implementation. It would then be possible to produce a functional budget, which could enable users to exercise various means of budgetary planning and control in a relatively efficient manner over the ZBB approach. Unfortunately, owing to the problems associated with technical design (e.g. exclusion of 'stepped' nature costs and large number of products, activities and cost drivers), the full functionality of SCB's ABB model could not be achieved. With SCB, the level of labour intensity required to operate the ABB system was as high as that required for the existing ZBB approach.

Transco's ABB project aimed to complement its existing budgetary planning and control process (which was based on functional budgets) with the use of ABB product cost budgets. The intention was to provide Transco's management with an overview of product costs information before the resource costs and activities were committed for the coming year. This objective was deemed to be feasible on the basis of extensive ABC knowledge gained over 8 years of ABC experience, possession of

efficient computer systems and lessons learnt from its first attempt<sup>7</sup> on ABB. Thus one would expect that Transco could develop its ABB model with relative ease. However, like SCB, Transco also ran into some technical difficulties in its ABB system design. Transco's ABB approach was to re-allocate its functional budget to products by using its ABC mapping rules and ABC unit costs. Apart from the discrepancies from the use of previous year's ABC unit costs (which were mainly affected by non-routine factors, as discussed in Section 8.2.2), the product costs budget was not accurate enough to be used as a measure for budgetary control purposes. In addition, different opinions on the usefulness of this ABB product cost budget were held by the two core business units (i.e. Asset and Operations). Asset as a 'service contractor' to Operations required product/service cost information that could enable the Asset's management to estimate total costs of products/services contracted to Operations. Thus from Asset's viewpoint, the ABB product cost information was useful to generate an overall picture of estimated product costs and thus assist decision making and budgetary planning and control processes. On the other hand, Operations, as a main 'service provider' for Asset would like to keep a close control on its operational activities and costs. Such control was thought to be best undertaken in a discrete departmental (or vertical) manner, i.e. through control over individual functional departments and in a more operational and timely fashion. The large number of products and complex activities required relatively high volumes of work in calculating the ABB product costs budget on an annual basis. The additional information provided by the ABB system did not appear to justify the amount of additional work required to produce such information. Therefore limited recognition of the ABB was received by Operations, in terms of the usefulness over conventional budgeting methods and other more timely mechanisms (e.g. forecasts and ABC).

In CPS, inadequacies of the conventional budget allocation methods related to lengthy budgetary processes, lack of standardised negotiation criteria, and lack of links between Areas performance and expenditure. The seriousness of these problems became more apparent when CPS moved to a smaller Area structure (i.e. the re-structuring from 13- to 42-Area structure in 1999). An ABB model was perceived as a cost-effective alternative since it provided important links between past performance (i.e. caseloads and

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<sup>7</sup> Transco made an attempt to build a functional budget in Operations by adopting a bottom-up approach by LDZ managers in 1995. This attempt failed owing to the lack of general ABC knowledge and priority for other projects.



ABC timings) and budget (resource deployment). It also set up more standardised and simplified allocation criteria than the previous models. The use of an ABB model also provided CPS with useful information during a trilateral budgetary discussion with the Treasury and government. The cost-effectiveness of this ABB model was obvious, in that a budget allocation based on the ABB approach was completed over a significantly short time period (i.e. 3 days in year 2000-01, and 1 day in year 2001-02). Therefore CPS's ABB offered significant improvement over other budget allocation methods that CPS had previously adopted. The ABB model also enabled CPS to set up a common ground for budget discussions with the Treasury and the government, as well as between HQs and Areas.

#### 8.2.4 *Compatibility of ABB Systems with Existing Systems and Structure*

From the ABC and Information Technology (IT) implementation literature, recent research suggests that the newly implemented system must be compatible with organisations' existing systems and structure (e.g. Anderson, 1995; Kwon & Zmud, 1987). As suggested newly designed and implemented systems should work closely with existing systems and fit into the organisational structure to form part of an integrated environment. Therefore compatibility between an ABB system and various existing systems and structure is one of the important factors that have significant impacts on the success (or otherwise) of the implementation of ABB systems. A well designed ABB system should allow seamless automatic data exchange operation to take place between the ABB system and the other existing systems. As a result, such a system will be efficient enough not only to eliminate or minimise the need for intensive manual data-entry operation or intervention, but also to ensure data integrity by eliminating the possibility of errors introduced during manual data transfer or entry between different systems. Considerations must also be given to the compatibility of the technical design of an ABB system and the organisational structure. Experience from the PPBS implementation suggests that a system, which requires minimum change to the existing organisational structure, is likely to face fewer barriers during the adoption process than the one requiring greater change (Jager, 1973; Wilhelmi & Kleiner, 1995).

Amongst the three case study organisations, SCB and Transco implemented relatively complicated ABB systems as compared to that of CPS. The relatively large



number of activities and products involved in SCB and Transco's ABB systems increased the volumes of data transfer and calculations between ABB, ABC and other existing systems. It was thus vital that these systems were compatible, in particular between ABB and ABC systems since SCB and Transco's ABB systems were designed and built into their respective ABC systems. In this respect, the efficiency of data transfer between these two elements was crucial if overall efficiency was to be optimised.

The information used for ABC/ABB purposes in SCB was based on its financial accounting system. Ideally the ABB should be fed back to the financial accounting system in order to derive functional budgets. Thus the compatibility between its ABC/ABB and the financial accounting system was one of the crucial factors in its ABB implementation. SCB's financial accounting, however, was not designed to accommodate ABC/ABB principles. For example, the account codes in the financial accounting system were not detailed enough to facilitate the ABC/ABB calculations. Thus the required accounting data needed to be extracted, and then manually converted into a form (by adding additional information) suitable for the ABC and ABB systems. The given complexity of the ABC and ABB systems, which catered for a significantly large numbers of activities, activity drivers and products, made the manual data conversion process an extremely labour intensive task. This was particularly problematic during the data conversion of an ABB process since it involved a manual dissemination process to convert ABB data into the financial account codes, which would be used to derive a functional budget (see Figure 8.1). The substantial human intervention in this two-way data conversion process also introduced the possibility of human error during the data processing. The labour intensity in the data conversion also affected the timeliness and accuracy of the information, which SCB required to assist decision making in the highly competitive beer market<sup>8</sup>.

In terms of data-transfer between ABC and financial accounting systems, Transco were relatively advanced in comparison to SCB. Transco's information systems

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<sup>8</sup> SCB's ABB system was not fully implemented owing to these discussed technical problems. Thus whether the ABB system and produced information is effective for budgetary purposes (namely planning and control) has not been tested. However, on the basis of the discussion and until the system functionality could be solved, particularly in terms of producing timely information useful in this highly competitive beer market, it is not hard to conclude that the ABB information was not too useful to SCB. In fact, SCB has undergone a route of abandoning budgeting, with the replacement of other means of planning and control mechanism (e.g. Scorecards, TQM, benchmark and traditional financial information) (this was discovered in a following-up discussion with SCB after this case study).

were built on a system architectural concept of 'data warehouse'<sup>9</sup>. The core ABC data (in HyperABC/Metify) was deliberately kept separate from the reporting systems (e.g. the ABC reporting system EssBase). Advantages of this architecture consisted of minimisation of interruption and data-corruption, as well as ease of data-interface design. The use of this system architecture allowed data conversion between financial data from its accounting system (SAP<sup>TM</sup>) and the ABC system (HyperABC/Metify) to be performed automatically. This was a significant improvement over the approach adopted by SCB and made timely production of ABC product costs reports possible. The ABB system 'Budget Plus', on the other hand, was relatively less well designed in that it was a non-integrated stand-alone system that was linked with the ABC reporting system (EssBase) via comparatively less efficient downloading. This lack of integration between the ABC and ABB systems resulted in the onerousness and difficulty of updating the ABB information, therefore ABB product cost budgets were only produced annually. Hence, this also reduced the potential use of ABB product cost information for controlling product performance throughout the year.

The data extraction between CPS's ABC and the ABB systems was a simple and effective manual process. It involved the use of ABC ratios produced from its ABC system to computer spreadsheet models during the annual budget setting exercises. CPS's ABC system was integrated with its overall corporate information system. Thus there was no problem related to system compatibility. Although CPS's ABC system produced quarterly ABC reports, this ABC information was useful and adequate for the annual budget setting and mid-year review processes. CPS's ABB system exemplified a simple budgeting approach that made use of ABC information which was generated from a complex and computerised corporate information system.

In deciding the technical design of an ABB system one also needs to take account of an organisational existing structure. In terms of the organisational structure, the three case study organisations were all organised in a functional manner. SCB and CPS's ABB models were designed in line with their existing functional structure (i.e.

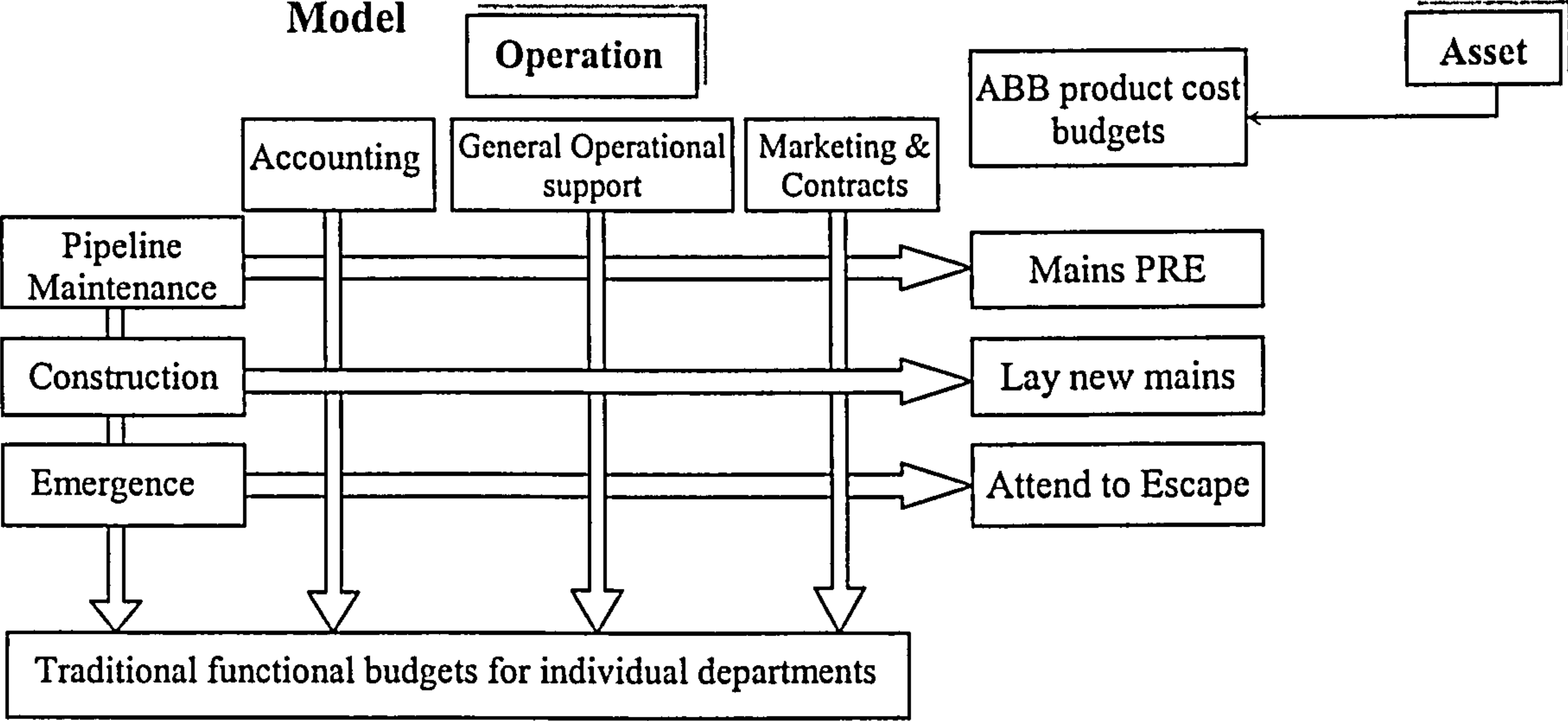
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<sup>9</sup> Data warehouse is the centre of the architecture for information systems in the 1990s. It is not a new concept. It was presented as a solution originally by IBM as the information warehouse and has had numerous rebirths in recent times. It was only evangelised by W.H. Inmon, who has promoted and describes the data warehouse. W.H. Inmon (1993), "the father of the data warehouse", gives an academic definition "a data warehouse is a subject-oriented, integrated, time-variant, non-volatile collection of data in support of management's decision making process". The data entering the data warehouse comes from the operational environment in almost every case. A data warehouse is always a physically separate store of data transformed from the application data found in the operational environment.



SCB’s ABB aimed to produce departmental budgets, and CPS’s ABB aimed to perform Areas’ budget allocation), whereas Transco’s ABB product cost model was differed from the existing structure. Therefore if this product cost information was to be used, a horizontal view towards its organisational processes and departmental activities (i.e. a cross-functional view) needed to be established first (see Figure 8.2). Transco’s organisational structure, which was relatively hierarchical and functionally oriented, was not in line with the way that the product cost budgets were presented and estimated. Transco’s ABB model, which required horizontal co-ordination of activities across departments within a LDZ, did not suit the current way of running LDZs’ business activities and processes in Operations.

**Figure 8.2** An Illustration of Horizontal View as Required By Transco’s ABB Model



**8.2.5 Effectiveness of ABB Information in Meeting Budgeting Purposes and Market Competition**

Budgeting is generally used to facilitate some business activities such as planning, co-ordination, communication, motivation, control and evaluation (Drury, 1996, Rainborn, et. al, 1996; Wilson, 1983). When an organisation faces uncertainty in its external environment (e.g. market competition), an effective budgeting system (which is an integrated part of management accounting system) can provide management with essential information for decision making and may result in performance improvements (Bromwich, 1990; Mia & Clarke, 1999). This means that the quality of a system can be measured by its success in meeting the perceived internal and external needs (Anderson & Young, 1997). A successful ABB system is therefore required to provide information



effectively to meet the needs of decision-makers and keep up with changes in business activities as the market demands.

The end results of ABB implementations in the three case study organisations demonstrated various degrees of effectiveness (or otherwise) of ABB information in meeting internal and external requirements, this in turn helped to determine the future of the respective ABB systems.

- SCB's system could not effectively produced adequate ABB information which did not fulfil budgeting purposes and meet market competition, it was thus *abandoned*.
- Transco's ABB product cost information was adequate for budgetary planning and control purposes at a strategic level but inadequate for planning and control purposes at operational level, thus it was *partially adopted* for planning but not control purposes.
- CPS's ABB model was relatively effective for budget allocation purposes and accepted in principle. However, when performing the actual budget allocation on the basis of the ABB information such allocation was not feasible owing to some internal and external circumstances (e.g. the reduced government funding and large portion of costs with fixed nature (i.e. inflexible workforce). As a result a form of *modification* to the ABB model was introduced.

SCB was facing a volatile and highly competitive beer market both in the UK and around the world, thus it required prompt and accurate information to assist decision making. A budget exercise, conducted annually, was clearly unable to provide SCB's managers with timely and accurate information to keep close monitoring of business performance and have quick response to the volatile market. Compounded with the ineffectiveness of its ABB system to produce realistic budget information, it was not surprising that SCB shelved further development of the ABB system at an early implementation stage.

The effectiveness of Transco's ABB product costs budget information varied along with various transition periods of the organisation. The primary influential factor was the recent transition of a monopolised to a competitive utility market. At the earlier stages of this case study, market competition to the utility market had not been introduced, and the whole range of business activities dealt with by Transco's Operations and Asset units was still monopolised. In another words, Asset and Operations were still

in a sole 'contractor and service provider' relationship. The effectiveness and usefulness of the ABB information was less apparent than the functional budget information, especially in a situation where the performance of individual LDZs and the managers were still predominantly measured on the basis of functional budgets. Another influential factor was related to the different views on the use of ABB and budget information between Asset and Operations. To Asset, as a contractor to Operations, the ABB information provided managers with an overall picture of product costs, which could assist Asset to plan and control Operations' business activities. However, the real use of this information was limited because of sole contractual relationship with Operations at that time. To Operations, managers placed more emphasis on control than planning in order to meet the functional budgetary targets. They also generally regarded annual budgets as '*out-of-date*' information and less effective for control purposes. Thus before the introduction of market competition, the effectiveness and usefulness of the budget information was already less obvious to managers at Operations. However, when the idea of Asset and Operations' commercial relationship<sup>10</sup> was formalised during the course of this case study, the level of recognition of the importance of ABB product cost information was substantially increased (more apparently amongst Operations' interviewees). To Operations, its former less emphasis on planning was to be changed since Operations ought to compete with outside contractors<sup>11</sup> for price and quality of service.

CPS's ABB system, although conceptually and structurally simple, was regarded as effective for budget allocation purposes. CPS, as a government agent, was held accountable for the effective utilisation of public funds and the delivery of quality public service. The main utilisation of the funds was for the costing of CPS staff, most of whom were on permanent employment contracts. Thus the reduction of governmental funding for CPS in the year 2000-01 had resulted in serious implications. In the face of this situation, CPS's ABB information provided a clear and rational demonstration of the

<sup>10</sup> During the case study in 2000, the commercial relationship between Asset and Operations was not formalised. In 2001, this relationship was finally realised and Operations have to compete with other service providers to bid for the Asset's contracts. Thus the ABB product cost information is imaginably important in Operations' product cost planning process in the financial year 2001-02.

<sup>11</sup> As suggested by the interviewed Marketing Manager in South LDZ, the use of ABC information in 'what-if' planning could be potentially useful in determination of product costs under various scenarios if Transco's Operations unit was going to be a non-regulated and independent organisation.



constraints in resource and was gainfully used to support CPS's budget discussion with the Treasury, which had a favourable outcome.

Within CPS, the ABB information allowed top management to have a relatively clear picture of the desirable budgetary allocation and to appreciate the links between budgets and Areas' previous and anticipated activities. Within the individual Areas, the ABB information assisted Areas' managers in streamlining Areas' activities and processes. Across Areas and HQs, ABB information also provided a rational platform for negotiation and discussion. The use of ABC reports improved communication and co-ordination among Chief Crown Prosecutors (CCPs), Area Business Managers (AreaBMs), Branch Crown Prosecutors (BCPs) and HQs' managers. Despite the fact that CPS's budget allocations for the year 2000-2001 were not based on an ABB system as a result of the two constraints, i.e. the significant reduction of government funding and the existence of inflexible workforce structure (see Section 8.4.3 for further discussion), the above-mentioned positive notes were still apparent amongst the interviewees in CPS. The ABB budget information has set the tone for future budget allocation criteria.

In terms of using ABB information for budgetary planning and control purposes, CPS's experience was fairly similar to Transco's, i.e. ABB information was perceived to be less effective at the front-line level. Top/middle management as well as CCPs and AreaBMs were able to use ABB information to draw relevance when planning and control performances across 42 Areas and between branches respectively. However, since CPS's ABB information made use of averaged parameter (the averaged ABC timing measures), BCPs regarded it too approximate to pinpoint exact situations in the branches. Therefore, to the frontline BCPs, ABB information was perceived as a less useful tool for their planning and control purposes.

In summary, evidence from the three case study organisations suggested that the use of ABB information tended to respond to external forces. SCB and Transco experienced market competitions whilst CPS was faced with budgetary pressure (i.e. increased demand for public accountability and reduced governmental funds). Because of the approximated nature of ABB information, managers at Transco and CPS tended to find ABB information to be more useful for budgetary planning than control. This tendency also indicated the applicability of ABB information to different levels of managers within an organisational hierarchy. To managers at higher levels, ABB information provided them with a comparable and overall picture of operations at lower



levels, and thus would be applicable for planning purposes. However, to managers at lower level (front-line in particular) whose main responsibility was to monitor closely operational performance, the approximate ABB information was too inaccurate to be used for control purposes<sup>12</sup>.

### **8.3. Behavioural Perspective**

The implementations of the respective ABB systems at SCB, Transco and CPS were closely linked with their experience of ABC implementation (see Table 8.1). The behavioural issues that are suggested in the literature of ABC/M implementation and budgeting systems are therefore pertinent to be used as prime references in the identification of some common and distinct issues in this research.

Literature on the practical implementation of ABC and ABCM systems has indicated some behavioural factors that influenced the success (or otherwise) of a system implementation. These factors mainly consisted of management involvement, participative manner during the development and implementation of ABC systems, and ownership issues (Bhimani & Pigott, 1993; Innes & Mitchell, 1991/1995a; Shields, 1995).

On the other hand, behavioural research in budgeting has focused mainly on the relationship between participation and a series of behavioural consequences (e.g. motivation, performance, job satisfaction, and reducing slack), and influential variables, for example, personality types, role ambiguity, information asymmetries and agency theory (Argyris, 1952; Brownell & McInnes, 1986; Brownell, 1981; Dunk, 1992; Hofstede, 1968; Licata et al, 1986; Mia, 1988; Nouri, 1994). Existing empirical research findings also identify certain types of human behaviour in budgetary control systems, such as gamesmanship, leadership style and certain managerial responses to organisational circumstances (Arwidi & Samuelson, 1993; Decoster & Fertakis, 1968; Hofstede, 1968; Petterson, 1995).

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<sup>12</sup> It also should be noted that, a trade-off between simplicity and detailed information naturally exist for any system. The incorporation of detailed lower level information tends to increase the level of complexity of the system. In CPS's case, a simple system is achieved through the sacrifice of omitting disclosure of the lowest level (branch level) information.

It should be noted that behavioural issues are complex. To interpret such complex behavioural issues thoroughly an in-depth analysis using a multi-disciplinary approach is required. It is clearly not a primary aim of this research to perform any in-depth behavioural study; instead a pragmatic and simplistic approach has been adopted to address these important issues briefly and concisely.

This section compares the following behavioural attributes:

- □ Participative manner in ABB implementation in relation to users' acceptance towards ABB systems.
- □ Influences of ABB implementation on managerial behaviour.
- □ Impacts of budgeting approaches, participative budgeting, motivation and attitude towards the ABB systems.

### **8.3.1 *Participative Manner in ABB Implementation in Relation to Users' Acceptance towards ABB Systems***

Innes and Mitchell (1991) suggest that involvement and consultation of staff and participative approach in data gathering are the two main factors attributed to users' acceptance which would lead to the success of an ABC system. Other researchers support this suggestion (Anderson, 1995; Bhimani & Pigott, 1993). Innes et al. (2000) further revealed that involvement of accountants did not have a beneficial effect on the ABC system implementation. Evidence from SCB and Transco generally supports these literature findings. Under the top-down budgeting approach, the involvement of CPS's Area managers was limited during the budget setting process. However, evidence in CPS suggested that users' acceptance of the ABB system was closely linked to effective communication (in both formal and informal terms) between budgeters and budgetees.

The three case study organisations demonstrated three different ways of users' involvement during the ABB implementation processes. In SCB, the users (i.e. breweries' managers) were involved mainly at the beginning and the end of the implementation. During these two periods, they were introduced with the ABC/ABB principles, consulted on ideas about possible identification of processes/activities, and presented with the outcomes of the ABC and ABB models. However, these users were not involved in the actual identification and classification of activities and cost drivers nor in the data gathering process. Instead, accountants (both members of the implementation

team and accountants at the six breweries) were actively involved in the actual development of ABC and ABB models. As a result, resentments of the ABC/ABB were evident amongst users. For example, the use of the term “non-value added” to describe repair and maintenance functions without proper consultation with the managers concerned (who would have objected to this term) had certainly caused some resentment amongst the managers. The resentment also contributed in part to the reluctance for these managers to claim the ownership of the systems. Indeed the accountants’ involvement also presented adverse effects upon users’ willingness to claim ownership of the system (Innes, et.al., 2000).

A similar situation was found in Transco. Managers at Operations were unwilling to claim ownership of the ABB system since they perceived the ABB product cost budgets as *‘accountants’ budgets but not LDZs’ budgets* (as commented by a LDZ network manager)’. This was caused by the strong presence and involvement of management accountants, but a lack of managers’ involvement from Asset and Operations during the ABB implementation process. In addition, because of the way that the ABC/ABB information was handled, some negative attitudes towards ABC/ABB systems were exerted by many front-line managers at Operations. These line managers had been told to record a list of routine and specific activities and the proportion of time spent on these activities for ABC purposes. However, they did not receive any reports or feedback based on activity information because they were not perceived to be the intended users for the activity-based information (according to some interviewees). The line managers, therefore, did not see any incentive in supporting the ABC system. Such a negative attitude would possibly be extended towards the ABB system<sup>13</sup>.

As stated, the underlying principles of CPS’s ABB model were simple and relatively easy to understand. Even if an Area manager did not understand the design of the ABC system, the ABB model would cause relatively fewer concerns since it utilised the benchmark of an Area ABC performance to overall Areas’ ABC performance. CPS’s top-down or imposed budgeting approach suggested that no participation from line management was present during the budget setting process. However, through other means of involvement (e.g. budget allocation minus, correspondence, telephone calls and

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<sup>13</sup> Owing to a lack of participation from front-line managers, it was not possible to get a direct feedback from those line managers. This assumption was affirmed by some interviewees’ answers in response to questions, such as ‘do you give feedback to your front-line managers?’ – ‘No, they are not the receiving end of the ABC reports’.



internal conferences), the objective and intention of the ABB process was conveyed from top to line management in a relatively effective manner.

In addition, CPS also deliberately allowed a certain degree of Area managers' involvement in order to help line management to understand the ABB process better (i.e. the association of one or two AreaBMs during the annual budget setting exercises).

In terms of users' ownership, CPS's evidence demonstrated a clear separation of model developer and users. Unlike SCB and Transco, CPS's IRPMB had the ownership for the ABC and ABB model, whilst the development and maintenance of the ABC model was normally taken up by the members from the ABCM unit, together with members from Areas. This arrangement helped to infuse the knowledge of ABC and ABB (Argiris, 1996; Bjornenak, 1997). Thus, despite the non-participative manner of CPS's ABB implementation, a majority of the interviewees tended to agree that the ABB allocation was indeed a relatively 'fairer' budget allocation method.

### 8.3.2 *Influences of ABB Implementation on Managerial Behaviour*

A budget is regarded as a useful device for influencing managerial behaviour and motivating managers to perform in line with organisational efforts, but it may also cause some dysfunctional behaviour (Young, 1988). This research has found that some positive influences on managerial behaviour can be achieved if an ABB system was implemented in a participative manner and with some forms of users' involvement (as discussed in above Section 8.3.1). In addition, the availability of the old and familiar budgeting methods during an ABB implementation tended to have an undesirable influence on managers in learning and accepting a new system.

Within the three case study organisations, managers at SCB and Transco tended to find other simpler methods to replace budgets or rely on the traditional budgeting methods. Whereas managers at CPS were given no other alternatives but to use the ABB system because of the significant improvement of the ABB model over the old budgeting methods (as the only cost-effective and '*scientific*' means for budget allocation).

The lack of managers' active involvement at both SCB and Transco resulted in the ABB systems exerting a minimum influence on managerial behaviour. At SCB, compounded with the various technical difficulties and the relatively strong presence of

accountants during the ABB implementation process, managers from the six breweries were not involved in the ABB project at all in some senses. The fact was that they were unable to use the ABB system to produce budgets effectively. This led to their inability to draw relevance of ABB information to meet their needs. The existence of reluctance, which was demonstrated by some departmental managers in accepting the ABB budget, indicated that ABB had little (if not adverse) influence on managerial behaviour.

Transco's ABB experience suffered the similar drawback as SCB's, in that a lack of LDZ managers' involvement denied an opportunity for the ABB implementation to influence positively the way that LDZ managers oversaw their business operations. The decision of a top-down approach to ABB implementation was taken on the basis of lessons learnt from its first failed attempt<sup>14</sup>. However, owing to the fact that LDZ managers were accustomed to traditional costing and functional ways to manage their operations, they found it difficult to understand the non-functional approach imposed on them through this ABB model. Such difficulties were compounded by the lack of LDZ managers' involvement. Thus ABB implementation exerted minimum influence on managerial behaviour, particularly among LDZ managers.

On the contrary, the influences of ABB on CPS's managers were relatively apparent. Managers at CPS, Area managers in particular, started to make some necessary changes shortly after the ABB exercise. The importance of ABC information, which was the prime parameter for budget allocation, was generally recognised by the managers via the ABB implementation. Areas' staff members also realised the HQs' intention and determination to adopt this ABB approach in Areas' budget allocation. This recognition had produced some positive influences on managers' behaviour in that some Area managers took various forms of proactive actions to improve their Areas' performances. For example, ABC learning groups were formed voluntarily in an attempt to share experiences of best practice and knowledge of ABC/ABB. Another example of the proactive actions was the process re-engineering attempt, which was used to improve and streamline processes within the Areas (e.g. 'what-if' planning on optimal distribution of prosecutors between branches within an Area) and in the entire criminal justice system (e.g. process mapping between Police Force, CPS and the Courts, see Figure 7.5 in

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<sup>14</sup> Transco made its first attempt to implement ABB at the earlier stage of its ABC implementation. It had taken a 'bottom-up' approach. According to the finance analyst, this attempt failed owing to a general lack of 'ABC knowledge', imaginably at such an early stage of implementation.

Chapter 7). These actions represented some positive changes on managerial behaviour as a direct result of ABB implementation. The above-mentioned evidence demonstrated that CPS's ABB implementation had a positive effect on the use of activity-based information amongst Area managers.

### 8.3.3 *Impacts of Budgeting Approaches, Participative Budgeting, Motivation and Attitude towards the ABB Systems*

The search for a suitable budgeting method and an appropriate budgeting process (e.g. top-down, bottom-up or hybrid) is investigated in practice and academia. Many researchers argue that participation is an important behavioural element that affects both the budgeting process and its outcomes (e.g. job satisfaction, performance, motivation, and slack) (Argiris, 1952; Brownell & McInnes, 1986; Hofstede, 1972; Locke et al, 1981; Milani, 1975).

The budgeting approaches adopted in the three case study organisations were different: a bottom-up approach adopted at SCB, a hybrid approach at Transco and a top-down approach at CPS. These different approaches resulted in three different patterns of participation, which would naturally have different impacts on the use of ABB.

Prior to the introduction of the ABB system, line managers at SCB routinely participated in its 'bottom-up' ZBB process (including budget preparation and subsequent negotiation to reach the final budgets). Although they generally had no accounting background, these managers had acquired sufficient knowledge of functional budgeting methods through this form of participation. They were therefore familiar with this process. Owing to the complexity of the ABB design specifications, the relatively complicated concepts of ABC and ABB and a lack of involvement in ABB implementation processes, the managers found themselves unable to participate in the ABB budgeting process. For example, they had to rely on accountants to prepare an ABB functional budget. From the managers' viewpoints, this over-dependency on accountants and computer packages to deliver the budget increased a sense of uncertainty as to the reliability and accuracy of the final outputs of the ABB system. If this ABB functional budget was used as a part of performance target measures for these breweries' managers, it would also increase task uncertainty. Other potential consequences as a



direct result of this increased level of task uncertainty included increased job tension, lack of motivation and low performances.

With the hybrid approach adopted at Transco, LDZ managers participated during the bottom-up budgeting process to derive individual functional budgets (after the top management determined a 'control total' in a top-down manner). ABB was introduced in an attempt to improve this bottom-up budgeting process. Owing to the fact that LDZ managers were neither fully trained in using the ABC information nor were they accustomed to the ABB model, they could not participate in the ABB process effectively. As was the case at SCB, LDZ managers may feel that they were unable to influence the ABB outcomes. As a result they tended to make less use of the ABB budgets.

Transco's ABB approach had also created some tensions between the accountants and the LDZ managers. The accountants felt that the LDZ managers did not have the necessary knowledge to construct the ABB product cost budgets effectively. On the other hand the LDZ managers argued that without active participation in the ABB implementation stage they would not be able to gain sufficient knowledge of activity-based information. In contrast to the use of functional budgets through participation where managers felt they had greater influence, LDZ managers were less motivated to use ABB information for performance improvement and other relevant tasks. Thus, the participative manner that LDZ managers were accustomed to producing their functional budgeting approach created impediment for them to adopt an ABB system, which was introduced in a non-participative manner.

Prior to the attempt to use the ABB approach, evidence suggested that CPS had already established a top-down budgeting approach since 1995. Whether or not the Area managers were pleased about this approach, they were accustomed to this minimum level of participation as opposed to those at SCB and Transco. In other words, participation might not be a paramount factor in affecting managerial performance and motivation. Instead, CPS's evidence suggested that managers perceived two variables as the main influential factors that affected their attitude to the ABB system, i.e. a justifiable (or a 'fairer' budget) and an understandable method for budget allocation and budget decisions on ABB.

The use of the ABB model was perceived by CPS's top management as a cost-effective and rational method to perform the crucial task of budget allocations across 42 Areas. Although Area managers were unable to participate directly in the budgeting process, the rationale for this ABB model was also simple enough to be understood by

managers at all levels. This simple method helped to form a common ground of communication for budget discussions amongst managers at various levels at the organisational hierarchy. The attempt made by top/middle management to involve Area managers during the actual budget setting exercises (i.e. an indirect form of participation) had helped to reduce the perception of secrecy in a top-down budgetary approach. Such attempts also promoted knowledge infusion in that Area managers could learn to apply the ABB methods in their areas' budget distribution to branches.

On the basis of Area managers' responses, it was evident that budget decisions (whether or not were made on ABB information) had an influence on managers' motivation to use the ABB system. The ABB system helped both top/middle managers and Area managers to envisage those Areas with padded resources in relation to their performance<sup>15</sup>. However, when the budget decisions were made based on an 'across-the-board' cut approach rather than on the ABB results, managers from Areas with high ABB outcomes became less motivated to commit to the activity-based systems (i.e. ABC/ABB).

Thus budgetary approaches may determine a certain pattern of participation initially, but may not prevent other means of participation from being adopted, which can be gainfully exploited to achieve desirable behavioural outcomes (as illustrated in the case of CPS). If the approach adopted in an ABB process is in contrast to the existing budgetary approach, the ABB process will be met with greater resistance from the manager (as illustrated in the cases of SCB and Transco, it is a matter of 'resistance to change'). Furthermore, a 'fairer' and understandable tool for budget allocation and budgetary decisions on ABB have been found to be the two main influential factors that affected managers' attitude and motivation to the use of the ABB system (as demonstrated by CPS's experience).

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<sup>15</sup> In an internal report of 2000-01 budget allocation a comparison of budgets allocated on the basis of 4.5% 'across-the-board' cut and ABB made a clear demonstration of the excessive resources in some Areas to all Area managers. This exposure posed some deep questions in terms of efficiency and inflexible workforce structure.

## 8.4. Organisational Perspective

As suggested in the literature, a budgeting process that an organisation chooses may exert influence on matters relating to administrative structure and arrangements, and its interrelationships with organisational goals and sub-goals developments (Hirst, 1987; Livingstone, 1975; Merchant et al, 1989; Xavier, 1996). A change of organisational structure, whether or not it is a merger, acquisition or restructuring, will inevitably produce impacts upon business processes and operations within an organisation. As part of business planning and control processes, the budgeting process will also be affected by such changes.

On the basis of evidence collected from SCB, Transco and CPS, this section draws comparisons in the following areas:

- Top management support and training in relation to ABB implementations.
- Variations of relevance and reliance on ABB information for decision making amongst managers at different levels.
- Administrative structure and arrangements – lack of standardisation, inflexible workforce structure and budget devolution.
- Interrelationship of goal and sub-goal development with ABB implementations
- Organisational structure: changes and consequences.

### 8.4.1 *Top Management Support and Training in Relation to ABB Implementations*

Shields and Young (1989) identified top management support and users' training; design and implementation of the systems; ease of use and consensus about the objectives of the system, as the most important factors contributing to the successful implementation of a cost management system. Whilst the latter three factors have been discussed from a technical perspective (see Section 8.2), the first two factors (i.e top management support and users' training) are discussed in this section.

Published empirical studies on ABC/M implementation support Shield and Young (1989)'s view, in that top management support is one of the main factors contributing to the success of a system implementation (Foster & Swenson, 1997; Innes & Mitchell, 1991/1995a; Krumwiede, 1998b; McGowan & Klammer, 1997; Shields,



1995). Evidence from the ABB implementations in the three case study organisations also confirmed this view. Furthermore, findings from the three case studies suggested that continuous and sustained commitment from the senior management was equally crucial to ensure the success of a system implementation. The sustained (or otherwise) support from top management could be observed in various forms. One form of the sustained support was users' training during and after the entire system implementation in order to ensure the transfer of sufficient knowledge and skills to users.

Generally speaking, top management support was evident at the initial stage of all the ABB implementation projects in SCB, Transco and CPS. Being fully aware of the importance of the issue of top management support, the ABB implementation team at SCB consciously sought full support from the top management (e.g. resource commitment, formal endorsement documents, and top management's presence at the ABB implementation meetings in the beginning). However, the level of support might not be sustained if the implementation coincided with an acquisition exercise. As a result of the acquisition the move of the finance director, who was the main supporter/sponsor at the senior management level, caused a certain level of disruption and discontinuity of senior management's support for the ABB project. At the same time, the partially implemented ABB system failed to deliver some of the useful information to assist SCB's managers to gain a competitive edge in the highly volatile beer market. Therefore, there were some suspicions that some members of the senior management would want to distance themselves from the project and subtly reduce the level of support for the ABB implementation.

The decreasing level of top management support at SCB could also be evident from a lack of users' training. Breweries' managers were presented with the resultant ABB models in one-day sessions at the beginning and end of the implementation. However, owing to the time and resource constraints, members of the ABB implementation team (i.e. there were only two full-time members at that time) were unable to provide the breweries' managers with more 'hands-on' training or supports. Rather the two members implemented closely with the accountants at the individual breweries, who would then gain some 'hands-on' experiences through the implementation processes. As a result of this lack of sufficient training the implementation team had failed to provide a transferable ABC/ABB knowledge to those managers at the six breweries.

Whilst senior management support for Transco's ABC project was apparent (i.e. continuous investment in the development of ABC systems), their support for the ABB implementation was relatively less apparent. For example, its traditional budget still held a dominant role in setting performance targets for individual LDZs and LDZ line managers. Given the fact that ABC/B systems still ran in parallel with the traditional financial systems, it could raise a question about Transco's top management's definitive commitment to the activity-based systems.

With regard to training, the experience of Transco's staff was somewhat similar to that of SCB in that the management accountants (but not the line managers) from Operations and Asset were involved in the development of the ABB model and received necessary training. Evidence suggested that training for line managers to use the activity-based systems was often delayed. Firstly there were relatively limited resources available to train the large number of line managers (given the sheer size of Transco). Secondly, priority was often given to management accountants at individual LDZs, who were thought to be the prime information collectors at a LDZ level. Finally, the relatively high turnover on those trained management accountants caused an ever-growing demand for training for management accountants (i.e. a 'vicious cycle'). As a result, the training needs of line managers were often neglected.

In the case of CPS, top management support to the ABB project came in a form of total commitment throughout the six-implementation stages (i.e. from the initiation to the infusion stages). It was therefore not difficult for one to establish a fairly strong link of the top management support with the relative success of ABB implementation at CPS. Determination to use the ABB approach in the allocation of additional funds was a strong indication of the top management's commitment to ABB. A general consensus on ABB as a better allocation tool was also apparent amongst managers at top, middle and Area levels, as one interviewed CPS staff member expressed "*ABB was not only the best, but also the only scientific tool we have got*".

There were different training requirements in relation to the complexity of ABB systems. In comparison to the complexity of ABB systems at SCB and Transco, CPS's ABB model was simple and easy to understand. Users (i.e. managers) at SCB and Transco genuinely needed a fair amount of training in order to understand the underlying principles and operations of the ABC/B system, whereas the underlying principles behind CPS's ABB model was fairly simple so that users understood it with relative ease. In addition, with the involvement of one or two Area managers during the annual budget

setting exercises, the Area managers were gradually trained to gain a fuller understanding of the ABB budget setting process. It should be noted that interviewees at CPS did raise training as an issue, but pointed out that the required training was in the area of general management skills and knowledge (but not specifically in the area of ABB).

#### 8.4.2 *Variations of Relevance and Reliance on ABB Information for Decision Making amongst Managers at Different Levels*

In the presence of uncertainty about objectives and cause and effect of outputs, various sources of information (either formal or informal) are being used to support the decision making processes on a routine or non-routine basis (Abernethy & Stoelwinder, 1991; Bruns & McKinnon, 1993; Cohen, et al, 1972; Earl & Hopwood, 1981; Hirst, 1987; Samuelson, 1986).

Generally speaking, the evidence gathered from Transco and CPS is in line with Bruns and McKinnon (1993)'s finding, in that much of the information that the managers used for decision making does not appear to come from the management accounting systems. On the other hand, ABB information provides managers with useful measures to quantify the likelihood of success or failure towards achieving some objectives, and hence tends to reduce the influence of uncertainty (Earl & Hopwood, 1981; Hirst, 1987). In particular, CPS uses ABB information effectively as a 'dialogue machine' (Earl & Hopwood, 1981), in that the ABB information provides a communication channel between top and Area managers to have constructive budget-related discussions.

A close examination of the actions from managers at SCB, Transco and CPS revealed the following relevant issues:

- (i) There are differences in perception of the relevance of ABB information to support decision making processes amongst managers at different hierarchical levels;
- (ii) The importance of the accuracy of ABB information lies in its relevance to the level of uncertainty about objectives as well as the cause and effect of organisational actions;

Managers at higher levels generally tend to rely on both formal (including ABB) and informal sources of information to support decision-makings, whereas



managers at front-line levels tend to rely much less on accounting information to support their decision makings. This observed tendency can be explained using the level of uncertainty faced by the managers at different levels and the relevance of ABB information utilised by the managers in an attempt to reduce the influence of uncertainty.

SCB, Transco and CPS faced different sorts of uncertainty (e.g. volatile beer market for SCB, likelihood of 3<sup>rd</sup> party competitions for Transco and difficult budgetary tasks for CPS). These sorts of uncertainty tended to create the need for different level of accuracy in ABB information. The volatile beer market presented a relatively higher level of uncertainty, thus managers at SCB generally needed a relatively higher level of accurate and timely information (including ABB), which could then assist them to reduce the undesirable influence of uncertainty during decision makings. However, the technical difficulties in SCB's ABB system prevented the system from producing accurate and unreliable ABB information in meeting the managers' requirements.

Transco's evidence also suggested the existence of an interrelationship between the level of uncertainty and the degree of reliance on ABB information. Prior to the introduction of market competition, the monopolistic nature of Transco's business implied that there was a relatively low level of uncertainty in the cause and effect of organisational actions, in particular in Operations. However, this situation would be radically changed if Operations was to be separated from Transco. This meant that Operations was actually exposed to a relatively high level of uncertainty when they were made to face external competition. In this situation, the degree of relevance of ABB information would be significantly increased. This was evident from the fact that after knowing the introduction of market competition senior and middle line managers at Operations began to use some activity-based information during the decision-making processes (e.g. 'performance gap' and 'bandwidth analysis').

In terms of uncertainty about tasks and the achievement of objectives, the need for accurate ABB information at Transco was perceived differently by managers at different levels. For example, to front-line managers they were responsible for the business activities that were of direct cost nature and linked to the products in a 'one-to-one' relationship. Thus whether the information was translated in ABC or financial accounting forms, the cost elements that reflected the front-line business activities were regarded as unchanged. Thus the ABB information was perceived by the front-line managers to be indifferent from traditional financial accounting information and somewhat relevant to deal with the uncertainty at this level. On the other hand, the

middle and top-level managers at both Operations and Asset recognised the relevance of ABB information for decision making in different ways. To those managers at Asset, ABB information represented a relatively clear picture of Operations' product performance so that they could use it for strategic planning purposes. Thus Asset managers regarded the ABB information as adequate to fulfil their objectives. However, for managers at Operations, the ABB information, which reapportioned estimated functional budgets to products, was too inaccurate to be used as budgetary targets for product costs. In addition, the ABB information was not perceived as timely enough to be used to control or plan performance at an operational level. As a result they perceived ABB to be less relevant to meet the needs at Operations.

To a certain extent, CPS encountered a similar situation as that at Transco, in that the relevance of ABB information diminished when it reached to managers at the front-line level (i.e. Branch Crown Prosecutors, or BCPs). The budget responsibility held by and the uncertainty faced by managers at different levels tended to determine the existence of various perceptions to the relevance of ABB information. CPS as a whole faced external pressure to justify its utilisation of public resources and the quality of service provided. CPS's top management perceived that the ABB information would enable them to relate an Area's performances to the allocated budget. In addition, the ABB information would also help to address the previously neglected issue of imbalance and 'fairness' in budget allocation between Areas. However, the relevance of ABB information to support decision-making processes was not recognised in some of the Areas, especially at the branch level. This was fairly obvious given that the autonomy to make budget-related decisions was only marginally devolved to Area and Branch levels. Further Area managers required prompt and accurate information to support the decision-makings at Area and Branch levels. The ABB information, which was based on average measures, was not able to provide exact answers to specific situations faced at Area and Branch levels. Thus the relevance of ABB information to support decision-makings was perceived much less by Area managers than by top/middle managers.



#### 8.4.3 *Administrative Structure and Arrangements – Lack of Standardisation and Co-ordination, Inflexible Workforce Structure and Budget Devolution*

Xavier (1996) suggested that budgetary reform needs to encompass all administrative arrangements that are related to budgetary and financial management. The evidence from the three case study organisations supports this suggestion, particularly in the following areas:

- (i) standardisation of organisational procedures,
- (ii) co-ordination between departments,
- (iii) inflexible workforce structure and budget devolution.

SCB's ABB implementation process was significantly affected by the inadequacy in its administrative arrangements. Within the S & N group, two separate units were involved in running the beer business: SCB was responsible for beer production, whilst the beer-selling unit was responsible for sales forecasts, actual sales and marketing. The budgeting process involved both units, in that the beer-selling unit produced sales and production volume forecasts, which were then used by SCB to calculate annual budgets for the six breweries. However, the ABB project involved only SCB, but not the beer-selling unit. A direct consequence of this arrangement was that non-standardised forecast data produced by the beer-selling unit were to be converted into a form suitable for inputting into the ABC/ABB systems. This process resulted in the difficulties in data conversion and an increased level of labour intensity. Further a lack of standard guidelines in determining the forecasted production volume between the six breweries created an opportunity for breweries' managers to negotiate with the beer selling unit for favourable production volumes. This could cause some sorts of 'padding' to be built in at the very beginning of the budgeting process. Under the ZBB process, this 'padding' problem was able to be scrutinised because of the tedious justification process involved in the ZBB. However, in the ABB process, the 'padded' volume forecasts were input directly into the computerised 'Cost Control' without any scrutiny. The resultant budgets were obviously too unreliable to be used for budgetary planning and control purposes. On the other hand, it was evident amongst the six breweries that non-standardised classification between fixed and variable costs had increased the labour intensity to perform data conversion between the ABC/ABB systems and the financial system. Therefore as a result of the use of non-standardised data and the involvement of only one of the two units (i.e. the production unit but not the selling unit), SCB



experienced the same problem of labour intensity in the ABB process as that in ZBB process. The resultant budget was unreliable to support budgetary decision making processes.

Transco's ABB model was designed in parallel with its organisation's functional structure (see Figure 8.2), which was similar to the PPBS approach (see Figure 3.4). Due to its design philosophy, the ABB system did not fit LDZ operational processes, which were in a fairly hierarchical manner. Therefore more efforts would be required to co-ordinate the functional departments to ensure the success of the ABB implementation. This requirement became apparent when a lack of co-ordination occurred in relation to the two planning teams (i.e. Finance in Support Services at HQ and the business planning team at Operations). Whilst the former was responsible for the delivery of long-term organisational plans, the latter was responsible for the execution of the short-term plans at Operations. Evidence suggested that a lack of co-ordination between two planning teams caused divergent views of organisational objectives, which in turn affected the capability to merge the long term and short-term plans and translate into actions. To a certain extent, this would affect the general perception of the usefulness of the ABB system at LDZ levels.

Owing to historical reasons (i.e. the recruitment of permanent contractual staff during CPS's expansion), CPS's workforce structure was inflexible and a majority of costs at CPS were related to the fixed staffing costs. In Noreen (1991)'s view, the existence of a flexible cost structure is paramount if the activity information is to be used to support management decision making processes<sup>16</sup>. In other words, CPS's inflexible workforce structure was not conducive for the application of ABC and ABB principles. However, since CPS's activity drivers (e.g. 'Should Take' ABC timings) were derived from a set of averaged parameters, these drivers did not represent a precise criteria that could be used directly (or rather rigidly) in decision making processes related to specific Areas. Instead, CPS applied the ABC ratio (which was a benchmarking result of Areas performances indicated by the ABC system) in budgeting to highlight for the management the imbalance between workforce distribution, workloads and performance.

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<sup>16</sup> Noreen described three main conditions to meet the ABC implementation. One of those conditions was the proportional workforce *'if ABC systems are to provide relevant cost data, costs that are not strictly variable at the level of the cost pool should be excluded from the allocations and handled in some other manner (p. 164).'*

Therefore CPS's ABB information was perceived to be useful in support its budget-related decision-makings.

Budget devolution also played an important role in the success of ABB implementation at CPS. CCPs and AreaBMs were given relatively greater budget responsibility under a devolved budgeting system. Evidence suggested that the increased sense of budget responsibility promoted the need for these managers to search for tools that could enable them to manage their Areas better. The ABC/B models were perceived by managers as better tools than the conventional methods. The increased budget responsibility made managers more conscious of improving business efficiency, which led to some actions in creative management (e.g. the preparation of case files in police station and initiation of mapping the process in C.J.S.). Thus the responses from CPS's Area managers about devolved budgets were generally agreed with the conclusions in the literature, in that budget devolution can encourage managers to take better responsibility and often stimulate creativity management (Bourn & Ezzamel, 1987).

#### **8.4.4 *Interrelationship between Goal and Sub-Goal Developments and ABB Implementation***

An organisation uses a unifying set of goals to reduce perceived uncertainty and to influence its business operations and employees to move towards achievement of these goals (Stoelwinder, 1991). A set of sub-goals refers to the goals developed by individual business units (or functional departments) and should be in contribution to the achievement of the organisational goals. To make the interrelationship between goals and sub-goals clearer, a formal procedure needs to be established by specifying how the goals and sub-goals should be set. This may attribute indirectly to the success (or otherwise) of the ABB system implementation in the three case study organisations.

The shrinking beer market faced by SCB suggested that the prime sub-goal at the six breweries was to avoid the risk of closure. This sub-goal led to the problem of human inertia in the breweries' attempt to obtain sale forecasts. Since a procedure was not formalised to link sub-goals with organisational goals, the brewery managers' attention were not drawn to achieving organisational goals. Instead they focused very much on the survival of the breweries. The resultant budget 'padding' (as discussion in Section 8.4.3) also indicated breweries' efforts to achieve this sub-goal.

On the basis of data gathered from the interviews held in Transco, it was clearly demonstrated that all interviewees were fully aware of the contribution of sub-goals to the achievement of HQ's goals. Despite this level of awareness, the sets of sub-goals at Assets and Operations were very much determined by the relationship of 'contractor' and 'service provider'. This resulted in different emphases on their respective sets of sub-goals at Asset and Operations. For example, Asset would emphasise on the sub-goal of '*greater return on assets*' whilst Operations would stress '*the importance of making profit on jobs that were given certain rates.*' Initially both of the sub-goals seemed to have the same focus on profitability. However, because of the relationship of 'contractor and service provider' between them, Asset and Operations perceived differently the use of ABB information to achieve their respective sub-goals. To Asset, the ABB product costs budget was perceived as adequate to fulfil its sub-goal, in that Asset's managers would be able to identify areas for cost reduction using the ABB information. However, to Operations, the use of ABB information implied that Operations would not be able to determine its own product cost budgets nor have the power to negotiate with Operations. Therefore the use of ABB information led to a shift in the abilities to achieve sub-goals between Asset and Operations.

Amongst the three organisations, CPS was the exemplary organisation in which goal and sub-goal interrelationship was clearly defined. All the interviewees, from top managers to BCPs, demonstrated a clear understanding of the close links between organisational goals and Areas' sub-goals and targets. This clear understanding was established via a formal procedure of developing an 'Area Business Plan'. The development of this plan started with HQ's setting-up national objectives, which was then used by Areas to mirror into Areas' objectives. A clear set of performance targets was then derived from the Areas' objectives. The whole procedure of developing the 'Area Business Plan' helped Area managers to visualise the formal relationship between national and Areas' objectives.

Therefore, in comparison to SCB and BG Transco, CPS has achieved the congruence of goals and sub-goals through the formal procedure of developing 'Area Business Plan'. To a certain extent, this formation of goal congruence has helped to exert a positive influence to achieve the success in CPS's ABB implementation.



#### 8.4.5 *Organisational Structure: Changes and Consequences*

A budgeting process is often described as an organisational process that has a close interrelationship with organisational structure (Baulmer, 1971; Hopwood, 1973; Otley, 1978; Preston, 1995). The published empirical findings have not produced any conclusive results to confirm this interrelationship, which has led to Otley (1980)'s suggestion that the best design for a management control system is circumstantial, depending upon situational and contextual factors.

The evidence from the three case study organisations suggested that changes in organisational structure indeed had significant impacts on the design, implementation and operational processes of an ABB system. In the three different organisational contexts, these impacts produced three different consequences, which significantly affected the design and implementation of the ABB systems.

SCB's ABB project took place at the same time as its acquisition exercise. The direct impacts of the acquisition on the ABB project were that (1) the number of breweries involved in this ABB project was increased from 3 to 6; (2) a new accounting system (i.e. SAP<sup>TM</sup>) from the Courage Brewing (i.e. the acquired organisation) was introduced. The first impact (increased number of breweries) contributed partially to the difficulties experienced during the technical design and actual implementation, such as a lack of suitability of the ABB model to all six breweries, labour intensity in data conversion, increased length of the implementation process and constraints in resources. Although Scottish & Newcastle Ltd. and Courage Brewing Ltd. were in the same brewing industry, the two would naturally have some differences in procedures and working practices. Evidence of such differences can be observed from the issue of non-standardisation in the allocation of forecast figures and data formats in the six breweries, which contributed significantly to the difficulties (as mentioned in Section 8.4.4). The second impact directly linked to the issue of system compatibility (see Section 8.2.4). SCB had designed the ABB model prior to the acquisition exercise. Obviously compatibility between the designed ABB and Courage Brewing's SAP<sup>TM</sup> systems was not considered during this design stage. For the two systems to be compatible, additional resources were required (e.g. additional time and investment to make 'Cost Control' meet data requirements in SAP<sup>TM</sup>). In addition, the fact that a higher priority was given to SAP<sup>TM</sup> suggested that there may be competition between the two projects for priorities. The competition could put the ABB system implementers and users in a difficult

situation. On one hand, the ABC/ABB system implementers had to cope not only with situations and problems arising from the ABC/ABB project, but also to compete with SAP<sup>TM</sup> for resources and priorities. On the other hand, the users had to learn to use the two new systems at the same time. Therefore on the basis of such situational and contextual factors, the acquisition in a way indirectly contributed to SCB's decision to shelf further developments on the ABB system.

Transco's organisational structure was described as '*ever-changing*' by its staff members. The constant changes in structure were evident from a series of demergers and re-organisations (e.g. privatisation, separation of the core Asset & Operation management into two functional units – Operations and Assets). Although these changes would be regarded as inevitable by the regulator, they were inducing some senses of instability. Some direct consequences of the constant changes were already evident at Transco (e.g. high turnover of experienced staff resulted in losses of expertise and knowledge). For the ABB project, constant training was always needed to enable newly recruited staff members to use the activity-based systems. Also constant changes of organisational structure required relatively frequent modifications to the activity-based systems, which exerted a negative influence on the LDZ managers' attempts to learn and/or adapt to the systems. The consequence of frequent modifications was an increased need to re-train those trained staff members on a regular basis (i.e. the 'vicious cycle' situation as described in Section 8.4.1). Thus Transco's constant structural changes attributed in part to a lack of adaptation to the activity-based systems.

As a government organisation, CPS is held accountable for its effective utilisation of public funds. The restructuring in 1999 was an attempt to promote accountability in its resource utilisation and efficiency in the delivery of its service. This restructuring had resulted in two significant changes, which had a significant consequence to the budgeting allocation process. The first change was an increase in the number of Areas (i.e. from 13 to 42 Areas) and a corresponding level of reduction in the Areas' sizes. The traditional budget allocation process, which was a time-consuming one (usually took months to complete), was perceived to be not cost-effective under the new 42-Area structure. The need to search for a 'fairer' allocation method was also perceived to be a crucial and urgent matter, simply because funds were relatively easy to 'manoeuvre' in a bigger area structure than in a smaller one. Therefore under the 42-Area structure, a fairer and cost-effective method for budget allocation became crucial. It was under this circumstance that ABB became a natural choice. The second change was



the creation of a new set of management positions. There was willingness amongst the newly appointed managers to adopt different management tools. As a result, the structural changes had effectively become a catalyst to the implementation of the ABB system.

Timing of the structural changes is also an important factor that would affect the ABB implementation processes. All evidence from SCB, Transco and CPS indicated that timing is a crucial factor that may contribute to a successful implementation. SCB's ABB implementation took place at the same time as the acquisition, whilst Transco's ABB implementation took place at a time of the constant structural changes. The associated uncertainty, induced instability and shift in priorities had produced a profound impact on the lack of success of both ABB experiences. Due to uncertainty to Areas' spending level under the new structure, CPS had decided to introduce the ABB model one-year after its restructuring. The benefit of this timing was that it provided those newly appointed managers with sufficient time to settle into the new structure. By the time ABB was introduced, those managers at CPS had sufficient experience (as contrasted to the managers' situation at SCB) and they were sufficiently prepared to learn about the application of ABB model. This kind of readiness may contribute in part to a relatively high level of ABB adaptation amongst CPS's Area managers.

## **8.5. Cultural Perspective**

The culture of an organisation is a set of general beliefs and values that are shared by the employees in that organisation. The formation of organisational culture may be through perception, training, working practice and influences of superiors and subordinates (Gagliardi, 1990; Hofstede, 1986; Preston, 1995). From the literature on culture perspective (see Section 3.4.4 in Chapter 3), the general hypothesis is that organisational culture may have an influence on the success or failure of an ABB implementation. Two aspects of this hypothesis were tested in this research: one was to test Goddard (1997)'s findings that 'budgetary control systems would only be really effective if they were designed to complement organisational culture', the detailed results have been presented in Chapters 6 & 7 respectively); and the other was to test Reynold (1986)'s findings that 'industry and organisational position had a strong association with



perceived work context.’ This section presents an analysis of the hypothesis test of the possible existence of associations between organisational culture, the nature of organisations and organisational positions.

Owing to the limited permission of access granted by SCB, only one staff member was involved in the case study. The interviewee had tried to present collective views. However, one cannot discount the possibility of biases under such given circumstance. Thus the comparative test of organisational culture was only drawn from questionnaires returned by interviewees from Transco and CPS.

On the basis of the size of the sample (22 in total, which includes 6 from Transco and 16 from CPS), non-parametric test<sup>17</sup> is appropriate to discover any significant difference on perception of work contexts by interviewees between CPS and Transco (see Table 8.2-3). On the basis of the significant test results from Mann-Whitney U test<sup>18</sup>, statistically significant differences can only be established on 1 of the 16 dimensions (i.e. rewards), which is beyond the accepted significant level of 0.01. The substantive difference on the ‘rewards’ category indicates that CPS concentrates on individual rewards, whilst Transco concentrates on a combination of both individual and group rewards. On the basis of interviewees’ responses, no major differences among the associations of work value with the two organisations can be established.

Table 8.2 Differences in Work Context between CPS and Transco

|  |            |               | Name of Organisations |            | Statistical            |
|--|------------|---------------|-----------------------|------------|------------------------|
|  |            |               | CPS                   | BG Transco | Significance           |
| Total number of respondents            |            |               | 16                    | 6          | (Mann-Whitney Test, *) |
| Aspects of Work Context <sup>(b)</sup> |            |               | Median                | Median     |                        |
|  | (1)        | (5)           |                       |            |                        |
| 1                                      | External   | Internal      | 3.00                  | 3.00       | n.s.                   |
| 2                                      | Task       | Social        | 2.00                  | 2.00       | n.s.                   |
| 3                                      | Safety     | Risk          | 3.00                  | 2.50       | n.s.                   |
| 4                                      | Conformity | Individuality | 3.00                  | 3.00       | n.s.                   |
| 5                                      | Individual | Group Rewards | 1.00                  | 3.00       | **                     |

<sup>17</sup> Non-parametric tests are normally regarded as ‘distribution-free tests’. They do not depend on assumptions about the precise form of the distribution of the sampled populations. In contrast parametric tests are applicable in the conditions of: (1) the level or scale of measurement is equal interval or ratio scaling, i.e. more than ordinal; (2) the distribution of the population scores is normal; and (3) the variances of both variables are equal or homogeneous (Bryman and Cramer, 1997, p.117). Since the population in Transco is 6, and 16 in CPS, it does not fit in the conditions for parametric tests.

<sup>18</sup> There are a number of ways to test statistical significance. Mann-Whitney U test is designed to evaluate the difference between two unrelated treatments (or two independent populations), using ordinal data (i.e. the data in this case) from an independent – samples study. The rationale behind the Mann-Whitney test is that a real difference between two treatments should cause the scores in one sample to be generally larger than the scores in the other sample. In an attempt to test whether there is any significant difference between Transco and CPS, which are two unrelated samples, Mann-Whitney test is appropriate.

|    |  |                                      | Name of Organisations |            | Statistical                        |
|----|--|--------------------------------------|-----------------------|------------|------------------------------------|
|    |  |                                      | CPS                   | BG Transco | Significance                       |
|    | Total number of respondents                |                                      | 16                    | 6          | (Mann-Whitney Test, <sup>a</sup> ) |
|    | Aspects of Work Context <sup>(b)</sup>     |                                      | Median                | Median     |                                    |
|    | (1)  | (5)                                  |                       |            |                                    |
|    | Rewards                                    |                                      |                       |            |                                    |
| 6  | Individual Decisions                       | Group Decisions                      | 2.00                  | 2.00       | n.s.                               |
| 7  | Centralised                                | Decentralised                        | 2.00                  | 2.50       | n.s.                               |
| 8  | Ad Hockery                                 | Planning                             | 3.00                  | 3.00       | n.s.                               |
| 9  | Stability                                  | Innovation                           | 3.00                  | 3.50       | n.s.                               |
| 10 | Simplicity                                 | Complexity                           | 2.00                  | 2.00       | n.s.                               |
| 11 | Informal                                   | Formalised                           | 4.00                  | 3.00       | n.s.                               |
| 12 | High loyalty                               | Low loyalty                          | 2.00                  | 2.00       | n.s.                               |
| 13 | Ignorance of organisation                  | Knowledge of organisation            | 4.00                  | 4.00       | n.s.                               |
| 14 | Manager-dominant                           | Professional dominant <sup>(c)</sup> | 4.00                  | 4.00       | n.s.                               |
| 15 | Internal Competitive                       | Internal Co-operative <sup>(d)</sup> | 3.00                  | 3.00       | n.s.                               |
| 16 | Co-operative (facing external competition) | Non – Co-operative <sup>(e)</sup>    | 3.00                  | 2.00       | n.s.                               |

Notes: (a) Significant level: not significant – n.s.; 0.05 -- \*; 0.01 -- \*\*; 0.001 -- \*\*\*.  
(b) Five alternatives numbered from 1 to 5 presented for each item; anchors indicated.  
(c) The additional question was added for this case study.  
(d) & (e) were separated from Reynold’s dimension of ‘cooperation vs. competition’.

In an attempt to examine the differences of work value among different organisational positions (which has more than two position groups), the Kruskal Wallis<sup>19</sup> test is used to analyse the data. As shown in Table 8.3, no statistically significant difference can be established from the data among various positions.

Table 8.3 Differences between Work Context and Organisational Positions

|   |   |               | Position              |              |                |                | Statistical                         |
|---|---|---------------|-----------------------|--------------|----------------|----------------|-------------------------------------|
|   |   |               | Management Accountant | Line Manager | Middle Manager | Senior Manager | Significance                        |
|   | Total number of respondents                       |               |                       |              |                |                | (Kruskal Wallis test <sup>a</sup> ) |
|   | Aspects of Work Context <sup>(b)</sup><br>(1) (5) |               | Median                | Median       | Median         | Median         |                                     |
| 1 | External  | Internal      | 3.00                  | 3.00         | 3.00           | 3.00           | n.s.                                |
| 2 | Task  | Social        | 2.50                  | 2.00         | 2.00           | 2.50           | n.s.                                |
| 3 | Safety  | Risk          | 2.50                  | 2.00         | 3.00           | 3.50           | n.s.                                |
| 4 | Conformity  | Individuality | 3.00                  | 3.00         | 3.00           | 2.50           | n.s.                                |
| 5 | Individual Rewards                                | Group Rewards | 3.00                  | 1.00         | 2.00           | 1.50           | n.s.                                |

<sup>19</sup> Kruskal Wallis test is used in the NON-PARAMETRIC TEST situation where there are more than two groups to be compared. Although large number of Mann-Whitney U tests could be performed, this increases the experiment-wise error rate.



|  |  |                                      | Position              |              |                |                | Statistical            |
|--|--|--------------------------------------|-----------------------|--------------|----------------|----------------|------------------------|
|  |  |                                      | Management Accountant | Line Manager | Middle Manager | Senior Manager | Significance           |
| Total number of respondents            |  |                                      |                       |              |                |                | (Kruskal Wallis test*) |
| Aspects of Work Context <sup>(b)</sup> |  | (1) (5)                              | Median                | Median       | Median         | Median         |                        |
| 6                                      | Individual Decisions                       | Group Decisions                      | 3.00                  | 2.00         | 4.00           | 3.00           | n.s.                   |
| 7                                      | Centralised                                | Decentralised                        | 3.00                  | 2.00         | 4.00           | 4.00           | n.s.                   |
| 8                                      | Ad Hockery                                 | Planning                             | 3.00                  | 3.00         | 2.00           | 2.50           | n.s.                   |
| 9                                      | Stability                                  | Innovation                           | 3.50                  | 2.50         | 3.00           | 2.00           | n.s.                   |
| 10                                     | Simplicity                                 | Complexity                           | 2.00                  | 2.00         | 3.00           | 1.50           | n.s.                   |
| 11                                     | Informal                                   | Formalised                           | 3.00                  | 4.00         | 4.00           | 5.00           | n.s.                   |
| 12                                     | High loyalty                               | Low loyalty                          | 2.00                  | 2.00         | 2.00           | 2.50           | n.s.                   |
| 13                                     | Ignorance of organisation                  | Knowledge of organisation            | 4.00                  | 4.00         | 3.00           | 4.00           | n.s.                   |
| 14                                     | Manager-dominant                           | Professional dominant <sup>(c)</sup> | 4.00                  | 4.00         | 2.00           | 2.50           | n.s.                   |
| 15                                     | Internal Competitive                       | Internal Co-operative <sup>(d)</sup> | 4.00                  | 3.00         | 2.00           | 3.50           | n.s.                   |
| 16                                     | Co-operative (facing external competition) | Non – Co-operative <sup>(e)</sup>    | 2.00                  | 3.00         | 3.00           | 2.00           | n.s.                   |

Notes: (a) Significant level: not significant – n.s.; 0.05 -- \*; 0.01 -- \*\*; 0.001 -- \*\*\*.  
(b) Five alternatives numbered from 1 to 5 presented for each item; anchors indicated.  
(c) The additional question was added for this case study.  
(d) & (e) were separated from Reynold’s dimension of ‘cooperation vs. competition’

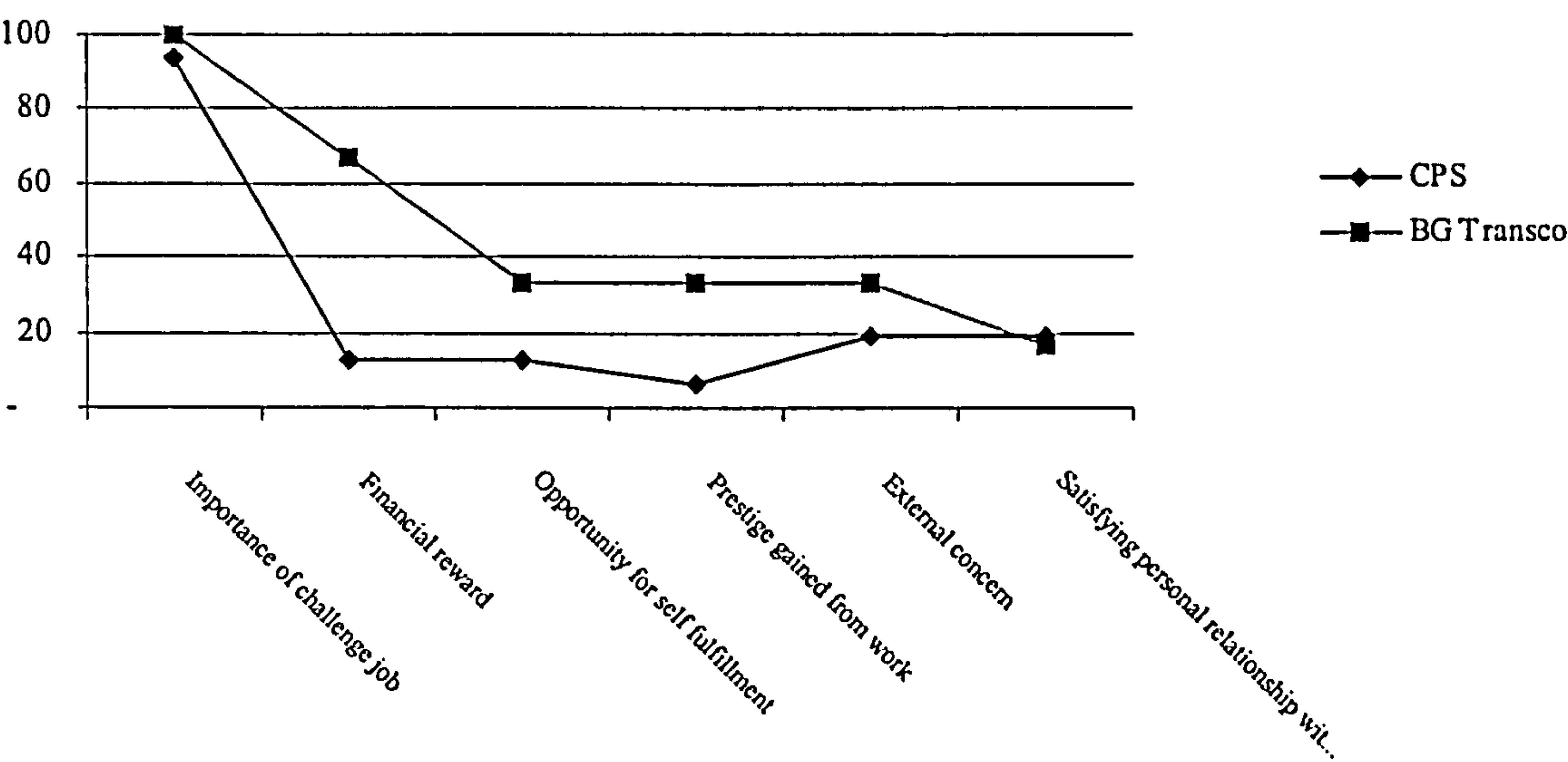
The examination of basis for individual’s commitment to the organisation reveals another picture. Most of the interviewees have been with their organisations for a long period of time (see Table 6.1 and 7.1) thus, their views towards the reasons to stay in the workplace can potentially reveal some interesting insights. From Table 8.4, all respondents (100%) in Transco suggested that ‘importance of job challenge’ was their prime concerns to stay in Transco, whilst 15 of the 16 respondent (94%) suggested so in CPS. On the other side of scale, the ‘prestige gained from work’ tends to cause the least concern for people staying in CPS, whilst the ‘satisfying personal relationship between colleagues’ tends to be the least reason to stay in Transco. The ‘financial rewards’ was the second concern in Transco, whilst the ‘external concern’ and ‘satisfying personal relationship between colleagues’ were the second concern before ‘financial rewards’. A general declining trend can be observed in Figure 8.3 for both organisations.



Table 8.4      Basis for Commitment between CPS and Transco

|  |  | CPS      |                  | BG Transco |                 |
|--|--|----------|------------------|------------|-----------------|
|  |  | Mean (A) | % 22 respondents | Mean (B)   | % 6 respondents |
| <i>Reasons to be in this Workplace</i> |  |          |                  |            |                 |
| 1                                      | Importance of job challenge                      | 15       | 94               | 6          | 100             |
| 2                                      | Financial reward                                 | 2        | 13               | 4          | 67              |
| 3                                      | Opportunity for self fulfilment                  | 2        | 13               | 2          | 33              |
| 4                                      | Prestige gained from work                        | 1        | 6                | 2          | 33              |
| 5                                      | External concern                                 | 3        | 19               | 2          | 33              |
| 6                                      | Satisfying personal relationship with colleagues | 3        | 19               | 1          | 17              |

Figure 8.3      Demonstration of Basic Commitment between CPS and Transco



On the basis of results presented in Tables 8.2-3, a general conclusion can be drawn that no strong association can be found to support Reynold’s (1986) findings. For the two organisations, there is no evidence to support the hypothesis that the nature of organisations and organisational positions has a strong association with different organisational culture. Thus, the results seem to suggest that organisational culture is not a factor that affects the success (or failure) of ABB implementation at CPS and Transco. However, it must be stated that this conclusion is drawn from a relatively small sample, because the sample size of interviewees from both CPS and Transco is relatively small in comparison to the large number of workforce at both organisations. In addition the sample of Transco may be skewed in that interviewees generally hold positive opinions on ABC/ABB. In spite of this limitation, it can be argued that in general the combined

data samples tend to support the conclusion that the existing respondents share a general view towards organisational culture, perhaps because both organisations are in the domain of public service.

The above statistical evidence is based upon statistical significance tests performed on 16 cultural criteria or attributes that are used in an attempt to describe some aspects of influences that may be exerted by organisational culture. Sensible conclusions can be drawn from the analysis, and the results from these tests generally support observations and intuition. However, if one is to explore beyond the region defined by the 16 dimensions or attributes (in a qualitative manner), one may be able to examine the data to look for other aspects of organisational culture that may not be identified by the 16 attributes.

One would expect that Transco, an organisation that faces constant changes from demerger and floatation exercises, would be accustomed to changes and therefore it should be able to adapt to changes reasonably well. On the contrary its adaptation to ABC and ABB systems was a relatively slow process. The relative slowness may be attributed to the possible existence of a 'set-culture' (as suggested by the interviewees during the course of this research), particularly among managers at Operations. At this stage, it is relatively difficult to quantify the nature of this culture or the extent to which this 'set-culture' affected the perception to changes by Transco's staff members.

In contrast, CPS, which experienced a series of restructuring exercises, coped relatively well with changes. It may be suggested that these changes have a positive impact on the organisation. The need to search for a new management tool (such as ABB system) was generally well received by the staff members. After the implementation of the ABB system, changes of attitudes among staff members were readily observed: openness and willingness to learn and accept new information and to adapt to a different way of working out the budgets. This evidence demonstrates the impact of organisational change upon staff members, and indeed indicates the interrelationship between organisational culture, changes and ABB implementation.

## 8.6. Other External Factors

The public service nature of Transco (as a regulated public organisation) and CPS (as a governmental agent) indicated that some political influences (e.g. changes of governmental policy and new initiatives, regulatory pressure and political concerns) may have relatively significant impacts to CPS and Transco as opposed to SCB. These political influences on Transco and CPS may be manifested in the following forms:

- (i) *External demand for justification.* There is a growing demand from general public for transparency and cost-efficiency in governmental and regulated organisations.
- (ii) *External ABC Initiatives.* Evidence suggested that both ABC implementations at Transco and CPS are initiated by their respective governing bodies, (i.e. Ofgem for Transco and the Treasury and government for CPS).
- (iii) *Information needed for budget discussions with the governing bodies.* Both Transco and CPS are under close scrutiny by their respective governing bodies. Ofgem needs to review Transco's cost structure and pricing strategy on a regular basis, whilst the UK government and Treasury demand 'value-for-money' from its governmental organisations. Therefore Transco and CPS are under constant pressure to provide them with comprehensive justifications.
- (iv) *Political concerns on CPS's ABB implementation.* The political concerns became obvious and exerted greater influences on CPS's decision to implement its ABB system, in a situation where the budgets proposed by the ABB model could expose inflexible workforce structure with potentially significant consequences.

The observation made here was that political factors had a relatively significant influence on the ABB implementation at Transco and CPS. So far the limited data (from only Transco and CPS) suggested that ABB has produced a favourable influence upon governmental bodies. It would not be unreasonable to extrapolate this observation to suggest that the rational basis derived from ABC and ABB was beginning to influence Transco and CPS in a favourable manner.

On the basis of discussion from the four perspectives, market competition emerges as the most influential factor to the implementation of ABB. In the SCB case, although some governmental policies also had some direct impacts on SCB (e.g. changes in import/export duties or taxes on beer), it was the market pressure (i.e. pressure from



supermarket) which started SCB's ABC/B implementation. Evidence suggested that the intensified market competition partially contributed to SCB's decision to shelf the ABB implementation. On the other hand, the possible introduction of market competition to Transco led to an increased recognition of the importance of the ABB information. Such recognition was also evident from the latest attempt to implement ABB at Operations. Hence the market competition has different impacts on the ABB implementations between SCB and Transco.

## 8.7. Summary

This chapter compares the design of ABB models and respective implementation processes in SCB, Transco and CPS. As regards to model design, SCB's ABB model, which was based on Kaplan and Copper (1998)'s 'reverse ABC process', is deemed to be impractical. Influential factors have been drawn with association of technical, behavioural, organisational and cultural perspectives. The common strands are that the objectives of ABB implementations are found to be the prime determinants within the three ABB systems. Others include the simplicity and complexity of the systems, organisational commitment, training, the impacts of an organisation's structural changes to ABB systems' implementation, administrative arrangements, and the cultural influences.

The uncommon strands are that ABB is more useful for strategic planning purposes than for control purposes.

On the basis of the comparative analysis, a general response was that the implementation of an ABB system was not dependent solely on the technical specifications of an ABB system or hierarchical organisational structure, nor by the behavioural consequences or cultural influence. Rather, the ABB implementation was by and large attributed by a combination of these factors.

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## **Chapter 9                      Conclusions and Further Research**

### **9.1.              Summation**

Published ABB literature contains relatively little empirical material on both the applications of ABB in practice and influential factors related to the implementation of ABB within an organisational context. To address this issue, the two main objectives of this research are: (a) to obtain a rich technical description about the nature of operational ABB systems so that some differentiation and consideration of generic and situational characteristics of ABB can be made; and (b) to identify and analyse factors that are of significant influences to these ABB systems in terms of their design, implementation and operational processes. In order to meet these objectives, a comprehensive research framework, which allows a given ABB system to be examined and assessed against existing issues from budgeting and ABC/M, ABB, and budgeting literature, has been established. This framework enables the empirical work to be focused on technical designs of ABB applications and influential factors from technical, behavioural, organisational and cultural perspectives (see Chapters 2 and 3).

To carry out the investigation and exploration of ABB experiences in practice, this research adopts a case study approach. This approach is also prompted by repeated calls for empirical studies that investigate accounting paradigms in organisational contexts (Ashton, et. al, 1991/1995; Innes & Mitchell, 1995a/b; Otley & Berry, 1994; Scapens & Arnold, 1986). The research findings are enriched by the breadth of the exposure (i.e. the involvement of three organisations, namely SCB, Transco and CPS, that are in brewing, gas supply service and government sectors respectively) and the depth of the analysis through the use of a multiple-data collection approach ('triangulation'), which enables the potentially diverse views from personnel involved in ABB implementation and operational processes to be fully analysed (see Chapter 4).

The first research objective, a technical description of the nature of an ABB system, has been achieved by the comprehensive descriptions of three distinctive ABB models in the preceding chapters. This includes SCB's 'reverse ABC process' model for departmental budgets, Transco's ABB model for product cost budgets and CPS's



‘benchmark ABC performance’ ABB model for Areas’ budget allocation (see illustrations of respective ABB model designs and computational processes in Chapters 5 – 7).

With reference to issues generated from reviews on published ABC/M, ABB and budgeting literature (see Chapters 2 and 3), the second objective has been achieved via a two-facet exploration. The first facet of the exploration was conducted through detailed descriptions of the implementation processes in SCB, Transco and CPS in order to reveal their different implementation stages and emerging influential factors. The second facet of the exploration was conducted through an analysis of these influential factors against the background of three types of ABB systems’ design specifications, implementation and operational processes, as well as internal and external environment (see detailed descriptions of ABB implementation processes and analyses in Chapters 5-7). This two-facet process enabled factors to be extracted and then compared to corresponding factors that have been generated from the literature reviews and categorised under technical, behavioural, organisational and cultural perspectives. The comparative study of these three ABB experiences highlighted the differences in the three distinctive ABB system design specifications and system implementations in SCB, Transco and CPS. The comparison also synthesised generic characteristics that have common strands (Chapter 8).

## 9.2. Contributions of this Research

Despite the fact that ABB was promoted as one of the advanced uses of ABC information (Brimson & Antos, 1999; Kaplan & Cooper, 1999), very limited published literature has revealed practical issues relating to the development and implementation of an ABB system in an organisational context. Indeed feedback from business organisations suggested that they have experienced difficulties in the actual development and implementation processes.

This research has provided some of the first empirical study of the topic. The significant contributions of this research are that:

- (i) It provides the first detailed empirical account of the ABB implementation experiences in three UK organisations, involving a wide spectrum of personnel from various levels within the organisational hierarchy.

- (ii) It provides the first critical evaluation of theoretical approaches to the applications of ABB in the three case study organisations, which have led to the synthesis of an informed and clear description of ABB system design specifications.
- (i) It provides a comprehensive analytical examination of the success (or otherwise) of ABB implementation with reference to generic and specific issues that have been generated from prior ABC, ABM, and budgeting literature in technical, behavioural, organisational and cultural perspectives.

### 9.3. Limitations of this Research

As with most research studies, the methodological framework and the methods adopted for collecting evidence for this research inevitably have limitations. These limitations may be attributed to two factors: ABB is a fairly new phenomenon with relatively limited reported experience in the real world; and the general problems associated with the analytical procedures adopted for this study.

A main purpose of case study research is to learn from practice, the knowledge learnt can then be used for the enrichment of literature. This approach is different in principle from prescription methods (Keating, 1995; Lapsley & Mitchell, 1994). Since ABB is a fairly new phenomenon and little has been revealed in the literature, it is thus necessary for this research to adopt a case study approach to generate knowledge from practice with an aim to bridge the gap between theory and practice. Hence this research inevitably inherits the limitations of a case study research methodology, although efforts have been made to minimise the impacts produced by these limitations (see Section 4.2.2 for the limitations of case study research and Sections 4.2.3/4.3 for the justification of actions taken to minimise the limitations).

The other limitation lies in the inadequacy of the case study to support a universal generalisation. This is a common problem in case study research, or arguably in other business research methods (Yin, 1994).

Despite the above limitations, the researcher believes that this thesis provides sufficient insights and in-depth analyses that help practitioners to draw relevance in practice and provide academics with useful guidelines for future studies in the area of

ABB. It can also be confidently stated that the design adopted for this research contributes in an inductive way to the knowledge development of ABB (with the usual constraint of limited resources, scale and time).

Further, it is worth noting that Transco and CPS have continued the implementation processes of their ABB systems. Therefore this research constitutes only part of their ABB experiences.

## 9.4. Conclusions of the Thesis

The general findings of this empirical research are presented according to the following headings:

### 9.4.1 *Assessment of Two Theoretical ABB Approaches as per Kaplan & Cooper (1998) and Brimson & Fraser (1991)*

In broad terms, ABB refers to the application of ABC in budgeting. This research has found that by applying ABC information in budgeting processes two main types of ABB budgets are derived in practice. One type of ABB budget is the product cost budget, whereby activity information is used in process analysis across functional departments. The other type of ABB budget is the functional budget, whereby activity information is used to determine resource costs, which can then be formulated into budgets for functional departments.

Two ABB approaches have been proposed in the literature, i.e. Kaplan and Cooper's (1998) ABB model that is based on the concept of ABB as 'a reverse ABC process' and Brimson and Fraser's (1991) ABB process model that is a general use of ABC information in a planning and budgeting process. Based on the evidence from the three case study organisation, it can be stated that Kaplan and Cooper's model, under certain circumstances, is impractical. The main drawback of Kaplan and Cooper's approach is that, in the context of SCB, it created major permutation problems (see Figure 8.1 in Chapter 8). To overcome these problems enormous amount of investment would be required, and this would have rendered SCB's ABB system significantly less cost-effective. Similar results were also evident in Transco's first ABB attempt when they



tried to implement both ABC and ABB models in one computer system (see Chapter 6 for details). Another drawback of this approach is concerned with the 'reverse ABC process', where the computerisation tends to magnify any technical drawbacks, associated with an ABC system, in ABB system (as evident in SCB). Brimson and Fraser's approach, on the other hand, provides a general framework, which promotes the use of ABC information and allows organisations to interpret ABB in different ways. Thus it tends to be relatively more workable in practice. For example, Transco applies ABC information to re-apporportion the functional budgets into the product cost budgets, whereas CPS adopts the ABC ratio as a tool to allocate Areas' budgets.

Further evidence from Transco and CPS suggests that the ABB implementation can be enhanced by the use of two dedicated computer systems, which handle the ABC and ABB processes separately. The use of the two dedicated systems tends to be more effective and responsive in fulfilling costing and budgeting purposes. As stated in the Section 8.2.2, the ABC and ABB systems deal with two different types of data processes, i.e. data aggregation in an ABC system and data dissemination in an ABB system. The separation of the two different processes can ensure the relatively smooth operation of data processing in both systems without any interruption. In addition, in order to provide useful information for management planning and decision-makings purposes, some analytic and data manipulation exercises, such as 'what-if' analysis, are required in an ABB process. Once separated, these exercises can be conducted in the ABB system effectively without interrupting any data processing operations within an ABC process. Thus this separation increases the efficiency of both systems.

#### **9.4.2      *Budgeting Purposes and Organisational Objectives of a System Implementation as Two Main Determinants to ABB System Designs***

This research has demonstrated that the variations of the three ABB system implementations are determined predominantly by two factors: an individual organisation's budgeting purposes and objectives of a system implementation. The latter supports the empirical findings in the ABC implementation literature (Cooper, 1990b; Innes & Mitchell, 1998; McGowan & Klammer, 1997; Shield, 1995).

The general objective of the ABB system implementation in SCB, Transco and CPS is very much the same, i.e. to improve the existing budgeting process and

achieve better budgetary planning and control. The detailed objectives, which are related to different budgetary purposes in SCB, Transco and CPS, determine their ABB system implementations. SCB's ABB was primarily designed to *replace* its highly labour intensive ZBB process with a computerised ABB model, which was believed to be able to compute functional budgets in a fraction of time. Transco's product cost ABB budget was designed to *supplement* its functional budgeting process and to provide useful information for the planning and control of product performance. CPS's ABB budget was designed to *replace* its less cost-effective traditional budget allocation methods. These objectives determined the particular outputs (i.e. SCB's functional budget, Transco's product cost budget and CPS's Area budget) and the varying approaches taken by SCB, Transco and CPS during the implementation of their ABB systems.

#### 9.4.3 *ABB Links to Budgetary Planning and Control*

If implemented successfully, an ABB process provides a clear overall view of organisational activities and their causal links with organisational objectives and operational processes across business units (Brimson & Antos, 1994/99; Kaplan & Cooper, 1998). The evidence in Transco and CPS suggests that the overall and comparative picture provided by ABB information is more suitable for budgetary planning purposes. Transco's ABB product cost budgets helped management to align their plans for future actions with objectives, activities, processes and product costs. CPS's budgets also helped management to align resources planning with organisational objectives and Areas' activity performance. Furthermore, ABB information provided a clearer causal link between performance requirements, overall business processes and resource deployment at the operational levels. Thus, a cross-functional view to business operations was established to enhance the strategic planning process. The top and middle level managers at Transco and CPS confirm that ABB information improves their understanding of business activities at the operational levels. Consequently this improved understanding has helped them to devise better strategic plans.

On the other hand, both budgets were drawn up on the basis of past ABC information, which included some non-routine factors related only to the previous year. Thus the front-line managers suggested that ABB information was too inaccurate for controlling current operations. The production of both budgets was also on an annual

basis. The managers (in particular at front-line level) at both Transco and CPS argued that the budgets were 'out-of-date' for measuring performance and did not provide exact information related to individual functional departments. Therefore the front-line (functional) managers regarded ABB information as less effective and inaccurate for monitoring and evaluating the departmental activities/performance. Indeed, this research found that the managers at both organisations were less reliant on ABB information for controlling business operations. Rather they used what they consider to be simpler and timely measures to assist their control of business operations and performance (e.g. functional budgets for spending control, monthly financial information, such as forecasts, financial accounting and ABC information (if available), and non-financial information for monitoring performance). This finding supports the argument that a set of budget derived for planning purposes may be unsuitable for motivating performance or performance evaluation (i.e. control purposes) (Amey, 1979; Morris, 1968).

#### 9.4.4 *Influential Factors on the Success (or otherwise) of an ABB Implementation*

The general findings from this research suggest that a simpler ABB model tends to have a higher probability of success and is regarded as a cost-effective means of implementation in practice (e.g. the simple model used by CPS). Evidence of this research suggests that the success (or otherwise) of an ABB system implementation is attributed to a mixture of factors from technical, behavioural, organisational and cultural perspectives. These factors are listed as follows:

- (i) Technical perspective: the system design specification in relation to an organisational structure, simplicity to users, compatibility to existing systems, and suitability for budgetary purposes;
- (ii) Behavioural perspective: top management's commitment and recognition, training, users' involvement, resistance to change, motivation, influence of the use of ABB information on managerial behaviour;
- (iii) Organisational perspective: changes on organisational structure, administrative arrangements and a clear demonstration of interrelationship between organisational goals and sub-goals development;



- (iv) Cultural perspective: the existence of a 'set' culture as opposed to open culture.

Some of above-mentioned factors are to be found in the published literature related to ABC/M system and budgeting system implementation and are of a generic nature. These generic factors include: (1) top management's commitment and simplicity to users, which are two of the important factors in the ABB implementation as well as in the ABC implementation (e.g. Cooper, 1990a; Cooper, et. al, 1992b; Innes & Mitchell, 1998, Shields, 1995) and ZBB implementation literature (Wilhelmi & Kleiner, 1995); (2) an ABB system design specification, which does not fit existing organisational realities, tends to cause technical, behavioural and organisational difficulties in practice. Such evidence can also be found in PPBS system implementation (Bellamy & Kluvers, 1995; Delong, 1973; Dennison, 1975; Jager, 1973; Wilhelmi & Kleiner, 1995); and (3) the institutional action<sup>1</sup> of existing procedures (e.g. resistance to change), which hinder changes occurred in ABC, ZBB and PPBS systems, is also evident in the ABB experiences (Burns & Scapens, 2000; Chenhall & Langfield-Smith, 1998; Markus, 1983; Scapens, 1994).

Other above-mentioned factors that emerged from this research are specifically related to ABB experiences. They are addressed as follows:

- (i) The adoption of an ABB approach is influenced by the overall budgeting approach used in an organisation. Since the ABB information provides a relatively clear picture of the overall anticipated performance across functional departments, it is perceived by top and middle management to be useful in managing front-line business activities. Hence an ABB approach can be adopted relatively easily and readily in an organisation that uses a top-down budgeting approach. However the ABB approach may not be adopted readily in an organisation that uses a bottom-up budgeting approach. This is because the front-line managers are familiar with accurate information that represents their departmental operations. More importantly, unless their understanding of an ABB model/system can be substantially increased, they are likely to pursue for 'fairer' and accurate budgets rather than appreciate the 'cross-

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<sup>1</sup> Managers and accountants who are used to existing systems or procedures tend to cast doubts and/or resist the adoption of any new systems or techniques.

functional' view provided by the ABB information. Therefore it is relatively difficult to implement an ABB in a bottom-up manner.

- (ii) Managerial behaviour in a system implementation, such as acceptance of the system, claim of ownership, and resistance to change, is often associated with factors such as users' involvement and training (e.g. Innes & Mitchell, 1991; Krumwiede, 1998b; Morrow & Connelly, 1994). This research found that the involvement of users through all stages of an ABB implementation process, and adequate training and support, are related and important to users' acceptance of the ABB systems. The users' involvement in system development can act as a form of training and improve users' understanding of such an ABB system. Various forms of training and support, not only on the principles of an ABB system, but also on the applications of ABB in business scenarios, are essential. In addition, as evident in this research, line managers' acceptance and motivation to use an ABB system are also affected by top management's budgetary decisions, which are perceived as an indication of commitment at top-level to such a system.
- (iii) Changes in an organisation's structure have inevitably impacts on an ABB implementation process. These impacts can be either positive or negative, based on the different timings of the implementation and organisational changes. Structural changes may create an opportunity for management to look for new methodologies (e.g. ABB), but also introduce a sense of instability to an organisation. When an ABB system is implemented just after the organisation reaches a new level of stability, the implementation tends to be more successful. When an ABB implementation took place during a transitional period (e.g. acquisition), it is crucial to ensure that the implementation delivers useful results promptly. Otherwise an ABB project is likely to face increased resource competition and conflicts in priorities during such a period. Further, too frequent structural changes may result in the need to modify an ABB model constantly, which may significantly increase the difficulty for a user to adapt the system effectively. As a result users may decide to continue using more familiar and/or simpler methods.
- (iv) Supportive administrative arrangements (e.g. standardised procedure and a clear demonstration of the interrelationship between organisational goal and sub-goal development) and budgetary devolution tend to help to define the

precise role of an ABB and thus help to pave the way for a smooth ABB implementation. To quote a negative example, data collected from non-standardised procedures may have an adverse effect by unnecessarily increasing the labour intensity in the use of an ABB system. This may then become an impediment to the achievement of the budgeting purposes and organisational objectives for implementing the ABB system. On the other hand, supportive arrangements such as budget devolution can help to promote creative management, which will encourage managers to seek effective management tools and learn to use activity-based information in planning scenarios spontaneously and actively.

- (v) In the literature it was suggested that the use of ABC information for decision making is restricted if cost variability is limited (Bromwich & Hong, 1999; Noreen, 1991). However the evidence from this research tends not to support this suggestion. For example, the existence of an inflexible workforce structure is inherent in most governmental organisations. Therefore in theory it is not appropriate to use activity-based approaches in those organisations since they have limited variability in their cost structures (according to Noreen (1991)). However, by using ABC as a measure to draw relevance rather than to obtain precise answers, decision-makings can still be supported beneficially by using ABC information. CPS's ABB experience strongly suggested that the use of ABC information was a cost-effective way to support managers' budget decision-making.
- (vi) Culture does play a significant role in an ABB implementation process. Budgets can help to form a particular set of norms (and/or beliefs) to foster people to work towards organisational goals (Drury, 1996). However, the existence of a formed organisational culture towards a given set of budgets may defer the readiness of an organisation to accept the introduction of another set of budgets such as an ABB budget. In this research, two aspects of cultural influence have been observed in CPS and Transco. CPS's restructuring created a group of newly appointed managers throughout the organisational hierarchy. The introduction of ABB budgets tends to help these managers to form a new set of norms (or culture). On the other hand, Transco's ABB product cost budget was introduced to complement its traditional budgets. A 'set' culture on budgeting had already been established



amongst various levels of managers, such as the use of traditional financial information (incl. budgets). Simply put, the managers were familiar with the traditional budgeting practice. Thus, it was relatively difficult for Transco to break this 'set' culture to allow for a greater use of ABB.

#### 9.4.5 *Other Issues*

Evidence of this research suggests that an ABB implementation is also substantially influenced by some external factors, such as political concerns, regulatory pressure, market competition and impacts from/to other government agencies (e.g. in the case of CPS).

The degree of influence from these external factors varied amongst SCB, Transco and CPS, which operate in different sectors. For example, political concerns are of particular importance to CPS. Since it is one of the government agencies, CPS is very cautious about potential political consequences of its decisions. These concerns were clearly expressed by CPS's interviewees about the budget allocation for the year 2000-01<sup>2</sup>. On the other hand, CPS's ABB information highlights the significant influence that other government agencies' service quality have on CPS's own performance. This identification helps to promote some proactive management actions. One example is the process mapping exercises that CPS undertook jointly with the police and the courts in an attempt to rationalise processes in the CJS.

In Transco's case, although its ABC implementation is a direct result of the regulatory pressure for a clear justification to its cost structure and costing information, the recognition of the importance of the ABB information is noticeably linked to the introduction of market competition. When Transco was in a monopoly position, cost control was the prime concerns of all business units at Transco because of the regulator's focus on the cost structure. The introduction of market competition to one of two key business units (Operations) changes the monopoly nature of the 'contractor and service provider' relationship between these two units. Managers at Operations start to realise

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<sup>2</sup> Because of the reduction of the overall budget provision from the government, the Areas' budgets allocated based on the ABB model exposed some serious shortfalls of funding to staff costs, particularly to some Areas. This would result in the possible retrenchment, which would also cause some serious political consequences. To a certain extent, such concerns had influenced the CEMC, who took the budget decision based on the 'across-the-board' cut.

the importance of ABB product cost budget information when they are competing with other service providers in bidding for future contracts. In this respect, the introduction of market competition to Transco has a positive influence to the use of ABB product costing information.

However, market competition poses a negative influence on SCB's ABB implementation. The volatile and fiercely competitive beer market in the UK and abroad means that SCB needs to make swift responses to the market and monitor performance rigorously. SCB's ABB process (and indeed the budgeting process), which is an annual exercise, can no longer meet these needs.

The different impacts of market competition upon ABB implementations in Transco and SCB may also relate to the various stages of market they enter. The part of gas supply market that Transco's Operations is entering is a newly open-up market, whilst SCB is competing in a relatively matured beer market. Therefore the relationship between the varying degree of market competition and the success of ABB implementations is an area that needs further investigation.

## 9.5. Further Research

This research has also identified a number of areas for further research:

- (i) The study on the cultural influences on ABB implementation in Transco can be further enhanced by involving personnel from managerial background and with budgetary responsibility (in particular people with different opinions and at different positions). The enhancement will allow the research to study the relationship between the success of an ABB implementation and the influences of a number of cultural variables. This hypothesis can be extended to cover cases in cross-national organisational contexts, where national culture may play a relatively significant role.
- (ii) An examination of the success of an ABB implementation can be undertaken by studying and comparing its impacts of pre- and post- of an ABB implementation on an organisation. This can include a number of quantifiable measures (e.g. share prices, market share and internal

performance measures) and qualitative indications (e.g. public recognition and managers' perceptions to the usefulness of budgeting information).

- (iii) The influences of market competition on ABB implementations have already been identified in this research. SCB's ABB implementation was adversely affected by the fierce competition in the beer market, whereas Transco's growing concern for market competition had some positive influences on the ABB implementation (see Section 9.3.5). Further research may be undertaken to examine whether or not market competition is a determining factor for an ABB implementation. The examination may also focus on establishing a relationship between ABB implementation, the varying degrees of market competition, quality of ABB information and users' acceptance.
- (iv) This research reveals that the ABB information tends to be more useful for the purpose of strategic planning than control. A detailed examination can be extended to reveal the various applications of ABB information in strategic planning (e.g. transfer pricing and 'what-if' analysis). It will be of interest to both academics and practitioners to see the future impacts of ABB systems, whether or not it would live up to expectations raised in the literature or is rather just a fad. It may even provide other potential benefits of ABB which have not been fully revealed in the literature.



## Reference

- Abernety, M. A. & Stoelwinder, J. U., 1991. Budget Use, Task Uncertainty, System Goal Orientation and Subunit Performance: a Test of the 'Fit' Hypothesis in Not-For-Profit Hospitals, *Accounting, Organizations and Society*, Vol. 16, No. 2, pp.105-120.
- Achstatter, G., 1995. EVA: performance gauge for the 1990s? *Investor's Business Daily - American Online*, pp.1-5.
- Ahrens, T. & Dent, J. F., 1998. Accounting and Organizations: Realizing the Richness of Field Research, *Journal of Management Accounting Research*, Vol. 10, pp. 1-40.
- Aiyathurai, Gerald, Cooper, W. W. & Sinha, K. K., 1991. Note on Activity Accounting, *Accounting Horizons*, December, pp. 60-67.
- Alam, M., 1990. *The Budgetary Process in Uncertain Context: A Study of Public Sector Corporations in Bangladesh*, Unpublished PhD Thesis, London School of Economics.
- Alam, M., 1997. Budgetary Process in Uncertain Contexts: a Study of State-Owned Enterprises in Bangladesh. *Management Accounting Research*, Vol. 8, No. 2, pp.147-167.
- Allaire, Y. & Firsirotu, M. E., 1984. Theories of Organisational Culture, *Organisation Studies*, Vol. 5, No. 3, pp. 193-256.
- Allison, B., O'sullivan, T., Owen, A., Rice, J., Rothwell, A. & Saunders, C., 1996. *Research Skills for Students*. Kogan Page.
- Alvesson, M., 2000. *Reflexive Methodology: New Vistas For Qualitative Research*, London : SAGE.
- Amey, L. R., 1979. *Budget Planning and Control System*, Pitman Publishing Ltd.
- Amsa, P., 1986. Organizational Culture and Work Group Behaviour: An Empirical Study, *Journal of Management Studies*, Vol. 23, No. 3, pp. 347-362.
- Anderson, J. C. & Narus, J. A., 1995. Capturing the Value of Supplementary Services, *Harvard Business Review*, January-February, pp. 75-83.
- Anderson, S. W. & Young, M., 1997. Evaluation of Activity-Based Costing Systems: The Impact of Contextual and Procedural Factors, *Working Paper, University of Michigan*.  
(in) Krumwiede, K. P., 1998. The Implementation Stages of Activity-Based Costing and the Impact of Contextual and Organisational Factors, *Journal of Management Accounting Research*, Vol., 10, pp. 239-277.
- Anderson, S. W., 1995. A Framework For Assessing Cost Management System Changes: The Case Of Activity Based Costing Implementation at General Motors, 1986-1993. *Journal of Management Accounting Research*, Vol. 7, pp. 1-51.

- Ansoff, H. I., 1979. *Strategic Management*, New York: Wiley.
- Anthony, R. N., 1965. *Planning and Control Systems: A Framework for Analysis*, Boston, MA: Graduate School of Business Administration, Harvard Business School.
- Antos, J., 1992. Activity-based management for service, not-for-profit and governmental organisations. *Journal of Cost Management*, Summer, pp.13-23.
- Appleyard, A. R., Strong, N. C. & Walton, P. J., 1991. Multi-Currency Budgeting by Multinational Companies, *British Accounting Review*, Vol. 23, pp. 105-121.
- Archer, S. & Otley, D. T., 1991. Strategy, Structure, Planning and Control Systems and Performance Evaluation – Rumenco Limited, *Management Accounting Research*, Vol. 2, No. 4, pp. 263-303.
- Argyris, C., 1952. *The Impact of Budgets on People*, The Controllership Foundation Inc. Cornell University, Ithaca NY. (in) Libby, T., 1996. *The Incentive of Fairness: a Study of the effect of Perceived Fairness on Budgetary Slack and performance*, Ph.D. thesis, University of Waterloo, Ontario, Canada, p. 23.
- Argyris, C., 1953. Human Problems with Budgets, *Harvard Business Review*, January/February, pp. 97-110. (in) Drury, C., 1996. *Management and Cost Accounting*, Thomason Business Press, pp. 627-650.
- Argyris, C., 1996. *Organisational Learning II: Theory, Method, And Practice*, Wokingham: Addison-Wesley.
- Armitage, H. & Russell, G., 1993. Activity-Based Management Information: TQM's Missing Link, *CMA Magazine*, March, p. 7.
- Armstrong, P., Marginson, P., Edwards, P. & Purcell, J., 1996. Budgetary Control and the Labour Force: Findings from a Survey of Large British Companies, *Management Accounting Research*, Vol. 7, No. 1, pp.1-23.
- Arunagiri, V. & Rao, S. M., 1992. Basic changes in management accounting process. *The Management Accountant*, Vol. 27, No. 3, March, pp. 163-171.
- Arwidi, O. & Samuelson, L. A., 1993. The Development of Budgetary Control in Sweden -- A Research Note, *Management Accounting Research*, Vol. 3, pp. 93-107.
- Ashton, D., Hopper, T. & Scapens, R., 1991/1995. The Changing Nature of Issues in Management Accounting, (in) *Issues in Management Accounting*, Prentice Hall.
- Austin, L. A., 1977. *Zero-Base Budgeting: Organisational Impact and Effects*. AMACOM, New York. (in) Wilhelmi, M. & Kleiner, B. H., 1995. New Developments in Budgeting, *Management Research News*, Vol. 18, No. 3-5, pp.78-87.

Awasthi, V. N., 1994. ABC's of Activity-Based Costing, *Industrial Management*, July, pp. 8-11.

Barkman, A., 1997. Synergy from A to Z, ABC to ZBB, *Journal of Managerial Issues*, Vol. 9, No. 1, pp.54-71.

Baulmer, J. V., 1971. Defined Criteria of Performance and Organisational Control, *Administrative Science Quarterly*, September, pp. 340-349.

Becker, S. W. & Green, D., 1962. Budgeting and Employee Behaviour, *Journal of Business*, pp. 392-402.

Bellamy, S. & Kluvers, R., 1995. Program Budgeting in Australian Local Government: a Study of Implementation and Outcomes, *Financial Accountability and Management*, Vol. 11, No. 1, pp. 39-56.

Berliner, C. & Brimson, J. A., 1988. *Cost Management for Today's Advanced Manufacturing: The CAM-I Conceptual Design*. Harvard Business School Press, Boston, Massachusetts.

Berry, A. J., Capps, t., Cooper, D. J., Ferguson, P., Hopper, T. M. & Lowe, E. A., 1985. Management Control in an Area of the NCB: Rationales of Accounting Practices in a Public Enterprise, *Accounting, Organisations and Society*, Vol. 10, No. 1, pp. 3-28.

Beaujon, G. J. & Singhal, V. R., 1990. Understanding the Activity Costs in an Activity-Based Cost System, *Journal of Cost Management*, Spring, pp. 51-72.

Bhimani, A. & Pigott, D., 1993. Implementing ABC: a Case Study of Organizational and Behavioural Consequences, *Management Accounting Research*, Vol. 3, pp. 119-132.

Biggs, J. R., Long, E. J. & Fraedrich, K. E., 1991. Integrating Accounting, Planning, and Control. *Journal of Cost Management*, Vol. 15, No. 1, pp. 11-21.

Birnberg, J. & Sabhu, K. K., 1986. The Contribution of Psychological Research to Managerial Accounting, (in) Bromwich, M. and Hopwood, A. (eds.), *Research and Current Issues in Management Accounting*, Pitman.

Birnberg, J. G., Shields, M. D. & Young, S. M., 1990. The Case for Multiple Methods in Empirical Management Accounting Research (With an Illustration from Budget Setting), *Journal of Management Accounting Research*, Vol. 2, Fall, pp. 33-66.

Birnberg, J. G., Turopolec, L. & Young, S.M., 1983. The Organizational Context of Accounting, *Accounting, Organisations and Society*, Vol. 8, No. 2, pp. 111-129.

Bjornenak, T., 1997. Diffusion and Accounting: the case of ABC in Norway, *Management Accounting Research*, Vol. 8, pp. 3-17.



Block, R. J. & Carr, L. P., 1999. Activity-Based Budgeting at Digital Semiconductor, *Journal of Cost Management*, November/December, pp. 11-20.

Bogdan, R. & Taylor, S. J., 1975. *Introduction to Qualitative Research Methods*, John Wiley & Sons: New York.

Borjesson, S., 1994. What Kind of Activity-Based Information Does Your Purpose Require? Two Case Studies, *International Journal of Operations & Production Management*, Vol. 14, No. 12, pp. 79-99.

Borjesson, S., 1997. A Case Study On Activity-Based Budgeting. *Journal of Cost Management*, Vol. 10, Winter, pp. 7-18.

Bourne, M., Dent, J. & Ezzamel, M., 1982. *Reflections on Research and Practice in Management Accounting*, Paper presented at 10<sup>th</sup> Anniversary Celebrations of the European Institute of Advanced Studies in Management, Brussels, 24-26<sup>th</sup> May.

Boyns, T., 1998. Budgets and Budgetary Control in British Business to c. 1945, *Accounting, Business and Financial History*, Vol. 8, No. 3, pp. 261-301.

Briers, M. & Hirst, M., 1990. The Role of Budgetary Information in Performance Evaluation, *Accounting, Organizations and Society*, Vol. 15, No. 4, pp. 373-398.

Brimson, J. A. & Antos, J., 1994. *Activity-Based Management: for Service Industries, Government Entities, and Nonprofit Organisations*, John Wiley & Sons, Inc..

Brimson, J. A. & Antos, J., 1999. *Driving Value Using Activity-Based Budgeting*, John Wiley & Sons, Inc..

Brimson, J. A. & Fraser, R., 1991. The Key Feature of ABB, *Management Accounting*, January, p. 42.

Brimson, J. A., 1991. *Activity Accounting: An Activity-Based Costing Approach*, John Wiley, New York.

Bromwich, M. & Hong, C., 1999. Activity-Based Costing Systems and Incremental Costs, *Management Accounting Research*, Vol. 10, pp. 39-60.

Bromwich, M. & Lapsley, I., 1997. Decentralisation and Management Accounting in Central Government: Recycling Old Ideas? *Financial Accountability & Management*, Vol. 13, No. 2, May, pp. 181-201.

Bromwich, M., 1990. The Case for Strategic Management Accounting: the Role of Accounting Information for Strategy in Competitive Markets, *Accounting Organizations and Society*, Vol. 15, pp. 27-46.

- Brophy, J., 1995. Thoughts on the Qualitative Quantitative Debate. *Chicago, IL: National Council for the Social Studies*, November, ERIC Document Reproduction Service No. 392734
- Brownell, P. & Hirst, M., 1986. Reliance on Accounting Information, Budgetary Participation and Task Uncertainty: Tests of a Three-Way Interaction, *Journal of Accounting Research*, Vol. 24, No. 2, Autumn, pp. 241-249.
- Brownell, P. & McInnes, M., 1986. Budgetary Participation, Motivation and Managerial Performance. *Accounting Review*, Vol. LXI, No.4, pp. 587-600.
- Brownell, P., 1981. Participation in Budgeting, Locus of Control and Organisational Effectiveness, *The Accounting Review*, pp. 840-860.
- Brownell, P., 1982. The Role of Accounting Data in Performance Evaluation, Budgetary Participation, and Organisational Effectiveness, *Journal of Accounting Research*, pp. 12-27.
- Brownell, P., 1983. The Motivational Impact of Management-By-Exception in a Budgetary Context, *Journal of Accounting Research*, Vol. 21, No. 2, Autumn, pp. 456-472.
- Brownell, P., 1995. *Research Methods in Management Accounting*, Cooper & Lybrand Accounting Research Methodology Monography No. 2.
- Bruns, W. J. & Waterhouse, J. H., 1975. Budgetary Control and Organisational Structure, *Journal of Accounting Research*, Vol. 13, No. 2, pp. 177-203.
- Bruns, W. J. Jr. & McKinnon, S. M., 1993. Information and Managers: A Field Study, *Journal of Management Accounting Research*, Vol. 5, pp.84-108.
- Brunsson, K., 1995. Puzzle Pictures: Swedish Budgetary Processes in Principle and Practice, *Financial Accountability and Management*, Vol. 11, No. 2, pp.111-125.
- Burgess, R., 1984. *In the Field: An Introduction to Field Research*, London: George Allen and Unwin.
- Burns, J. & Scapens, R. W., 2000. Conceptualizing Management Accounting Change: an Institutional Framework, *Management Accounting Research*, Vol. 11, pp. 3-25.
- Burns, T. & Stalker, G. M., 1961. *The Management of Innovation*. Tavistock. (cited by) Otley, D. T., 1984, (in) Scapens, R. W., Otley, D. T. & Lister, R. J., 1984. *Management Accounting, Organizational Theory and Capital Budgeting: Three Surveys*, Macmillan Press.
- Burrell, G. & Morgan, G., 1979. *Sociological Paradigms and Organizational Analysis*, London: Heinemann.

Business Today: Interview with Robert S. Kaplan 'Strategy is the Basis of the Scorecard'.  
URL: <http://www.india-today.com/btoday/22031999/interview.html>. [21 July 2000]

Cahoon, M. C., 1987 (ed). *Research methodology: Recent Advances in Nursing*, Edinburgh : Churchill Livingstone, series 17.

Campbell, D. & Fiske, D., 1959. Convergent and Discriminant Validation by the Multitrait-Multimethod Matrix, *Psychological Bulletin*, pp. 81-105. (in) Birnberg, et al., 1990. The Case for Multiple Methods in Empirical Management Accounting Research (With an Illustration from Budget Setting), *Journal of Management Accounting Research*, Vol. 2, Fall, pp. 33-66.

Campi, J. P. 1992. It's not as easy as ABC. *Journal of Cost Management*, Summer, pp.5-11.

Caplan, E. H. & Champoux, J. E., 1978. *Cases in Management Accounting: Context and Behaviour*, New York: National Association of Accountants.

Carlson, D. A. & Young, S. M., 1993. Activity-Based Total Quality Management in American Express, *Journal of Cost Management*, Vol. 7, No. 1, Spring, pp. 48-58.

Chalos, P., 1992. *Managing Cost in Today's Manufacturing Environment*. Prentice Hall, Englewood Cliffs, New Jersey 07362.

Chalos, P., 1995. Costing, Control and Strategic Analysis in Outsourcing Decisions, *Journal of Cost Management*, Winter, pp. 31-37.

Chandler, A., 1962. *Strategy and Structure*, MIT Press. (cited by) Otley, D. T., 1984, (in) Scapens, R. W., Otley, D. T. & Lister, R. J., 1984. *Management Accounting, Organizational Theory and Capital Budgeting: Three Surveys*, Macmillan Press

Chenhall, R. H. & Brownell, P., 1988. The Effect of Participative Budgeting on Job Satisfaction and Performance: Role Ambiguity as an Intervening Variable, *Accounting & Organizations Society*, Vol. 13, No. 3, pp. 225-233.

Chenhall, R. H. & Langfield-Smith, K., 1998. Adoption and Benefits of Management Accounting Practices: an Australian Study, *Management Accounting Research*, Vol. 9, pp. 1-19.

Child, J., 1977. *Organization: A Guide to Problems and Practice*, Harper & Row.

Chong, V. K., 1996. Management Accounting Systems, Task Uncertainty and Managerial Performance: a Research Note, *Accounting, Organizations and Society*, Vol. 21, No. 5, pp. 415-421.

Chow, C. W. et al., 1996. The Use of Organizational Controls and Their effects on Data Manipulation and Management Myopia: a Japan Vs U. S. Comparison, *Accounting, Organizations and Society*, Vol. 21, No. 2/3, pp. 175-192.



- Chow, C. W., Cooper, J. C. & Haddad, K., 1991. The Effects of Pay Schemes and Ratchets on Budgetary Slack and Performance: a Multiperiod Experiment, *Accounting & Organizations Society*, Vol. 16, No. 1, pp. 47-60.
- Christiansen, J. K. & Skarbak, P., 1997. Implementing Budgetary Control in the Performing Arts: Games in the Organizational Theatre, *Management Accounting Research*, Vol. 8, pp. 405-438.
- Chua, W. F., 1988. Of Gods out Demons, Science and Ideology, *Advances in Public Interest Accounting*, Vol. 2, pp. 29-46.
- Chung, K. H., 1993. Cost-Volume-Profit Analysis under Uncertainty When the Firm has Production Flexibility, *Journal of Business Finance & Accounting*, Vol. 20, No. 4, pp. 583-592.
- Cobb, I., Innes, J. & Mitchell, F., 1992. *Activity-Based Costing – Problems in Practice*, London, CIMA.
- Cobb, I., Innes, J. & Mitchell, F., 1993. Activity-Based Costing Problems: the British Experience. *Advances in Management Accounting*, Vol. 2, pp. 63-83.
- Cohen, M. D., March, J. G. & Olsen, J. P., 1972. A Garbage Can Model of Organizational Choice, *Administrative Science Quarterly*, March, pp. 1-24.
- Cokins, G., 1994. Finding The Crossroad To Change, *Bobbin*, August, pp.66-74.
- Cokins, G.; Stratton, A. & Heldling, J., 1993. *An ABC Manager's Primer* Montvale, NJ: Institute of Management Accountants, Montvale, NJ07645-1760.
- Collins, F., 1982. Managerial Accounting Systems and Organizational Control: a Role Perspective, *Accounting, Organizations and Society*, Vol. 7, No. 2, pp. 107-122.
- Colville, I., 1981. Reconstructing "Behavioural Accounting", *Accounting, Organizations and Society*, pp. 119-132.
- Colville, I., 1989. Scenes from a Budget: Helping the Police with Their Accounting Enquiries, *Financial Accountability and Management*, Vol. 5, No. 2, pp.89-106.
- Connolly, T. & Ashworth, G., 1994. An Integrated Activity-Based Approach To Budgeting. *Management Accounting*, March, pp. 32-37.
- Consortio, 1998. Activity-Based Budgeting. URL:<http://www.consortio.co.nz/activity.htm>
- Cook, T. & Campbell, D. T., 1979. *Quasi-Experimentation – Design and Analysis Issues for Field Studies*, Boston, Mass: Houghton Mifflin Co.
- Cooper, D. R. & Schindler, P. S. 1998. *Business research methods 6<sup>th</sup> edition*, Boston; London : Irwin McGraw-Hill.

- Cooper, D., 1981. A Social and Organizational View of Management Accounting, (in) Broomwich, M., & Hopwood, A. G., 1981 (eds), *Essays in British Accounting Research*, Pitman.
- Cooper, R. & Kaplan, R. S., 1988. Measure Costs Right: Make the Right Decisions, *Harvard Business Review*, September-October, pp. 97-98.
- Cooper, R. & Kaplan, R. S., 1991a. Profit Priorities from Activity-Based Costing. *Harvard Business Review*, May-June, pp. 130-135.
- Cooper, R. & Kaplan, R. S., 1991b. *The Design of Cost Management Systems*. Englewood Cliffs, NJ: Prentice Hall.
- Cooper, R. & Kaplan, R. S., 1992. Activity-Based Systems: Measuring the Cost of Resource Usage. *Accounting Horizons*, September, pp. 1-13.
- Cooper, R. & Kaplan, R. S., 1998. The Promise – and Peril – of Integrated Cost Systems. *Harvard Business Review*, July/August, Vol. 76, No. 4, pp. 109-119.
- Cooper, R. & Kaplan, R. S., 1999. *The Design of Cost Management Systems, 2<sup>nd</sup> Edition*, Prentice Hall, New Jersey.
- Cooper, R. B. & Zmud, R. W., 1990. Information Technology implementation Research: A Technological Diffusion Approach. *Management Science*, Vol. 36, No. 2, pp. 123-139.
- Cooper, R., 1987. The Two-Stage Procedure in Cost Accounting: Part One. *Journal of Cost Management*, Summer, pp. 43-51.
- Cooper, R., 1988a. The Rise of Activity-Based Costing – Part One: What is an Activity-Based Costing System? *Journal of Cost Management*, Summer, Vol.2, No.2, pp. 45-54.
- Cooper, R., 1988b. The Rise of Activity-Based Costing – Part Two: When Do I Need an Activity-Based Costing System? *Journal of Cost Management*, Fall, pp. 41-48.
- Cooper, R., 1989. You Need a New Cost System When..., *Harvard Business Review*, January - February, pp. 77 - 82.
- Cooper, R., 1990a. Cost Classification in Unit-Based and Activity-Based Manufacturing Cost Systems. *Journal of Cost Management*, Fall, pp. 4-14.
- Cooper, R., 1990b. Implementing an Activity-Based Cost System, *Journal of Cost Management*, Vol. 4, No. 1, Spring, pp. 33-42.
- Cooper, R., Kaplan, R., Maisel, L., Morrissey, E. & Oehm, R., 1992a. From ABC to ABM. *Management Accounting*, November, pp. 54-59.

- Cooper, R., Kaplan, R., Maisel, L., Morrissey, E. & Oehm, R., 1992b. *Implementing Activity-Based Cost Management: Moving from Analysis to Action*, Montvale, NJ: Institute of Management Accountants.
- Covaleski, M. A. & Dirsmith, M. W., 1983. Budgeting as A Means for Control and Loose Coupling, *Accounting, Organisations and Society*, Vol. 8, No. 4, pp. 323-340.
- Covaleski, M. A. & Dirsmith, M. W., 1986. The Budgetary Process of Power and Politics, *Accounting, Organisations and Society*, Vol. 11, No. 3, pp. 193-214.
- Covaleski, M. A. & Dirsmith, M. W., 1990. Dialectic Tension, Double Reflexity and the Everyday Accounting Researcher: On Using Qualitative Methods, *Accounting, Organisations and Society*, Vol. 15, No. 6, pp. 543-573.
- Czarniawska-Joerges, B. & Jacobsson, B., 1989. Budget in a Cold Climate, *Accounting, Organizations and Society*, Vol. 14, No. 1/2, pp. 29-39.
- Daft, R. L. & Macintosh, N. B., 1978. A New Approach to Design and Use of Management Information, *California Management Review*, Fall, pp. 82-92.
- Dahlgren, J. & Holmstrom, M., 2000. ABB at ABB. (presented at) *European Accounting Conference*, 23 Annual Congress, Munich, March 29-31.
- Darnill, A., 1996. Publish or Perish, *Accountancy*, September, p. 149.
- Daroca, F. P., 1984. Informational Influences on Group Decision Making in a Participative Budgeting Context, *Accounting & Organizations Society*, Vol. 9, No. 1, pp. 13-32.
- Das, H., 1986. Organizational and Decision Characteristics and Personality as Determinants of Control Actions: a Laboratory Experiment, *Accounting, Organizations and Society*, Vol. 11, No. 3, pp. 215-231.
- Das, T. H., 1983. Qualitative Research in Organizational Behaviour, *Journal of Management Studies*, Vol. 20, No. 3, pp. 301-314.
- Datar, S., Kekre, S., Mukhopadyay, T. & Svaan, E., 1991. Overloaded Overheads: Activity-Based Costing Analysis of Material Handling in Cell Manufacturing, *Journal of Operations Management*, Vol. 10, No. 1, January, pp. 119-137.
- Dawes, R. M., 1971. A Case Study of Graduate Admissions: Application of Three Principles of Human Decision Making, *American Psychologist*, Vol. 26, pp. 180-188.
- Deal, T. E. & Kennedy, A. A., 1982. *Corporate Cultures*, Reading MA: Adison-Wesley.
- Decoster, D. T. & Fertakis, J. P., 1968. Budget-Induced Pressure and Its Relationship to Supervisory Behaviour, *Journal of Accounting Research*, Autumn, pp. 237-246.



- DeLong, 1973. Planning, Programming, Budgeting Systems In Higher Education. (in) Lee, S. H., 1973. *Planning, Programming, Budgeting Systems (PPBS): Implications for Library Management*, The Pierian Press, Ann Arbor, Michigan, pp. 12-25.
- Dennison, W. F., 1975. *The Application of Planning Programming Budgeting Techniques to the Expenditure of English Local Education Authorities*, Ph. D. thesis, University of Newcastle Upon Tyne.
- Denzin, N. K., 1970. Interpretive Interactionism, in Morgan, G. 1970. (ed.), *Beyond Method*, Sage.
- Dhavale, D. G. & Sounderpandian, J., 1993. Flexible Budgets for Cellular Manufacturing Systems, *ABACUS*, Vol. 29, No. 1, pp. 75-89.
- Donnelly, H., 1995. Still Struggling on Supply Chain Improvements, *Stores*, March, pp. 56-57.
- Doyle, D., 1994. *Cost Control: A Strategic Guide*. Kogan Page Limited, London.
- Drury, C. & Tayles, M., 1995. Issues Arising from Surveys of Management Accounting Practices, *Management Accounting Research*, Vol. 6, pp. 267-280.
- Drury, C., 2000. *Management & Cost Accounting*, 5<sup>th</sup> Edition, Business Press, Thomas Learning.
- Drury, C., Braund, S., Osborne, P. & Tayles, M., 1993. *A Survey of Management Accounting Practices in UK Manufacturing Companies*, Certified Research Report 32, The Chartered Association of Certified Accountants.
- Drury, C., 1996. *Management and Cost Accounting*, International Thomas Business Press
- Dunk, A. S., 1989. Management Accounting Lag, *ABACUS*, Vol. 25, No. 2, pp. 149-155
- Dunk, A. S., 1992. The Effects of Managerial Level on the Relationship Between Budgetary Participation and Job Satisfaction. *British Accounting Review*, Vol. 24, pp. 207-218.
- Dunk, A. S., 1993a. The Effect of Budget Emphasis and Information Asymmetry on the Relation Between Budgetary Participation and Slack, *The Accounting Review*, Vol. 68, No. 2, pp. 400-410.
- Dunk, A. S., 1993b. The Effects of Job-Related Tension on Managerial Performance in Participative Budgetary Settings. *Accounting and Organization Society*, Vol. 18, No. 7/8, pp. 575-585.
- Earl, M. J. & Hopwood, A. G., 1979. *From Management Information to Information Management*, Paper to IFIP Working Conference on the Information Systems Environment, Bonn.

- Earl, M. J. & Hopwood, A. G., 1981. From Management Information to Information Management, (in) Lucas, H. C. Jr. et al, (eds.), *The Information Systems Environment*, Amsterdam, Holland.
- Eiler, R. G. & Campi, J. P., 1990. Implementing Activity-Based Costing at a Process Company, *Journal of Cost Management*, Vol. 4, No. 1, Spring, pp. 43-50.
- Evered, R. & Lewis, M. R., 1981. Alternative Perspectives in the Organizational Sciences: Inquiry from the Outside, *Academy of Management Review*, Vol. 6, No. 3, pp. 585-595.
- Ezzamel, M. & Bourn, M., 1995. Budget Allocation in a UK University: Contrasting Periods of Resource Availability With Resource Scarcity. *Journal of Management Studies*, Vol. 32, No. 3, pp.313-335.
- Ferris, J. M. & Graddy, E. A., 1998. A Contractual Framework for New Public Management Theory, *International Public Management Journal*, Vol. 1, No. 2, pp. 225-240.
- Filstead, W., 1970 (ed.). *Qualitative Methodology*, Chicago: Markham Publishing.
- Finney, R. G., 1993. Budgeting: Plan for the Unknown, *Management Review*, October, pp. 20-23.
- Flamholtz, E. G., 1980. The Process of Measurement in Managerial Accounting: a Psycho-Technical Systems Perspective, *Accounting, Organization and Society*, Vol. 5, No. 1, pp. 31-42.
- Forrester, J. P. & Adams, G. B., 1997. Budgetary Reform Through Organizational Learning: Toward an Organizational Theory of Budgeting, *Administration & Society*, Vol. 28, No. 4, February, pp. 466-488.
- Foster, G., & Swenson, D. W., 1997. Measuring the Success of Activity-Based Cost Management and its Determinants, *Journal of Management Accounting Research*, Vol. 9, p. 109-142.
- Gagliardi, P., 1990. The Creation and Change of Organizational Cultures: A Conceptual Framework, (in) Tosi, H. L. (eds), *Organizational Behaviour and Management: A Contingency Approach*, PWS-KENT Publishing Company: Boston.
- Galbraith, J., 1973. *Designing Complex Organisations*. Addison-Welsey.
- GAO, 1997-46. Performance Budgeting: Past Initiatives Offer Insights for GPRA Implementation, AIMD, United States General Accounting Office: *Report to Congressional Committees*, March.
- Garey, M. R. & Johnson, D. S., 1979. *Computers and intractability: a guide to the theory of NP-completeness*. San Francisco: W.H. Freeman.

- Gay, L. R., 1987. *Educational research: Competencies for Analysis and Application*, 3<sup>rd</sup> edition, Columbus, OH: Merrill.
- Glad, E. & Becker, H., 1994. Activity-Based Budgeting, Chapter 9. (In) *Activity-Based Costing and Management*, Johannesburg: JUTA, pp. 157-171.
- Glaser, B. G. & Strauss, A. L., 1967. *The Discovery of Grounded Theory: Strategies for Qualitative Research*, Aldine. (cited by) Otley, D. T., 1984, (in) Scapens, R. W., Otley, D. T. & Lister, R. J., 1984. *Management Accounting, Organizational Theory and Capital Budgeting: Three Surveys*, Macmillan Press.
- Glynn, J. J., Murphy, M. P. & Perkins D. A., 1992. GP Practice Budgets: an Evaluation of the Financial Risks and Rewards, *Financial Accountability and Management*, Vol. 8, No. 2, pp.149-161.
- Goddard, A., 1997. Organisational Culture and Budgetary Control in a UK Local Government Organisation, *Accounting and Business Research*, Vol. 27, No. 2, pp. 111-123.
- Goldberg, L. R., 1970. Man Versus Model of Man: A Rationale, Plus Some Evidence, for a Method of Improving on Clinical Inferences, *Psychological Bulletin*, Vol., 73, No. 4, pp. 422-432.
- Gordon, L. A. & Miller, D., 1976. A Contingency Framework for the Design of Accounting Information Systems, *Accounting, Organizations and Society*, pp. 59-69.
- Gordon, L. A. & Naraynan, V. K., 1984. Management Accounting Systems, Perceived Environmental Uncertainty and Organisation Structure: an Empirical Investigation, *Accounting, Organizations and Society*, Vol. 9, No., pp. 33-47.
- Gordon, L. A., Haka, S. & Schick A. G., 1984. Strategies for Information Systems Implementations: the Case of Zero Base Budgeting, *Accounting & Organizations Society*, Vol. 9, No. 2, pp. 111-123.
- Gosselin, M., 1997. The Effect of strategy and Organisational Structure on the Adoption and Implementation of Activity-Based Costing, *Accounting and Organisation Society*, Vol. 22, No. 2, pp. 105-122
- Government of Ireland-Department of Foreign Affairs: Review of the Irish Aid Supported Medical Laboratory Project August 1998. URL: <http://www.irlgov.ie/iveagh/irishaid/evaluations/9808.htm>. [20 July 2000]
- Govindarajan, V. & Gupta, A. K., 1985. Linking Control Systems to Business Unit Strategy: Impact on Performance, *Accounting, Organisations and Society*, pp. 51-66.
- Govindarajan, V., 1986. Impact of Budgetary Participation on Managerial Attitudes and Performance: Universalistic and Contingency Approaches. *Decision Sciences*, pp. 496-516.



- Govindarajan, V., 1988. A Contingency Approach to Strategy Implementation at the Business Unit Level: Integrating Administrative Mechanism with Strategy, *Academy of Management Journal*, pp. 828-853.
- Grasso, L. P., 1997. Is it Time to Revisit Zero-Base Budgeting? *Journal of Cost Management*, Vol. 11, No. 2, pp. 22-30.
- Green, F. B., Amenkhienan, F. & Johnson, G., 1991. Performance Measures and JIT, *Management Accounting*, February, pp. 50-53.
- Greene, J. C., 1994. Qualitative Program Research: Practice and Promise, (in) Denzin, N. K., and Lincoln, Y. (eds.), *Handbook of Qualitative Research*, Thousand Oaks, pp. 530ff.
- Guba, E. & Lincoln, Y. S., 1994. Competing Paradigm in Qualitative Research, (In) Denzin, N. K. and Lincoln, Y. (eds.), *Handbook of Qualitative Research*, Thousands Oaks.
- Gubrium, J. F. and Holstein, J. A., 1997. *The New Language of Qualitative Method*, New York.
- Haider, D. F., 1977. Zero-Base Federal Style. Public Administration Review, Vol. 37, July-August, pp. 400-407. (in) Barkmen, A, 1997. Synergy from A to Z, ABC to ZBB, *Journal of Managerial Issues*, Vol. 9, No. 1, Spring, pp. 54-71.
- Haka, S., Gordon, L. A. & Pinches, G. E., 1985. Sophisticated Capital Budgeting Selection Techniques and Firm Performance, *The Accounting Review*, Vol. LX, No.4, pp.651-669.
- Harrison, G. I., 1992. The Cross-Cultural Generalizability of the Relation Between participation, Budget Emphasis and Job Related Attitudes, *Accounting, Organizations and Society*, Vol. 17, No. 1, pp. 1-15
- Harrison, R., 1972. Understanding Your Organization's Character, *Harvard Business Review*, May-June, pp. 119-128.
- Harrison, R., 1978. Questionnaire on the Cultures of Organizations, (in) Handy, C. (eds.), *Gods of Management*, London: Souvenir, pp. 83-88.
- Harvey, M., 1991. Activity-Based Budgeting, *Certified Accountant*, July, pp. 27-30.
- Haslam, S. A., 1998. *Doing Psychology: An Introduction To Research Methodology And Statistics*, London: SAGE Publications, Foundations of psychology series.
- Hathaway, R., 1995. Assumptions Underlying Quantitative and Qualitative Research: Implications for Institutional Research, *Research in Higher Education*, Vol. 36, No. 5, pp. 535-562.

Hayes, D. C., 1977. The Contingency Theory of Managerial Accounting, *Accounting Review*, January, pp. 22-39.

Hayes, D. C., 1980. An Organizational Perspective n a Psycho-technical System perspective, *Accounting, Organisations and Society*, Vol. 5, No. 1, pp. 43-47.

Hayes, R. B. & Cron, W. R., 1988. Changes in Task Uncertainty Induced by Zero-Base Budgeting: Using the Thompson and Hirst Models to Predict Dysfunctional Behaviour. *ABACUS*, Vol. 25, No. 2, pp.145-161.

Hirst, M. K., 1983. Reliance on Accounting Performance Measures, Task Uncertainty, and Dysfunctional Behaviour: Some Extensions. *Journal of Accounting Research*, Vol. 21, No. 2, Autumn, pp.596-605.

Hirst, M. K., 1987. The Effects of Setting Budget Goals and Task Uncertainty on Performance: A Theoretical Analysis, *The Accounting Review*, Vol. LXII, No.4, pp.774-784.

Ho, S. & Pike, R. H., 1991. Risk Analysis in Capital Budgeting Contexts: Simple or Sophisticated? *Accounting and Business Research*, Vol. 21, No. 83, pp. 227-238.

Hofstede, G. H., 1968. *The Game of Budget Control*, Tavistock Publication, London, pp. 19-20.

Hofstede, G., 1980. *Culture's Consequences*. Beverly Hills: Sage Publications.

Hofstede, G., 1986. Editorial: The Usefulness of the 'Organizational Culture' Concept, *Journal of Management Studies*, Vol. 23, No. 3, May, pp. 253-258.

Hood, B. & Cohen, B., 1997. Budgeting: Seeking Best Practice, *The Australian Accountant*, Vol. 67, No. 1, p. 38.

Hope, J. & Fraser, R., 1997. Beyond Budgeting....., *Management Accounting*, December, pp. 20-23.

Hopper, T. M. & Powell, A., 1985. Making Sense of Research into Organizational and Social Aspects of Management Accounting: A Review of its Underlying Assumptions, *Journal of Management Studies*, Vol. 22, No. 5, September, pp. 429-436.

Hopper, T. M., 1987. Social Transformation and Management Accounting: Finding the Relevance in History, (in) Gustafsson, C. and Lassel, H. (eds.), *Accounting and Organization Action*, Abo/Turku: Abo University Press.

Hopper, T. M., Cooper, D. J., Lowe, T., Capps, T. & Mouritsen, J., 1986. Management Control and Worker Resistance in the NCB: Financial Control in the Labour Process, (in) Knights, D and Willmot, H. (eds.), *Managing the Labour Process*, Aldershot: Gower.

- Hopper, T. M., Storey, J. and Willmot, H., 1987. Accounting for Accounting: Towards the Relevance in History, (in) Gustafsson, C. and Lassel, H. (eds), *Accounting and Organization Action*, Abo/Turku: Abo Univeristy Press.
- Hopwood, A. G., 1972. An Empirical Study of the Role of Accounting Data in Performance Evaluation, ERA: SS, supplement to *Journal of Accounting Research*, pp. 156-193.
- Hopwood, A. G., 1973. *An Accounting System and Managerial Behaviour*, Saxon House.
- Hopwood, A. G., 1980. The Organisational and Behavioural Aspects of Budgeting and Control, in Arnold, J., Carsberg, B. and Scapens, R. (eds), *Topics in Management Accounting*, Philip Allan Publishers.
- Hopwood, A. G., 1983. On Trying to Study Accounting in the Contexts in Which it Operates, *Accounting, Organizations and Society*, Vol. 8, No. 3, pp. 287-306.
- Hoque, Z. & Hopper, T., 1997. Political and Industrial Relations Turbulence, Competition and Budgeting in the Nationalised Jute Mills of Bangladesh, *Accounting and Business Research*, Vol. 27, No. 2, pp. 125-143.
- Horngren, C. T., 1977. *Cost Accounting: A Managerial Emphasis*, Englewood Cliffs, N. J.: Prentice-Hall.
- Horngren, C. T., 1990. First Discussant, *Journal of Management Accounting Research*, Vol. 2, pp. 21-24. (in) Innes, J. & Mitchell, F., 1998. *A Practical Guide to Activity-Based Costing*, CIMA, Kogan Page.
- Horngren, C. T., Bhimani, A., Foster, G. & Datar, S. M., 1999a. *Management and Cost Accounting*, Prentice Hall Europe.
- Horngren, C. T., Sunden, G. L., & Strathon, W. O., 1999b. *Introduction to Management Accounting*, 11<sup>th</sup> Edition. Prentice Hall International.
- Ibaraki, T., 1997. Solving NP-hard combinatorial problems in the practical sense. *Lecture notes in computer science*, No. 1350, p. 1.
- Ijiri, Y., 1965. *Management Goals and Accounting for Control*, New York: North Holland.
- Imoisili, O. A., 1989. The Role of Budget Data in the Evaluation of Managerial Performance, *Accounting, Organizations and Society*, Vol. 14, No. 4, pp. 325-335.
- Inmon, W.H., 1993. *Building the Data Warehouse*. John Wiley & Sons, Inc, pp. 2-25.
- Innes, J. & Mitchell, F., 1991. *Activity Based Cost Management: A Case Study of Development and Implementation*, CIMA, London.



Innes, J. & Mitchell, F., 1993. *Overhead Cost*, Advanced Management and Accounting Series, Academic Press.

Innes, J. & Mitchell, F., 1995a. A survey of Activity-Based Costing in the U.K.'s Largest Companies, *Management Accounting Research*, June, Vol. 6, pp. 137-153.

Innes, J. & Mitchell, F., 1995b. Activity-Based Costing, (in) Ashton, D. Hopper, T. & Scapens, R. W., 1995 (edited) *Issues in Management Accounting*, 2<sup>nd</sup> Edition, Prentice Hall.

Innes, J. & Mitchell, F., 1998. *A Practical Guide to Activity-Based Costing*, CIMA's Financial Skills Series, Kogan Page.

Innes, J., Mitchell, F. & Sinclair, D., 2000. Activity-Based Costing in the U.K.'s Largest Companies: a Comparison of 1994 and 1999 Survey Results, *Management Accounting Research*, Vol. 11, pp. 349-362.

Jager, P., 1973. The State of Michigan Program Budget Evaluation System as Applied to Higher Education. (in) Lee, S. H., 1973. *Planning, Programming, Budgeting Systems (PPBS): Implications for Library Management*, The Pierian Press, Ann Arbor, Michigan, pp. 49-65.

Jick, T. D., 1979. Mixing Qualitative and Quantative Methods: Triangulation in Action, *Administrative Science Quarterly*, pp. 602-611.

Johnson, H. T. & Kaplan, R. S., 1987. *Relevance Lost: The Rise and Fall of Management Accounting*. Harvard Business School Press, Boston, Massachusetts.

Johnson, H. T., 1992. It's time to stop overselling activity-based costing. *Management Accounting*, September, pp. 26-35.

Jones, C. S., 1986. Organisational Change and the Functioning of Accounting, *Journal of Business Accounting & Finance*, Vol. 13, No. 3, pp. 283-310.

Kaplan, R. & Cooper, R., 1998. *Cost and Effect*, HBS Press Book, Boston, Massachusetts.

Kaplan, R. S. & Norton, D. P., 1996. *The Balanced Scorecard*, Harvard Business School Press, Boston, Massachusetts.

Kaplan, R. S., 1983. Measuring Manufacturing Performance: A New Challenge for Managerial Accounting Research, *The Accounting Review*, October, pp. 686-705.

Kaplan, R. S., 1984. The Evolution of Management Accounting, *The Accounting Review*, July, pp. 390-418.

Kaplan, R. S., 1986. The Role for Empirical Research in Management Accounting, *Accounting, Organizations and Society*, Vol. 11, No. 4/5, pp. 429-452.

- Kaplan, R. S., 1993. Invited Editorial: Research Opportunities in Management Accounting, *Journal of Management Accounting Research*, Vol. 5, pp. 1-14.
- Keating, P. J., 1995. A Framework for Classifying and Evaluating the Theoretical Contributions of Case Research in Management Accounting, *Journal of Management Accounting Research*, Vol.7, pp.66-86.
- Keen, L.A. & Murphy, M.P. , 1996. Devolved Budgetary Management in Local Government: Lessons from a Shire County, *Financial Accountability and Management*, Vol.12, No.1, pp.37-52.
- Kerlinger, F., 1986. *Foundations of Behavioural Research*, New York: Holt, Rinehart and Winston.
- Khandwalla, P. N., 1972. The Effect of Different Types of Competition on the Use of Management Controls, *Journal of Accounting Research*, Autumn, pp. 275-185.
- Kim, D. C., 1992. Risk Preferences in Participative Budgeting. *The Accounting Review*, Vol. 67, No. 2, pp.303-318.
- Klammer, T., Ansari, S. & Bell, J., 1997. *Activity-Based Budgeting Verson 1.0*. The McGraw-Hill Companies, Inc..
- Kleinsorge, I. K. & Tanner, R. D., 1991. Activity-Based Costing: Eight Questions to Answer Before You Implement, *Journal of Cost Management*, Vol. 5, No. 3, Fall, pp. 84-88.
- Krallinger, J. C. & Hellebust, K. G., 1993. *Strategic Planning Workbook*, 2<sup>nd</sup> Edition, John Wiley & Sons, Inc.
- Krumwiede, K. R., 1998a. ABC: Why it's Tried and How it Succeeds, *Management Accounting*, April, pp. 32-38.
- Krumwiede, K. R., 1998b. The Implementation Stages of Activity-Based Costing And The Impact of Contextual And Organizational Factors, *Journal of management accounting research*, Vol. 10, pp. 239-277.
- Kwon, T.H. & Zmud, R. W., 1987. Unifying the Fragmented Models of Information Systems Implementation. In *Critical Issues in Information Systems Research*, edited by Boland, R. J. & Hirscheim, R., New York, NY: John Wiley.
- Lamond, S. 1992. Activity-Based Management: An Australian Perspective. *Journal of Cost Management*, Summer, pp. 42-46.
- Lapsley, I. & Mitchell, F., 1994. Management Accounting Research: the Change Agenda, *Management Accounting Research*, Vol. 5, pp. 215-219.

- Lawrence, P. & Lorsch, J. W., 1967. *Organization and Environment*, Harvard University Press. (cited by) Otley, D. T., 1984, (in) Scapens, R. W., Otley, D. T. & Lister, R. J., 1984. *Management Accounting, Organizational Theory and Capital Budgeting: Three Surveys*, Macmillan Press
- Lawson, R. A., 1994. Activity-Based Costing Systems for Hospital Management, CMA Magazine, June, (in) *Articles of Merit: 1995 Competition*, pp. 21-28.
- Lee, C. J., 1988. Capital Budgeting under Uncertainty: the Issue of Optimal Timing, *Journal of Business Finance & Accounting*, Vol. 15, No.2, pp.155-168.
- Lee, S. H., 1973. *Planning-Programming-Budgeting System (Ppbs: Implication for Library Management)*, Pierian Pr..
- Lewis, B. L., Shields, M. D. & Young, S. M., 1983. Evaluating Human Judgments and Decision Aids, *Journal of Accounting Research*, Spring, Vol. 21, No. 1., pp. 271-285.
- Licata, M. P., Strawser, R. H. & Welker, R. B., 1986. A Note on Participation in Budgeting and Locus of Control, *The Accounting Review*, Vol. LXI, No.1, pp.112-117.
- Lightle, S. & Talbott, J., 1995. A Case Against Individual Performance Budgeting, *The CPA Journal*, Vol. 65, April, pp. 30-34.
- Likierman, A., 2001. From Planning to Implementation: The New UK Central Government Financial Framework, *Public Money & Management*, January, Vol. 21, No. 1, pp. 53-56.
- Lindberg, D. L., Lindberg, W. G. & Razaki, K. A., 2000. The "Anti-Stapler" and the Transfer of Social Sphere Functions from Federal Enterprises to Local Governments: Lack of Accounting Rules Contributes to Russia' Financial Woes, *The International Journal of Accounting*, Vol. 35, No. 1, pp. 151-162.
- Livingstone, J., 1975. Organization Goals and the Budget Process, *ABACUS*, Vol. 11, pp. 37-48.
- Lowe, E. A. & Shaw, R. W., 1968. An Analysis of Managerial Biasing: Evidence from a Company's Budgeting Process, *Journal of Management Studies*, pp. 304-315.
- Lyne, S., 1995. Accounting Measures, Motivation and Performance Appraisal, (in) Ashton, D. Hopper, T. & Scapens, R. W., 1995. (edited) *Issues in Management Accounting*, 2<sup>nd</sup> Edition, Prentice Hall.
- MacArthur, J. B., 1993. Zeor-Base Activity-Based Costing, *Journal of Cost Management*, Vol. 6, No. 4, Winter, pp. 45-49.
- Macintosh, N. B. & Williams, J. J., 1992. Managerial Roles and Budgeting Behaviour, *Behavioural Research in Accounting*, Vol. 2, pp. 23-48.



- Malmi, T., 1997. Towards Explaining Activity-Based Costing: Failure: Accounting and Control in a Decentralised Organization, *Management Accounting Research*, Vol. 8, pp. 459-480.
- March, J. G. & Simon, H. A., 1958. *Organization*, Wiley. (in) Scapens, R. W., Otley, D. T. & Lister, R. J., 1984. *Management Accounting, Organizational Theory and Capital Budgeting: Three Surveys*, Macmillan Press.
- Marchant, G., 1998. Strategic Performance Measurement. *Accounting & Business*, May, pp. 12-16.
- Markus, M. L., 1983. Power, Politics, and MIS Implementation, *Communications of the ACM*, June, Vol. 26, No. 6, pp. 430-445.
- Mason, B & Martin, J., 1996. Activity-Based Budgeting at Scottish Courage, *Management Accounting*, Vol. 74, No. 7, pp. 32.
- McClenahan, J. S., 1995. Generally Accepted Practice? The Pluses – and Minuses – of Activity-Based Budgeting. *Industry Week*, Vol. 244, No. 20, November, pp. 13-14.
- McGowan, A., & Klammer, T., 1997. Satisfaction with Activity-Based Costing Management Implementation, *Journal of Management Accounting Research*, Vol. 9, pp. 217-237.
- McNally, G. M., 1980. Responsibility Accounting and Organisational Control: Some Perspectives and Prospects, *Journal of Business Finance & Accounting*, Vol. 7, No. 2, pp. 165-181.
- Merchant, K. A. & Manzoni, J., 1989. The Achievability of Budget Targets in Profit Centers: A Field Study, *The Accounting Review*, Vol., LXIV, No. 3, pp. 539-558.
- Merchant, K. A. & Simons, R., 1986. Research and Control in Complex Organizations: An Overview, *Journal of Accounting Literature*, pp. 183-203.
- Merchant, K. A., 1981. The Design of the Corporate Budgeting System: Influences on Managerial Behaviour and Performance, *The Accounting Review*, Vol. LVI. No.4, pp.813-829.
- Merchant, K. A., 1984. Influences on Departmental Budgeting: an Empirical Examination of a Contingency Model, *Accounting, Organizations and Society*, Vol. 9, No. 3/4, pp. 291-307.
- Merchant, K. A., 1985. The Effects of Financial Controls on Data Manipulation and Management Myopia, *Accounting, Organizations and Society*, Vol. 15, No. 4, pp. 297-314.

Mevellec, P., 1993. Activity-Based Costing: A Call for a French Approach, *Revue Francaise de Comptabilite* (France), December, (in) *Articles of Merit: 1994 Competition*, pp. 1-13.

Mia, L. & Clarke, B., 1999. Market Competition, Management Accounting Systems and Business Unit Performance, *Management Accounting Research*, Vol. 10, pp. 137-158.

Mia, L., 1988. Managerial Attitude, Motivation and the Effectiveness of Budget Participation, *Accounting & Organizations Society*, Vol. 13, No. 5, pp.465-475.

Mia, L., 1989. The Impact of Participation in Budgeting and Job Difficulty on Managerial Performance and Work Motivation: a Research Note. *Accounting and Organisation Society*, Vol. 14, No. 4, pp.347-357.

Midwinter, A. & McGarvey, N., 2001. The New Accountability? Devolution and Expenditure Politics in Scotland. *Public Money & Management*, July-September, pp.47-55.

Miles, M. B. & Huberman, A. M., 1984. *Qualitative Data Analysis*, Sage: Beverly Hills.

Miller, J. A., 1990. The Best Way to Implement an Activity-Based Cost Management System, *Corporate Controller*, Vol. 3, No. 1, September/October, pp. 8-13.

Miller, P. & O'Leary, T., 1997. Capital Budgeting Practices and Complementary Relations in the Transition to Modern Manufacture: A Field-Based Analysis, *Journal of Accounting Research*, Vol. 35, No. 2, pp.257-271.

Mol, N. P., 1997. Performance Budgeting and Management Control in Government, Conference Paper, *20<sup>th</sup> Annual Congress of European Accounting Association*, Graz, Austria, April, 23-25, 1997.

Mookherjee, D. & Reichelstein, S., 1997. Budgeting and Hierarchical Control, *Journal of Accounting Research*, Vol. 35, No. 2, pp.129-155.

Moravec, R. D. & Yoemans, M. S., 1992. Using ABC to Support Business Re-engineering in the Department of Defense, *Journal of Cost Management*, Vol. 6, No. 2, Summer, pp. 32-41.

Morgan, G., 1980. Paradigms, Metaphors and Puzzle Solving in Organisation Theory, *Administrative Science Quarterly*, Vol. 25, pp. 605-622.

Morgan, G., 1983. (ed.). *Beyond Method: Strategies for Social Research*, SAGE Publication.

Morris, R. D., 1968. Budgetary Control is obsolete. *The Accountant*, May 18, pp. 654-656, (in) Amey, L. R., 1979. *Budget Planning and Control System*. Pitman Publishing LTD.

- Morrow, M. & Connelly, T., 1994. Practical Problems of Implementing ABC, *Accountancy*, January, pp. 76-80.
- Murray, W., 1970. *Management Controls in Action*, Irish Productivity Committee.
- Newing, R., 1994. Out With The Old, In With The New, *Accountancy*, July, pp.49-50.
- Newman, I., 1998. *Qualitative-Quantitative Research Methodology: Exploring The Interactive Co.*, Carbondale : Southern Illinois University Press.
- Noreen, E., 1991. Conditions under which Activity-Based Costing Systems Provide Relevant Costs, *Journal of Management Accounting Research*, Vol. 3, pp. 159-168.
- Norkiewicz, A., 1994. Nine Steps to Implementing ABC, *Management Accounting*, April, pp. 28-33.
- Nouri, H. & Parker, R. J., 1998. The Relationship Between Budget Participation and Job Performance: the Roles of Budget Adequacy and Organizational Commitment, *Accounting and Organization Society*, Vol. 23, No. 5/6, pp. 467-483.
- Nouri, H., 1994. Using Organizational Commitment and Job Involvement to Predict Budget Slack: a Research Note, *Accounting & Organizations Society*, Vol. 19, No. 3, pp.289-295.
- Novick, D., 1965. *Programme Budgeting: Programme Analysis and the Federal Budget*, Rand Corp..
- O'Connor, N. G., 1995. The Influence of Organizational Culture on the Usefulness of Budget Participation by Singaporean-Chinese Managers, *Accounting & Organizations Society*, Vol. 20, No. 5, pp. 383-403.
- Otley, D. T. & Berry, A. J., 1994. Case Study Research in Management Accounting and Control, *Management Accounting Research*, Vol. 5, pp. 45-65.
- Otley, D. T. & Berry, A. J., 1980. Control , Organisation and Accounting, *Accounting, Organizations and Society*, Vol. 5, No. 2, pp. 231-244.
- Otley, D. T., 1978. Budget Use and Managerial Performance, *Journal of Accounting Research*, Vol. 16, Spring, pp. 122-149.
- Otley, D. T., 1980. The Contingency Theory of Management Accounting: Achievement and Prognosis, *Accounting, Organizations and Society*, pp. 413-428.
- Otley, D. T., 1984. Management Accounting and Organization Theory: A Review of Their Interrelationships, in Scapens, R. W., Otley, D. T. and Lister, R. (eds), *Management Accounting, Organization Theory and Capital Budgeting: Three Surveys*, London: Macmillan. -



Otley, D. T., 1985. The Accuracy of Budgetary Estimates: Some Statistical Evidence, *Journal of Business Accounting & Finance*, Vol. 12, No. 3, pp. 415-428.

Otley, D. T., 1987. *Accounting Control and Organizational Behaviour*, London, Heinemann.

Otley, D. T., 1995. Management, Control, Organizational Design and Accounting Information Systems, in Ashton, D., Hopper, T. and Scapens, R. W. (eds) *Issues in Management Accounting*, pp. 45-64. Prentice Hall.

Ouchi, W. G., 1977. The Relationship between Organizational Structure and Organizational Control, *Administrative Science Quarterly*, March, pp. 95-113. (in) Scapens, R. W., Otley, D. T. & Lister, R. J., 1984. *Management Accounting, Organizational Theory and Capital Budgeting: Three Surveys*, Macmillan Press.

Ouchi, W. G., 1979. A Conceptual Framework for the Design of Organisational Control Mechanisms, *Management Science*, pp. 838-848.

Ouibrahim, N. & Scapens, R. W., 1989. Accounting for Control of a Socialist Enterprise: A Case Study of Algeria, *Accounting, Auditing and Accountability Journal*, Vol. 2, No. 2, pp. 7-28.

Parker, L. D., 1979. Participation in Budget Planning: the Prospects Surveyed. *Accounting and Business Research*, Vol. 9, pp.325-337.

Patton, M. Q., 1987. *How to Use Qualitative Methods in Evaluation*, Sage: Beverly Hills, CA.

Payne, J. Braunstein, M. & Carroll, J., 1978. Exploring Pre-decisional Behaviour: An Alternative Approach to Decision Research, *Organizational Behaviour and Human Performance*, pp. 17-44. (in) Birnberg, et al., 1990. The Case for Multiple Methods in Empirical Management Accounting Research (With an Illustration from Budget Setting), *Journal of Management Accounting Research*, Vol. 2, Fall, pp. 33-66.

Peters, T. & Waterman, R., 1982. *In Search of Excellence*, New York: Harper and Row.

Peters, T. J., 1978. Symbols, patterns and Settings: An Optimistic Case for Getting Things Done, *Organizational Dynamics*, Vol. 7, pp.3-23.

Pettersen, I. J., 1995. Budgetary Control of Hospitals -- Ritual Rhetorics and Rotionalized Myths? *Financial Accountability and Management*, Vol. 11, No. 3, pp. 207-221.

Pettigrew A., 1979. On Studying Organisational Culture, *Administrative Science Quarterly*, Vol. 24, December, pp. 570-581.

Pike, R. H., 1983. A Review of Recent Trends in Formal Capital Budgeting Processes, *Accounting and Business Research*, Summer, pp. 201-208.

- Pike, R. H., 1988. An Empirical Study of the Adoption of Sophisticated Capital Budgeting Practices and Decision-Making Effectiveness, *Accounting and Business Research*, Vol. 18, No. 72, pp. 341-351.
- Pinch, T., Mulkay, M. & Ashmore, M. , 1989. Clinical Budgeting Experimentation in the Social Sciences: A Drama in Five Acts, *Accounting, Organisations and Society*, Vol. 14, No. 3, pp. 271-301.
- Piper, J. A., 1980. Determinants of Financial Control Systems for Multiple Retailers – Some Case Study Evidence, *Managerial Finance*, Vol. 6, No. 1, pp. 52-62.
- Pohlen, T. L. & Londe, B. J., 1999. 1998 Survey of Activity-Based Costing Applications within Business Logistics, *Logistics Management & Distribution Report* – Logistics Best Practices (web-journal, <http://www.manufacturing.net/lm/>) Issue 2, February 1.
- Pope, P. F., 1984. Information Asymmetries in Participative Budgeting: A Bargaining Approach, *Journal of Business Finance & Accounting*, Vol. 11, No. 1, pp. 41-59.
- Porter, M. E., 1985. *Competitive Advantage*, The Free Press, New York, NY.
- Prendergast, P., 1997. Budget padding: is it a job for the finance police? *Management Accounting*, November, pp.44-46.
- Preston, A., 1995. Budgeting, Creativity and Culture, (in) Ashton, D., Hopper, T. and Scapens, R. W. (eds), *Issues in Management Accounting*, Prentice Hall.
- Pugh, D. S. & Hickson, D. J., 1976. Organisational Structure in its Context: The Aston Programme, Saxon House. (cited by) Otley, D. T., 1984, (in) Scapens, R. W., Otley, D. T. & Lister, R. J., 1984. *Management Accounting, Organizational Theory and Capital Budgeting: Three Surveys*, Macmillan Press
- Pyhrr, P. A., 1973. *Zero-Base Budgeting: a practical management tool for evaluating expenses*, John Wiley & Sons (A Wiley-Interscience Publication).
- Quail, J. M., 1997. More Peculiarities of the British: Budgetary Control in UK and US Business to 1939, *Business and Economic History*, Vol. 26, No. 2, pp. 617-631.
- Raffish, N. & Turney, P. B. B., 1991. Glossary of Activity-Based Management, *Journal of Cost Management*, Vol. 5, No. 3, Fall, 53-63.
- Raffish, N., 1991. How Much Does That Product Really Cost?: Finding Out May Be As Easy As ABC. *Management Accounting*, March, pp. 36-39.
- Raiborn, C. A., Barfield, J. T. & Kinney, M. R., 1996. *Managerial Accounting: Annotated Instructor's Edition*, West Publishing Organisation, p. 511.
- Reekie, W. D. & Crook, J. N., 1995. *Managerial Economics: A European Text*, 4<sup>th</sup> edition. Prentice Hall International (UK) Ltd.

- Reynolds, P. D., 1986. Organizational Culture as Related to Industry, Position and Performance: A Preliminary Report, *Journal of Management Studies*, May, Vol. 23, No. 3, pp. 333-345.
- Rhyne, L. C., 1987. Contrasting Planning Systems in High, Medium and Low performance Companies, *Journal of Management Studies*, Vol. 24, No. 4, pp. 363-385.
- Roberts, M. W. & Silvester, K. J. 1996. Why ABC failed and how it may yet succeed. *Journal of Cost Management*, Winter, pp.23-25.
- Robinson, J. J. & Liu, Y. J., 1998. *Is It Time to Consider Activity-Based Budgeting?* (Conference paper presented at) The 1998 British Accounting Association Northern Accounting Group Conference, September 9, Sunderland.
- Roddick, S., 1997. Activity-Based Budgeting: The Way Ahead, *The Brewer*, March, pp. 112-117.
- Rohman, M. & McCosh, A. M., 1976. The Influence of Organisational and Personal Factors on the Use of Accounting Information: An Empirical Study, *Accounting, Organizations and Society*, pp. 339-355.
- Ryan, B., 1992. *Research Method And Methodology In Finance And Accounting*, London : Academic Press..
- Ryan, R., Scapens, R. W. & Theobald, M., 1992. *Research Method and Methodology in Finance and Accounting*, London, Academic Press.
- Samuelson, L. A., 1986. Discrepancies Between the Roles of Budgeting, *Accounting, Organization and Society*, Vol. 11, No. 1, pp. 35-45.
- Scapens, R. W. & Arnold, J., 1986. Economics and Management Accounting Research, (in) Bromwich, M. and Hopwood, A. (eds.), *Research in Current Issues in Management Accounting*, Pitman.
- Scapens, R. W. & Roberts, J., 1993. Accounting and Control: a Case Study of Resistance to Accounting Change, *Management Accounting Research*, Vol. 4, pp. 1-32.
- Scapens, R. W., 1984. Management Accounting: A Survey Paper, (in) Scapens, R. W., Otley, D. T. and Lister, R., 1984, *Management Accounting, Organisational Theory and Capital Budgeting: Three Surveys*, MACMILLAN Press.
- Scapens, R. W., 1990. Researching Management Accounting Practice: The Role of Case Study Methods, *British Accounting Review*, Vol. 22, pp. 259-281.
- Scapens, R. W., 1991. *Management Accounting: a Review of Recent Development*, 2<sup>nd</sup> edition, Macmillan Education Ltd.



- Scapens, R. W., 1992. The Role of Case Study Methods in Management Accounting Research: A Personal Reflection and Reply, *British Accounting Review*, Vol. 24, pp. 369-383.
- Scapens, R. W., 1994. Never Mind the Gap: Towards an Institutional Perspective on Management Accounting Practice, *Management Accounting Research*, Vol. 5, pp. 301-321.
- Schatzman, L. & Strauss, A., 1973. *Field Research: Strategies for a Natural Sociology*, Englewood Cliffs, NJ: Prentice-Hall.
- Schein, E. H., 1983. The Role of the Founder in Creating Organizational Culture, *Organizational Dynamics*, Vol. 12, pp. 12-38.
- Schreyogg, G., 1980. Contingency and Choice in Organisation Theory, *Organisation Studies*, pp. 305-326.
- Scott, W., 1965. Field Methods in the Study of Organizations, (in) March, J. (ed.), *Handbook of Organizations*, Chicago: Rand McNally.
- Searfoss, R. G. & Monczha, R. M., 1973. Perceived participation in the Budget Process and Motivation to Achieve the Budget. *Academy of Management Journal*, pp. 541-553.
- Seiler, R. E. & Bartlett, R. W., 1982. Personality Variables as Predictors of Budget System Characteristics. *Accounting, Organisations and Society*, 1982, pp.381-403.
- Selznick, P., 1957. *Leadership in Administration*, Evanston, Ill.: Harper and Row.
- Sharman, P., 1996. Activity/Process Budgets: A Tool For Change Management, *CMA Magazine (Canada)*, March, Vol. 70, No. 2, pp. 21-24.
- Shehane, R. F., 1994. Planning, Programming, and Budgeting System (PPBS) – Ability to Meet the New World Order, *Armed Forces Comptroller*, Summer, Vol. 39, No. 3, pp. 46-48,
- Shields, M. D., 1995. An Empirical Analysis of Firms' Implementation Experiences with Activity-Based Costing, *Journal of Management Accounting Research*, Vol. 7, pp. 148-166.
- Shields, M., 1988. An Analysis of Experimental Accounting Research on Managerial Decision Making, (in) Ferris, K. (ed.), *Behavioural Accounting Research: A Critical Analysis*, Columbus, Ohio: Century VII Publishing Company.
- Shih, M. S. H., 1998. Corporate Hierarchy and Goal Attainability, *The Accounting Review*, Vol. 73, No. 4, pp. 557-564.
- Sieber, S. D., 1973. The Integration of Fieldwork and Survey Methods, *American Journal of Sociology*, Vol. 78, pp. 1335-1359.

- Siegel, G. & Ramanauskas-Marconi, H., 1989. *Behavioural Accounting*, South-Western Publishing Co.
- Simon, H. A., 1957. *Administrative Behaviour*, 2<sup>nd</sup> Edition, Collier-Macmillan. (in) Scapens, R. W., Otley, D. T. & Lister, R. J., 1984. *Management Accounting, Organizational Theory and Capital Budgeting: Three Surveys*, Macmillan Press.
- Sizer, J., 1989. *An Insight into Management Accounting*, Penguin.
- Skousen, C. R., 1990. Budgeting Practices in Local Governments of England and Wales, *Financial Accountability and Management*, Vol. 6, No. 3, pp. 191-208.
- Smircich, L., 1983. Concepts of Culture and Organisational Analysis, *Administrative Science Quarterly*, Vol. 28, No. 3, pp. 339-358.
- Smith, H. W., 1975. *Strategies of Social Research*, Englewood Cliffs, NJ: Prentice-Hall.
- Solomons, D., 1968. The Analysis of Standard Cost Variances, *Studies in Cost Analysis*, Sweet and Maxwell, (in) Innes, J. & Mitchell, F., 1998. *A Practical Guide to Activity-Based Costing*, CIMA, Kogan Page.
- Spicer, B. H., 1992. The Resurgence of Cost and Management Accounting: A Review of Some Recent Development in Practice, Theories and Case Research Methods, *Management Accounting Research*, Vol. 3, p. 1-38.
- Staubus, G., 1971. *Activity Costing and Input-Output Accounting*, Richard D. Irwin Inc.. (in) Innes, J. & Mitchell, F., 1998. *A Practical Guide to Activity-Based Costing*, CIMA, Kogan Page.
- Stedry, A. C., 1960. Budget Control and Cost Behaviour. Prentice-Hall, Englewood Cliffs, N.J., (in) Amey, L. R., 1979. *Budget Planning and Control System*. Pitman Publishing LTD.
- Steers, R., 1976. Factors Affecting Job Attitudes in a Goal Setting Environment, *Academy of Management Journal*, March, pp. 6-16.
- Stewart III, G. B., 1991. *The Quest for Value*, New York: Harper Collins, Publishers, Inc..
- Sunderland, F. O. & Kane, M. E., 1996. Measuring Productivity on a Value Basis, *National Productivity Review*, Vol. 15, pp. 57-76.
- Swenson, D. W., 1995. The Benefits of Activity-Based Cost Management to the Manufacturing Industry, *Journal of Management Accounting Research*, Vol. 7, pp. 167-180.
- Swieringa, R. J. & Moncur, R. H., 1975. *Some Effects of Participative Budgeting on Managerial Behaviour*, National Association of Accountants. (in) Lyne, S. R., 1988. The

Role of the Budget in Medium and Large UK Companies and the Relationship with Budget Pressure and Participation, *Accounting and Business Research*, Vol. 18, No.. 71, pp. 195-212. .

Swieringa, R. J. & Weick, K. E., 1982. An Assessment of Laboratory Experiments in Accounting, *Journal of Accounting Research*, Supplement, pp. 56-116.

Sytsma, Sid., 1998. URL: <http://www.sytsma.com/cism640/projectbudgeting.html> [08 July 1998]

Tashakkori, A., 1998. *Mixed Methodology: Combining Qualitative And Quantitative Approaches*, Thousand Oaks, Calif.; London: SAGE, Applied social research methods, Vol.46.

Tesch, R., 1990. *Qualitative Research: Analysis Types & Software Tools*, The Falmer Press.

Thompson, J., 1967. *Organization in Action*, McGraw-Hill.

Tinker, A. M., Merino, B. D. & Niemark, M. D., 1982. The Normative Origins of Positive Theories: Ideology and Accounting Thought, *Accounting, Organizations and Society*, Vol. 7, No. 2., pp. 167-200.

Todd, R. & Ramanathan, K. V., 1994. Perceived Social Needs, Outcomes Measurement, and Budgetary Responsiveness in a Not-for-Profit Setting: Some Empirical Evidence, *The Accounting Review*, Vol. 69, No. 1, pp. 122-137.

Tomkins, C. & Grove, R., 1983. The Everyday Accountant and Researching His Reality, *Accounting, Organizations and Society*, Vol. 8, No. 4, pp. 361-374.

Tomkins, C., Rosenberg, D. & Colville, I., 1980. The Social Process of Research: Some Reflections on Developing a Multi-Disciplinary Accounting Project, *Accounting, Organizations and Society*, pp. 247-262.

Turney, P.B.B., 1991. *Common Cents: The ABC Performance Breakthrough*, Cost Technology, Oregon.

Van Maanen, J., 1979. The Fact Of Fiction in Organisational Ethnography, *Administrative Science Quarterly*, Vol. 24, pp. 539-550.

Verbeke, W., Volgering, M. & Hessels, M., 1998. Exploring the Conceptual Expansion within the Field of Organizational Behaviour: Organizational Climate and Organizational Culture, *Journal of Management Studies*, Vol. 35, No. 3, May, pp. 303-329.

Vroom, V. H., 1959. Some Personality Determinants of the Effects of Participation. *Journal of Applied Psychology*, pp.322-327.

Vroom, V. H., 1964. *Work and Motivation*, John Willey, New York.



- Walker, K. B. & McClelland, L. A., 1991. Management Forecasts and Statistical Prediction Model Forecasts in Corporate Budgeting, *Journal of Accounting Research*, Vol. 29, No. 2, Autumn, pp. 371-381.
- Walker, R. (ed.), 1985. *Applied Qualitative Research*, Gower.
- Waterhouse, J. H. & Tiessen, P., 1978. A Contingency Framework for Management Accounting Systems Research, *Accounting, Organizations and Society*, pp. 65-76.
- Watson, D. J. H., 1975. Contingency Formulations of Organizational Structure: Implications for Managerial Accounting, in Livinstond, J. L. (ed.), *Managerial Accounting; The Behavioral Foundations*, GRID.
- Webb, E. J., Campbell, D. T., Schwartz, R. D. & Sechresr, L., 1966. *Unobtrusive Measures: Non-reactive Research in the Social Science*, Chicago: Rand McNally.
- Weimer, W. B., 1979. *Notes On The Methodology Of Scientific Research*, L. Erlbaum Associates, distributed by the Halsted Press Division of Wiley.
- Wildavasky, A., 1961. Political Implications of Budgetary Reform. *Public Administration Review*, Autumn, 21/4, pp.183-190. (in) Jones, L.R. & McCaffery, J.L. (1994). Budgeting According to Wildavsky: A Bibliographic Essay. *Public Budgeting & Finance*, Spring, Vol. 14, NO. 1., pp. 16-43.
- Wildavasky, A., 1964. *The Politics of the Budgetary Process*. Boston: Little Brown.
- Wildavsky, A., 1975. *Budgeting: A Comparative Theory of the Budgeting Process*, Little, Brown and Company, Inc.
- Wilhelmi, M. & Kleiner, B. H., 1995. New Developments in Budgeting, *Management Research News*, Vol. 18, No. 3-5, pp. 78-87.
- Willams, J. J., 1981. Zero-Base Budgeting: Prospects for Developing a Semi-Confusing Budgeting Information System, *Accounting, Organizations and Society*, Vol. 6, No. 2, pp.153-164.
- William, J. J., Macintosh, N. B. & Moore, J. C., 1990. Budget-related Behaviour in Public Sector Organisations, *Accounting, Organisations and Society*, Vol. 15, No. 3, pp. 221-246.
- Williams, J. J. & Hinings, C. R., 1988. A Note on Matching Control System Implications with Organizational Characteristics: ZBB and MBO Revisited, *Accounting and Organizations Society*, Vol. 13, No. 2, pp. 191-198.
- Williams, J. J., Newton, J. D. & Morgan, E. R., 1985. The Integration of Zero-Base Budgeting with Management-By-Objectives: an Empirical Inquiry, *Accounting & Organizations Society*, Vol. 10, No. 4, pp. 457-476.

- Willmott, H. C., 1983. Paradigms for Accounting Research: Critical Reflections on Tomkins and Groves' "Everyday Accountant and Researching His Reality", *Accounting, Organisations and Society*, Vol. 8, No. 4, 1983.
- Willmott, R., 1997. Structure, Culture and Agency: Rejecting the Current Orthodoxy of Organisation Theory, *Journal for the Theory of Social Behaviour*, Vol. 27, No.1, pp. 93-123.
- Willoughby, K. G. & Melkers, J. E., 2000. Implementing PBB: Conflicting Views of Success, *Public Budgeting and Finance*, Spring, Vol. 20, No. 1, pp. 85-120.
- Wilson, R.M.S., 1983. *Cost Control Handbook, 2<sup>nd</sup> Edition*, Gower Publishing Company Ltd, Aldershot, Hants, England.
- Wise, D., 1988. Better Budgeting for Better Results: the Role of Zero-Base Budgets. *Management Accounting*, May, pp. 35-36.
- Wood, S., 1979. A Reappraisal of the Contingency Approach to Organisation, *Journal of Management Studies*, pp. 334-354.
- Woodward, J., 1965. Industrial Organisation: Theory and Practice, Oxford University Press. (cited by) Otley, D. T., 1984, (in) Scapens, R. W., Otley, D. T. & Lister, R. J., 1984. *Management Accounting, Organizational Theory and Capital Budgeting: Three Surveys*, Macmillan Press
- Xavier, J. A., 1996. Budgetary Control and Management at the Malaysian Central Budget Process -- Principles and Practice, *Financial Accountability and Management*, Vol. 12, No. 4, pp.303-321.
- Yin, R. K., 1994. *Case Study Research: Design and Methods, 2<sup>nd</sup> Edition*, Sage Publications.
- Yin, R. K., 1984. *Case Study Research: Design and Methods*, Beverly Hills, CA: Sage.
- Yin, R. K., 1993. *Applications of Case Study Research*, SAGE Publications.
- Young, D. W., 1979. Administrative Theory and Administrative Systems: A Synthesis among Diverging Fields of Inquiry, *Accounting, Organizations and Society*, pp. 81-87.
- Young, M. S., 1988. Individual Behaviour: Performance Motivation and Control, (in) Ferris, K. (ed.), *Behavioural Accounting Research: A Critical Analysis*, Columbus, Ohio: Century VII Publishing Company.
- Young, S. M., 1985. Participative Budgeting: The Effects of Risk Aversion and Asymmetric Information on Budgetary Slack, *Journal of Accounting Research*, Vol. 23, No. 2, Autumn, pp. 829-842.

Zanibbi, L. & Pike, R., 1996. Behaviour Congruence in Capital Budgeting Judgements, *Management Accounting Research*, Vol. 7, No. 3, pp. 305-320.

Zikmund, W. G., 1997. *Business Research Methods*, 5<sup>th</sup> edition. The Dryden Press



# Appendix:

## Appendix 1 Cross-reference list

The following table is used to list the prevailing topics and cross-reference them with the literature suggestions. It is used to inform the construction of interview questions.

|                   | Topics  | Sources  |  |  | Related to Previous Literature Research  |
|-------------------|---|--|--|--|--|
|                   |   | Person   | Questions  | Documents  |  |
| Budgeting process | Process of budgeting and the role of budget in the management control process. Many authors view budgets as an important part of mgt. control process. And it can be divided into 4 principal steps: programming, budget formulation, operating (& measurement)& re-porting and evaluation. | Interview to <u>Senior Manager in charge of Budgeting</u>              | 1.the budget process<br>2.do decisions made during budgeting process lead to the actual action taken?<br>3.If yes, to what degree? | <ul style="list-style-type: none"><li>Budget process flow chart</li><li>Organisation chart (to see the responsibility of decision making</li></ul> | Hogheim (1989) The case study revealed that information (reporting & evaluation), decision (budgeting) and action are elusive and integrated, (procedural & reproductive integration), however, budgetary decision did not control action.                         |
|                   | ‘Top-down’ vs. ‘Bottom-up’ approaches to initiate budget control system as a factor to affect the budget system implementation  | Interview with <u>ABB implement-er</u> and <u>senior/line managers</u> | 4.Initiation of implementing ABB: big bang, or top down/ bottom up, others?<br>5.Initiation of how to use ABB                      |  | Jegers (1996) ‘During the investigation of European Intensive Care Units (ICU), it reveals that ICU managers can’t initiate budgetary control systems as opposite to assumption of ICU managers can initiate more or less sophisticated budgetary control systems’ |
|                   | Some authors advocat-ed the separation of budget  | Interview to <u>Senior Manager in charge</u>                           | 6.how often are planning and   | <ul style="list-style-type: none"><li>Planner for planning &amp;</li></ul>   | Morris (1968) advocated the separation of budget planning  |

|  | Topics  | Sources  |   |   | Related to Previous Literature Research  |
|--|---|--|---|---|--|
|  |   | Person   | Questions   | Documents   |  |
|  | planning and control since they carry different duties. Whether ABB carries either planning function or control or both. In addition, the characteristic of each function their linkage and distinction reflecting on the organisation management process   | <u>of Budgeting</u>  | budgeting taken place?<br>7.the purpose of budgeting,<br>8.your views about the function of ABB: planning &/or control  | budgeting<br>• Sample of budget (pre-/post ABB)   | from control.<br><br>Amey (1979) 'Short-term budgets were expected to do double duty, as plans and as controls' and supported the separation of these two duty.<br><br>Skousen (1990) 'The surveys confirm that limited use of longer term approaches to financial planning in local governments of England/Wales, in spite of the annual budget's limitation for forward planning purposes... defects on budgetary control,e.g. absence of profiling and output measures prevents variance analysis, ignorance of non-financial measures.   |
|  | Budget control and reflection of the characteristic of budgetary system (hierarchy control, control of repetitive activities, authoritarian/autonomy, etc.). In particular, the importance of budgetary control in the over all organisational control, any changes since ABB in place (more reliance on ABB control or less) | Interview to <u>Senior Manager in charge of Budgeting</u>                      | 9.Do you rely on ABB information, treat ABB as an important control device, if ABB enable budget control<br>10.How much do you rely on formal budget system in mgt. control?<br>11.Any other forms of control mechanism used? | • Samples of other forms of control, if any.  | Otley & Berry (1980) 'Organisation control is a subject of fundamental importance to the designer of accounting control system. Yet discussion of accounting control tend to take place against a back-cloth of incomplete of organisation & simplistic & authoritarian concepts of controls.'<br><br>Armstrong (1996) 'A lower overall incidence of budgetary control than might be expected from textbook, but only on labour control in survey of large UK companies'<br><br>Christiansen & Skarbak (1997) 'Political behaviour may be expected when implementing management control (budget control) system. The implementation of budgetary control system enforces other structural and procedural changes'. |
|  | Budgeting system implementation issues: 1) The reliance on accounting information (budgeting) as a main measure to planning/control b/w departments, 2)The relationship b/w an  | Feedback from <u>senior managers at H.Q. and line managers in area office.</u> | 12.Whether financial or non-financial control remain as dominant mode in terms of management/operational control  | • Budget/financial reports<br>• Key performance indicators (Q the use of financial/non-financial info.) | Miah & Mia (1996) 'The use of accounting control system acts as a mediator in the relationship b/w decentralisation of decision making and performance of government department & district office. But no direct association b/w decentralisation and the district office performance.'<br><br>Brignall (1997) 'The integration of costing and Performance Measure systems within wider MIS, which also throws up IT   |



|   | Topics   | Sources   |  |  | Related to Previous Literature Research   |
|---|--|---|--|--|---|
|   |  | Person  | Questions  | Documents  |   |
|   | ABB system implementation and design of the system<br>3) Reliance on non-financial measures in the system  |   |  |  | issues, such as the type of information architecture which would be appropriate to facilitate their implementation'<br>Jones & Dewing (1997) 'Non-financial controls remained the dominant mode of operational control.'  |
|   | Budget process vs. Budgetary bias  | Interview <u>line managers</u>  | 13. Do you manage your department according to the budget? e.g. agreed expenditures/activities   | <ul style="list-style-type: none"> <li>Departmental monthly financial report to see the deviation from budget/actuals</li> </ul>   | Otley (1985) 'Budget processes at lowest levels are different from higher levels in organisation. This provides a legitimate justification in budgetary bias.'<br>Lukka (1988) 'There are two major parts of a framework: an explanatory model of budgetary biasing at the individual level, and an organisational model for budgetary biasing.'  |
| Organisational behaviour, culture and structure | Some authors suggested that budget devolution can provide better responsibility and encourage creative management.   | Interview with <u>line managers/ senior managers</u> From the interview, observing the benefit/ pitfalls of budget devolution, if any.    | 14. Do you devolve your budgets to line managers? (ask Senior mgr.)<br>15. Do you feel that you are full in control of your budgets?   | <ul style="list-style-type: none"> <li>Samples of devolved budget reports, if any</li> </ul>   | Bourn & Ezzamel (1987) 'Budgetary devolution scheme is workable. It will enhance clinical activity by opening it to regular peer-group assessment, and by encouraging creative management of it by clinicians themselves. Less complex.'<br>Keen & Murphy (1996) 'Efforts have been put to avoid pitfalls of other devolution. But the authority fails to underlie paradox of devolving authority to 'independent business units', and the additional degree of complexity and 'contract bureaucracy'.'   |
|   | Budget-based goals and subordinate's performance and individual behaviour towards enhancing these goals. The way budgetary process operates has its influences from political, admin. structure, also the interrelationship with organisation goals/ sub-goals development and | Interview with <u>Senior managers</u> about the org. goals, <u>line managers'</u> clarity of these goals and linkage with their sub-goals | 16. Do you set/re-vise your organisational goals? How often? (senior managers)<br>17. Do you develop/have sub-goals to link with these org. goals? (senior/line mgrs.)<br>18. Are you aware of | <ul style="list-style-type: none"> <li>Mission statement</li> <li>Reports of submitted budget report and final agreed budget report, to see the deviation b/w budget submission and allocation.</li> </ul> | Locke (1968) 'predicts that explicit, difficult goals lead to better performance than moderate or easy goals despite the lower probability of achieving them'<br>Livingstone (1975) 'Goal development, sub-goal specification, resource allocation, budgeting, effectiveness measurement, and review of actual performance, as interdependent processes, each interacting with the other and reflected in bargaining, conflict and influence.'<br>Chow (1983) & Rockness (1977) found the attributes of the budget standard that affected performance (a reflection of goal |



|                 | Topics   | Sources                             |  |   | Related to Previous Literature Research   |
|-----------------|--|-------------------------------------|--|---|---|
|                 |  | Person                              | Questions  | Documents   |   |
|                 | budget process<br>(Others, e.g. Covaleski & Dirsmith, 1986; Merchant et.al, 1989; Hirst, 1987)                               |                                     | the goals of the org.? How do these goals link to your immediate interest? (line managers)   |   | difficulty).<br>Hopwood (1972) & Otley (1978)'s field studies confounding the distinction between the control over difficulties of the budget goal and the level of task difficulty.<br>Abernethy & Stoelwinder (1991) 'The existence of a unifying set of organisational goals and that individual behaviour can be directed towards the achievement of these goals.'<br>Xavier, (1996) 'political and administrative structures and values are the most proximate influences in the way a budget process operates. Budget reform need to encompass all administrative arrangements that impinge on budgetary and financial management.' |
|                 | Often there is a linkage b/w organisational culture and budgeting process and its related behaviour, but not straightforward | Observation and interview question, | 19.Do you feel comfortable with the existing system?   | <ul style="list-style-type: none"> <li>External/internal sources of reports or information that reflect the culture of organisations</li> </ul> | Goddard (1997) 'A correction b/w organisational culture and budget related behaviour ( i.e. budget participation and the usefulness of budgets to support managerial role) can be observed but not straightforward. The analysis indicated some tension b/w culture and the financial control system in operation'  |
| Human behaviour | Participation can increase job satisfaction and reduce job tension.  | Feedback from <u>line managers</u>  | 20.Do you participate in setting budget?<br>21.If yes, are you happy with this, or you would rather be told your budget for next year?<br>22.Do you think you will be less worried about achieving the |   | Collins (1978), Milani (1975) & so on suggested 'the positive effects of participation on job satisfaction and job tension'   |

|  | Topics  | Sources  |  |   | Related to Previous Literature Research   |
|--|---|--|--|---|---|
|  |   | Person   | Questions  | Documents   |   |
|  |   |  | budget if you participated?  |   |   |
|  | Participation vs. Performance (through the level of task uncertainty, complexity and level of budget goal, cognitive benefits derived from sharing information during participation, economic incentive, budget pressure, motivation)<br><br>(Lyne, 1988; Hirst, 1983; Collins, et al, 1984; Magner, et al 1995, etc) | Interview with <u>line managers</u> about effect of participation to performance | 23.If you participate in the budgeting process, what do you think it helps you positively? (achieving the budget & better performance)<br>24.How many levels of goals do you tend to set from the whole org.to the SBU?<br>25.What is the most important element(s) will affect your performance? (participation, incentive, task uncertainty) | <ul style="list-style-type: none"> <li>Result from internal financial report, esp. pre-/post ABB in place.</li> </ul> | Argyris (1952), Hofstetdt (1972) etc. suggested 'positive effect of budget participation on performance' But Brownell (1982) revealed the inconsistent results. There are four classes of variables shown to impact the relationship b/w participation and performance: cultural, organisational, interpersonal, and individual. And also the 'locus of control'<br><br>Brownell (1985) 'Mixed results: budget participation was found to have significantly greater positive effects on managerial performance in R&D than in Marketing. A reduced reliance on accounting information is appropriate with a more complex environment.'<br><br>Locke et al (1981) 'From a goal theory perspective, ... participation's effects on performance may occur in three ways: (1) through the setting of higher budget goals, (2) by increasing commitment to budget goals, and (3) through the cognitive benefits derived from sharing information during participation.' |
|  | Participation vs. propensity to create slack  | Observation during the interview with <u>line managers</u>                       | 26.Do you intend to stick with the budget?<br>27.Any additional spending incurred at the year end?   |   | Merchant (1985) 'Propensities to create slack are higher if a tight budget requires frequent tactical responses to avoid overruns.'<br><br>Dunk (1994) 'The relation b/w participation & slack is contingent upon budget emphasis and information asymmetry, but in a direction contrary to expectation; slack reduction results from participation except when budget emphasis is low.'  |
|  | Motivation vs. Performance  | Interview with <u>line</u>   | 28.Do you think the  |   | Brownell & McInnes (1986) 'The expectancy model predicts  |



|  | Topics   | Sources  |  |   | Related to Previous Literature Research   |
|--|--|--|--|---|---|
|  |  | Person   | Questions  | Documents   |   |
|  |  | <u>managers</u>  | budget system produce a fair budget?<br>29.Does this fair budget lead to your current achievement?<br>30.If you are not performing, do you think there is something to do with the budget? |   | that budgeting can impact the motivation to perform in several ways: (1) easy (difficult) budget goals increase (reduce) the expectancy of achieving the budget and increase (decrease) the motivation to perform, (2) the subordinate's knowledge of budget contingencies clarifies the availability of external valences and if they are perceived to be consistently provided, it enhances motivation, (3) to the extent that working toward or achieving budget goals provides satisfaction, intrinsic valences are enhanced. |
|  | Propensity to create slack vs. organisational commitment & job involvement | Observation from the interview with <u>line managers</u> . | 31.Are you confident for not overrunning the spending?<br>32.If yes, what are you going to do about it?  | • Financial reports (past and current) to see the discrepancy b/w budget/actual figures | Nouri (1994) 'For highly committed manager, job involvement is associated with decreased propensity to create budgetary slack.'   |
|  | Slack vs. Task complexity  | Observation from the interview with <u>line managers</u> . | 33.Is your current task difficult?<br>34.Do you think it is challenging/ hard to achieve it?<br>35.what kind of preparation do you use for just in case purposes?                          |   | Todd et al (1994) 'Task complexity appears to be a pervasively important consideration in New York Police Department; it may suggest that organisation maybe required in the short term to rely upon budgetary slack in order to achieve its mission.'  |



## Appendix 2      A sample letter used for pilot and preliminary investigation

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Mr. Smith  
Company name and address

July 2000

Dear Mr. Smith,

I am a Ph.D. candidate at Newcastle Business School of University of Northumbria. Currently I am proceeding to the final year of research in the area of activity-based budgeting (ABB).

ABB is a fairly recent topic in the management accounting research. In principal ABB should help organisations to improve their budgeting process and bring real benefits. Unfortunately there are very few examples of “published” case studies by which companies can learn about ABB.

In order to increase the “published” knowledge of ABB, I am looking for companies who are keen to share their experiences. Therefore,

- if you have an ABB system as described in the attached literature, either in the whole organisation or in one department (or a project);
- if your budgeting process is not termed ABB, but is operated in a similar way (such as zero-base budgeting and planning-programme-budgeting system);
- if you do not operate an ABB system, but would like to express your views on ABB.

I would be most grateful to learn about your experiences/views.

If you are willing to participate in this important area of research, then please contact me via e-mail or by post so that we can make arrangement to discuss the matter further. The duration of the meeting is anticipated approximately 1-1 1/2 hours. Your reply will be very much appreciated.

Yours Sincerely  
Lana Liu

# Appendix 3 Two sets of guideline questions and culture questionnaire

## 1. Guideline questions for budgeters

### Activity-Based Budgeting

Thank you for agreeing to help in my study. Broadly, it concerns the changes in budgets and processes of budgeting by using activity-based information (here we called 'New system') and its effects on the planning and control systems. The applications of the 'New system' may be varied from organisation to organisation. Subsequently its effects on the planning and control systems may rely on both the design of the 'New system' and the suitability of the 'New system' to its organisational setting and people involved in using the system.

This study is a three years Ph.D. research and conducted by Lana Y J Liu of the School of Accountancy and Information System at University of Northumbria at Newcastle.

Your comments and responses will be treated strictly confidence. The research report will contain mainly summarised information and will not name individuals or your organisation.

You are invited to complete the questionnaire in Part Two before our meeting. You are also invited to preview the questions listed in Part One and write down your responses before our meeting. The questions in Part One will enable selected topics to be discussed more fully when we meet. It will be helpful if a photocopy of your responses can be made available at that time.

For the purpose of this document, 'line management/managers' is the general term used to describe the following management positions: area chief prosecutors, area business managers and branch chief prosecutors.

|              |                             |
|--------------|-----------------------------|
| Date: _____  | Name: _____                 |
| Venue: _____ | Position: _____             |
|              | Number of years held: _____ |

PART ONE

If you have any of the following documents, would you please provide a copy of them? These documents will be treated strictly confidence.

Thank You!

- 1. Organisation Chart
- 2. Mission Statement
- 3. Sample of budget manual and budget process flow chart
- 4. Sample of budget related statements and reports
- 5. Sample of budgets, including initial submitted budget proposals and final agreed budget
- 6. Sample of monthly control reports
- 7. Sample of key performance indicators and performance reports (and benchmarking reports or league tables).
- 8. Sample of budget reports before introducing ‘activity timing’ and/or ‘Should take’/ ‘Did take’ as part of budget elements.
- 9. Internal non-financial information, e.g. newsletters, wallpapers, activity/process map

A. BACKGROUND INFORMATION

- a. Would you please tell me something about yourself and your educational background? (e.g., degrees, training, professional qualifications)
- b. Would you please give me a brief summary of your career history? (e.g., organisations you have worked with, positions held, and periods in respectively)
- c. Would you please describe the nature of work now?

B. INVOLVEMENTS IN BUDGETS

- a. How long have you been involved and what is the nature of your involvement in budgets?
- b. Would you please describe your responsibilities in the preparation and the implementation of budgets?

*(Please note that the following questions will be associated with Before and After ‘activity-timing’ information was introduced in your budgeting process. For the purpose of clarification here then use the terms ‘Old system’ and ‘New system’ respectively)*

C. GENERAL ISSUES ON BUDGETS AND BUDGETING

In general, organisations adopt the following 7 steps into their long-term and short-term planning, decision-making and control process: identify objectives – identify potential courses of action (i.e. strategies) – evaluate alternative course of action – implement long term plan in the form of the annual budget – monitor actual results – respond to divergencies from plan.

- a. Does your organisation follow these steps in each year?
- b. How often do you modify the organisational objectives? Presumably this modification will result in a change of strategies and budgets, how do you feel about the flexibility of the Old and New systems to cope with this change?
- c. In the Old system, does technicality of the system allow you to do ‘what-if’ scenario during

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23



planning and operational phases respectively? How about in the New system?

- d. How many months did it take to reach your annual budget under the Old system? What about now under the New system?

|            | Technical processing | Budget negotiation |
|------------|----------------------|--------------------|
| Old System | _____                | _____              |
| New System | _____                | _____              |

- e. What is the level of management involved in identifying strategies of organisation under Old and New systems respectively? Please tick.

|                                  | Old System               | New System               |
|----------------------------------|--------------------------|--------------------------|
| Senior Executive only            | <input type="checkbox"/> | <input type="checkbox"/> |
| Area Chief Prosecutors           | <input type="checkbox"/> | <input type="checkbox"/> |
| Area Business Managers           | <input type="checkbox"/> | <input type="checkbox"/> |
| Branch Chief Prosecutors         | <input type="checkbox"/> | <input type="checkbox"/> |
| Others _____<br>(please specify) | <input type="checkbox"/> | <input type="checkbox"/> |

- f. Who are the employees that involve in the budget setting process under the Old and New systems respectively? Please tick

|                          | Old System               | New System               |
|--------------------------|--------------------------|--------------------------|
| Senior Executive only    | <input type="checkbox"/> | <input type="checkbox"/> |
| Area Chief Prosecutors   | <input type="checkbox"/> | <input type="checkbox"/> |
| Area Business Managers   | <input type="checkbox"/> | <input type="checkbox"/> |
| Branch Chief Prosecutors | <input type="checkbox"/> | <input type="checkbox"/> |
| Others _____             | <input type="checkbox"/> | <input type="checkbox"/> |

- g. Do you devolve full budget responsibility and full budgetary control to your line management under Old and New systems respectively?
- h. Do you believe that the New system helps to set budgets better than the Old system? Do you find it is easier to use the information produced by the New system to identify and rectify problems than the Old system?

D. BUDGET PARTICIPATION

- a. Do you seek line managers' involvement in making strategic decisions (e.g. restructuring, cost reduction) prior to the budgeting process?
- b. At what stage do you involve line management in the budgeting process? (e.g. during budget preparation, budget submission/re-submission, budget negotiation, and budget finalisation)
- c. Do you perceive it is beneficial to encourage line managers to participate in the budgeting process?
- d. Why do you think it is beneficial or not beneficial for participation from the line management? (e.g. increase budget attainability, better budgetary control, better performances)

- e. In terms of the final budgets, is there any negotiation between you and line managers or do they just accept whatever is available to them – imposed budget?
- f. Do you believe whether there is any links between the participation and use of different (Old and New) systems? Why? Please give an example.

E. EFFECTIVENESS IN ACHIVING THE PURPOSE OF BUDGETING

Generally the purposes of budgeting can be described in 6 aspects:

- 1) To aid the planning of annual operations.
  - 2) To co-ordinate the activities of the various parts of the organisation and to ensure that the parts are in harmony with each other.
  - 3) To communicate plans to the various responsibility centre managers.
  - 4) To motivate managers to strive the organisational goals.
  - 5) To control activities.
  - 6) To evaluate the performance of managers.
- a. How did the budgeting process achieve any of the above mentioned purposes in Old and New system respectively? Please score them on scale 1-5: 5 is excellent level and 1 is low level.

|               | Old System           | New System           |
|---------------|----------------------|----------------------|
| Planning      | <input type="text"/> | <input type="text"/> |
| Co-ordination | <input type="text"/> | <input type="text"/> |
| Communication | <input type="text"/> | <input type="text"/> |
| Motivation    | <input type="text"/> | <input type="text"/> |
| Control       | <input type="text"/> | <input type="text"/> |
| Evaluation    | <input type="text"/> | <input type="text"/> |

- b. Please briefly explain your reasons to give above scores.

F. IMPLEMENTATION OF THE NEW SYSTEM

- a. As I understood from my initial interview, it was the external pressure from the government, which initiated the implementation of the New system. Is that the case? What else?
- b. How useful do you perceive the New System is in facing and/or dealing with the external pressure?
- c. Were there any other projects taking place at the same time? If yes, how did you allocate your resources (staff & finance) and priorities (and/or autonomy) between the ABB project and the other projects?
- d. After the New system was implemented, was there any feedback that subsequently led to some modifications to the New system? Where was the feedback from?
- e. If the New system is perceived to be a tool for area managers/each team, do the area managers/team leaders raise any suggestions to reflect their local factors in the system? Have all the possible local aspects been considered in the New system?
- f. Do you encourage managers to use the New system? How? (e.g. training, rewards, 'time-out')

G. GENERAL ISSUES

- a. Do you perceive management reports (including budget information) to be useful?
- b. How useful are the management reports in assisting you to control your spending?
- c. Are there any differences between the information contented in the Old system and the New system? Please briefly explain them.

|  | Old System               | New System               |
|--|--------------------------|--------------------------|
| Simple and easy to understand                  | <input type="checkbox"/> | <input type="checkbox"/> |
| Clearer information for decisions making       | <input type="checkbox"/> | <input type="checkbox"/> |
| Better indication for performances             | <input type="checkbox"/> | <input type="checkbox"/> |
| Better linking business targets with resources | <input type="checkbox"/> | <input type="checkbox"/> |
| Others _____<br>(please specify)               | <input type="checkbox"/> | <input type="checkbox"/> |

- d. Do you rely mainly on financial information (budgets and monthly financial reports) or on non-financial information to monitor the operation?
- e. What kinds of non-financial information do you use? (e.g. experiences/ personal knowledge, information gathered through corridor talks, your own records about the business, and/or others \_\_\_\_\_)  
(please specify)

H. ORGANISATION AND BUDGETING RELATED ISSUES

The organisational goals, as stated in the mission statement, are the objectives that CPS wants to achieve in certain length of time (i.e. long-term). The targets (or sub-goals) are the short-term objectives set in order to achieve these long-term goals.

- a. What kind of targets (difficult, moderate, and easy) do you tend to set for your line managers?
- b. Which of these targets (difficult, moderate or easy) do you perceive can encourage your line managers the most?
- c. What factors (e.g. local needs, managers' competence, past performance) do you consider when you set targets for your line managers?
- d. Under the Old system, were there any indicators that could help you to monitor your organisational and divisional performances against targets and to take actions before it was too late?
- e. Under the New system, are there any indicators that can help you to monitor your organisational and divisional performance against targets and to take actions before it is too late?
- f. Does your organisation operate reward scheme (i.e. pay rise or promotion)? What are the main criteria for the reward scheme? What do you perceive is the most important criteria?
- g. Any differences in reward scheme between Old and New system?
- h. Is there any linkage with the target achievement and reward?
- i. Do you reckon that the New system is better than the Old system or vice versa? Why?



## 2. . Guideline questions for budgetees

### Activity-Based Budgeting

Thank you for agreeing to help in my study. Broadly speaking, this study concerns the changes in budgets and budgeting processes using activity-based information (called 'New system' in this study) and its effects on the planning and control systems. The applications of the 'New system' may vary from organisation to organisation. Subsequently its effects on the planning and control systems may rely on both the design of the 'New system' and suitability of the 'New system' to its organisational setting and people involved in using the system.

This study is a three-year Ph.D. research programme conducted by Lana Y J Liu of the School of Accountancy and Information System at University of Northumbria at Newcastle.

Your comments and responses will be treated with strict confidence. The resultant research report will contain mainly summarised information and will not name individuals or your organisation.

You are invited to complete the questionnaire in Part Two before our meeting. You are also invited to preview the questions listed in Part One and write down your responses before our meeting. The questions in Part One will enable the selected topics to be discussed more fully when we meet. It will be helpful if a photocopy of your responses can be made available at that time.

Date: \_\_\_\_\_

Name: \_\_\_\_\_

Venue: \_\_\_\_\_

Position: \_\_\_\_\_

Number of years held: \_\_\_\_\_

PART ONE

If you have any of the following documents, would you please provide a copy of them? These documents will be treated strictly confidence.

Thank You!

- 1. Departmental budget manual and budgeting process flow chart
- 2. Samples of budget-related statements/reports
- 3. Sample of budgets, including initial submitted budget proposals and final agreed budget
- 4. Sample of monthly control reports
- 5. Sample of reports that indicate performance in comparison to budgeted performances (e.g. benchmarking reports or league table).
- 6. Sample of budget reports before introducing 'activity timing' and/or 'Should take'/'Did take' as a part of budget elements
- 7. Internal non-financial information, e.g. newsletters, wallpapers, activity/process map

A. BACKGROUND INFORMATION

- a. Would you please tell me something about yourself and your educational background? (e.g., degrees, training, professional qualifications)
- b. Would you please give me a brief summary of your career history? (e.g., organisations you have worked with, positions held, and periods in respectively)
- c. Would you please describe the nature of your work now?

B. INVOLVEMENTS IN BUDGETS

- a. How long have you been involved in budgeting and what is the nature of your involvement?
- b. Would you please describe your responsibilities in the preparation and the implementation of budgets?

(Please note that the following questions will be associated with Before and After 'activity-timing' information was introduced in your budgeting process. For the purpose of clarification here then use the terms 'Old system' and 'New system' respectively)

C. GENERAL ISSUES ON BUDGETS AND BUDGETING

- a. Do you feel that you are in control over the budgetary plans and managing the performance of your division? Why?
- b. What are the things that you need to plan for the year ahead?
- c. What are the criteria that you use in planning?
- d. How did you prepare the budgets? (e.g., obtaining last year's budgets/expense accounts, incrementing/cut x%, discussing with top management, discussing with staff in the department, submitting the budgetary plans)
- e. How do you plan for contingencies or for things that might happen unexpectedly in the future?
- f. Do you think that current use of activity based information (activity timing) makes any differences (on planning for contingencies) in any ways?

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D. EFFECTIVENESS IN ACHIVING THE PURPOSE OF BUDGETING

Generally the purposes of budgeting can be described in 6 aspects:

- 1) To aid the planning of annual operations.
- 2) To co-ordinate the activities of the various parts of the organisation and to ensure that the parts are in harmony with each other.
- 3) To communicate plans to the various responsibility centre managers.
- 4) To motivate managers to strive the organisational goals.
- 5) To control activities.
- 6) To evaluate the performance of managers.

a. How did the budgeting process achieve any of the above mentioned purposes in Old and New system respectively? Please score them on scale 1-5: 5 is excellent level and 1 is low level.

|               | Old System           | New System           |
|---------------|----------------------|----------------------|
| Planning      | <input type="text"/> | <input type="text"/> |
| Co-ordination | <input type="text"/> | <input type="text"/> |
| Communication | <input type="text"/> | <input type="text"/> |
| Motivation    | <input type="text"/> | <input type="text"/> |
| Control       | <input type="text"/> | <input type="text"/> |
| Evaluation    | <input type="text"/> | <input type="text"/> |

b. Please briefly explain your reasons to give above scores.

E. USE OF THE NEW SYSTEM

a. Do you feel comfortable of using the New system? Any of the followings might attribute to the reasons:

|  | Old System           | New System           |
|--|----------------------|----------------------|
| Simple and easy to understand                  | <input type="text"/> | <input type="text"/> |
| Clearer information for decisions making       | <input type="text"/> | <input type="text"/> |
| Better indication for performances             | <input type="text"/> | <input type="text"/> |
| Better linking business targets with resources | <input type="text"/> | <input type="text"/> |
| Flexibility for planning and control           | <input type="text"/> | <input type="text"/> |
| Others _____                                   | <input type="text"/> | <input type="text"/> |

- b. Do you feel obligated to use the New system because it is pushed from headquarters? (e.g. information generated for managerial performance appraisals, certain incentives for using the New system)
- c. Do you receive any encouragement/incentives from the top management to use the New system? What are they? (e.g. training, rewards, 'time-out')
- d. Do you reckon that the New system has taken your local factors into account of? If not, what initiatives did you take in order to reflect your local factors? Please give an example.
- e. In general, what kind of information (e.g. financial vs. non-financial) do you usually use during making any decisions (e.g., recruiting additional staff, reducing departmental expenditure, training)?
- f. Do you trust the information indicated from the key performance indicators (KPIs) derived



from the New system and reports produced by the headquarters?

- g. Do you also rely on your own source of information (e.g. your experiences, personal knowledge, corridor information, others \_\_\_\_\_) to help you to manage operation and to make decision?
- h. Do you use the information from the New system to do 'what-if' analysis and establish to initial budgets?
- i. Can the information provided by the New system help you to control your spending and stay within your budget?
- j. From your experiences with the Old system, could information help you to control your spending and stay within your budget?
- k. By conducting budgetary planning under this New system, what kind of advantages or disadvantages do you experience (e.g., awareness of business activities and processes, controlling expenses through managing activities and processes)?

#### **F. ORGANISATIONAL GOALS AND BRANCH SUB-GOALS**

- a. An organisation has overall goals (or organisational objectives) and also sets sub-goals (or targets) to link up with these goals. Have you been given or participated in setting up sub-goals for your division?
- b. Do you think these sub-goals of your division are truly what you are aiming for?
- c. Do you believe that your sub-goals can contribute to the organisational goals?
- d. Which are the important goals (i.e. organisational goals or sub-goals of your division) for you and your division?
- e. What (if any) additional goal(s) do you think will be more suitable for you and your division?

17,18

#### **G. BUDGET PARTICIPATION**

- a. Do you participate in the budgeting process? At what stage? (e.g. during budget preparation, budget submission/re-submission, budget negotiation)
- b. Are you happy with participating in the budgeting process or do you prefer imposed budget? Why?
- c. Do you feel that participating in the budgeting process may help/affect you to obtain favourable/achievable budget for your department and therefore you will be well prepared for the next year or at least it will be easy for you?
- d. Please comment on whether the Old system encourages budget participation. For example, under the Old system, the participation is useful in terms of negotiating budgets in quantum sum.
- e. Please comment on whether the New system encourages budget participation? For example, under the New system, the top management knew the cost of each activity, therefore, it is pointless to participate.
- f. What reasons does your superior provide to you when your budget is revised at the final stage without your consent?
- g. How often does your superior initiate budget-related discussion when budgets are being set?
- h. Generally how often do you initiate budget-related discussions with your superior (including during the budget preparation period and during the actual fiscal year)?

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- i. How much influence do you feel you had on the final budget? In other words, have your concerns been taken into account in the final budget?
- j. In general do you believe that it is important for you to take part in the budgeting process?

H. GENERAL QUESTIONS

- a. Can you usually stay within the budget?
- b. Have you been able to make the required savings? How?
- c. Are you under constant pressure for cuts?
- d. What effects have those cuts had on what you have planned (e.g., quality of service delivery, better performances, less complaints)?
- e. Do you feel that you have been given very tight budget under the New system? How was the situation under the Old system?
- f. Do you feel that the information (e.g. activity-based staff timing, 'Should take' time/cost, 'Did take' time/cost) produced from the New system helps you to manage under such a tight budget? Or do you think the New system results in a tight budget?
- g. If there are out-of-budget items during the year, do you need to request additional funding or can you manage it by yourself?
- h. Are you allowed to overspend during the budgeted year and get extra funding from the savings due to other departments' underspending? If there is a surplus at the year end, can you keep it or you have to return it to headquarters?

I. ORGANISATION AND BUDGETING RELATED ISSUES

- a. Do you perceive your current targets (i.e. financial targets, e.g. cost reduction and non-financial targets, e.g., quality of services)
  - difficult ☐
  - moderate ☐
  - easy ☐
- b. Which of these targets (difficult, moderate or easy targets) do you prefer? Why?
- c. Under the Old system, were there any indicators that could help you to monitor your divisional performance against targets and to take actions before it was too late?
- d. Under the New system, are there any indicators that can help you to monitor your divisional performance against targets and to take actions before it is too late?
- e. Does your organisation operate reward schemes (i.e. pay rise or promotion)? What are the main criteria for the reward schemes? What do you perceive is the most important criteria?
- f. Any differences in reward scheme between Old and New system?
- g. Are there any links with the target achievement and rewards?
- h. Do you think you will be able to achieve more difficult targets than current one if there is right level of rewards given?
- i. What lessons have you learn from this year's budgetary planning process? How will that affect the way you prepare your budget estimates next year?
- j. Do you reckon that the New system is better than the Old system or vice versa? Why?

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### 3. Culture questionnaire as the Part Two in the guideline questions

#### PART TWO

The following questions will help me to understand the culture dimensions (beliefs, individuality, stability, complexity, and tradition) of your organisation. (Sources from: Amsa (1986), Thompson & Wildavsky (1986) and Reynolds (1986)).

1 At work ..... (Circle one number)

- 1) Major emphasis is on meeting outside demands of customers, clients, or whatever.
- 2) Most emphasis is on meeting outside demands; some attention is given to organisation routines.
- 3) There is a balanced emphasis: outsiders' demands and organisational routines get equal attention.
- 4) Most emphasis is on organisational routines; some is given to clients, customers, etc.
- 5) Major emphasis is on organisational routines; paperwork, meetings, rules, procedures, and the like.

2 At work ..... (Circle one number)

- 1) Fulfilling organisational task is the only priority.
- 2) Fulfilling organisational task is the priority; some attention is given to people's social and personal needs.
- 3) There is a balanced focus: organisational task and social/personal needs get equal attention.
- 4) Social/personal needs get the priority; some is given to conduct the organisational task.
- 5) The only priority is on fulfilling social and personal needs.

3 At work ..... (Circle one number)

- 1) No risk of any kind is ever taken.
- 2) There is a willingness to accept a minimal risk.
- 3) Familiar and predictable risks are acceptable.
- 4) There is some acceptance of unfamiliar risk.
- 5) Any kind of risk is readily accepted.

4 At work ..... (Circle one number)

- 1) No variation in clothing, work styles, and personal activities within and away from the job site.
- 2) No variation in clothing, work styles, and personal activities only within the job site.
- 3) There is a willingness to accept some variation in clothing, work styles, and personal activities.
- 4) Only some limitation variation in clothing and work style within the job site.
- 5) No limitation of clothing, work styles, and personal activities.

5 At work ..... (Circle one number)

- 1) Organisation provides rewards (job continuity, systematic rises and prestige status) only based on individual's performance.
- 2) Organisation provides rewards based on individual performance; some rewards are given to all members of a work unit (a team that meets a sales, production, or research goal).
- 3) There is a balanced rewarding emphasis: individual and the work unit get fair share of the rewards.
- 4) Most rewards may be distributed to the work unit based on it's work performance; some rewards are given to individual based on his/her contributions to the performance.



- 5) All of the rewards are associated with work unit's performance.
- 6 At work ..... (Circle one number)
- 1) Key individuals make the major decisions and proceed with implementation.
  - 2) Key individuals make the major decisions but not proceed with implementation.
  - 3) Decisions are collected from various levels of individuals (different background, different department and mixture of different level in the hierarchy of organisation).
  - 4) Decisions are collected from various levels of individuals; other individuals are responsible for implementation.
  - 5) Decisions are collected from various levels of individuals and the same group of individuals is responsible for implementation.
- 7 At work ..... (Circle one number)
- 1) Headquarters makes all decisions on the programmes and actions of the organisation and local situation.
  - 2) Headquarters makes some decisions; some decisions are remained with local offices/ departments to decide about their own situation.
  - 3) Headquarters and local offices jointly make decisions on the programmes and actions of the organisation and local situation.
  - 4) Local offices/departments make decisions on most of local situation; some still remain with the headquarters.
  - 5) Local offices/departments makes all decisions.
- 8 At work ..... (Circle one number)
- 1) No planning takes place only ad hoc responses to all changes.
  - 2) Ad hoc responses are useful to some of the changes; minimal effort to anticipate and plan for change.
  - 3) A balanced effort is put into: ad hoc responses to unforeseeable changes and some anticipation and plans developed for change.
  - 4) Minimal use of ad hoc responses to changes.
  - 5) Organisation creates elaborate plans that anticipate most future scenarios.
- 9 At work ..... (Circle one number)
- 1) A reluctance to adopt any new procedure that is not well established.
  - 2) Precaution is given to any new procedure that is not well established; a search effort is given to reduce the uncertain.
  - 3) A willingness to adopt any new procedure as long as well recommended by others and pilot tested.
  - 4) Some efforts are put to find new procedures.
  - 5) A constant search for novel and distinctive goods, services, and procedures to changes.
- 10 At work ..... (Circle one number)
- 1) Anybody can quickly learn the company and the people.
  - 2) It takes about a year to learn the company and get to know the people.
  - 3) After a year or two, most people seem to know what is going on, but some never figure it out.
  - 4) Only a few people seem to understand the company and the politics -- and it takes them a long time.
  - 5) Nobody seems to fully understand both the company and internal politics.
- 11 At work ..... (Circle one number)
- 1) No formal, extensive and detailed rules and procedures and elaborate forms and written documents to justify any and all actions.
  - 2) Verbal discussions and approval on major issues, little or no discussion regarding minor matters.

- 3) Verbal discussions, some written documents and approval on major issues, verbal discussions on minor matters.
- 4) Verbal discussions, some written documents and approval on both major issues and minor matters.
- 5) Extensive and detailed rules and procedures and elaborate forms and written documents to justify all actions.

12 At work ..... (Circle one number)

- 1) The interests of organisation are most important.
- 2) The interests of organisation are important; some of personal interests (family, professional colleagues, personal career) are also need to be considered.
- 3) The interests of organisation and personal are equally important and need to be considered in a balance.
- 4) Personal interests are important; the interests of organisation also need to be considered.
- 5) Only personal interests are most important.

13 At work ..... (Circle one number)

- 1) Individual members pay no attention on what they are expected to do and how their work will contribute to the accomplishment of organisational tasks
- 2) Individual members do not know what they are expected to do and how their work will contribute to the accomplishment of organisational tasks.
- 3) Individual members have some ideas about what they are expected to do and but do not know how their work will contribute to the accomplishment of organisational tasks.
- 4) Individual members know about what they are expected to do and have some ideas about how their work will contribute to the accomplishment of organisational tasks.
- 5) Individual members know what they are expected to do and how their work will contribute to the accomplishment of organisational tasks.

14 At work ..... (Circle one number)

- 1) Anybody can be a manager in this workplace.
- 2) A person who has professional knowledge but no managerial skills can be a manager.
- 3) A person who has managerial skills but no professional knowledge can be a manager.
- 4) A person who has both professional knowledge and managerial skills can be a manager.
- 5) A managerial person needs to be fully competent in terms of professional knowledge, managerial skills, and other qualities (prestige status in the workplace, loyalty to the organisation, etc.)

15 Please rating the following statement:

- |  |   |                               |  |                                |  |
|--|---|-------------------------------|--|--------------------------------|--|
| 1) In order to get scarce rewards (salary increases, bonuses, and promotion), individual members enter into fierce competition among each other.   | <input type="radio"/><br>Entirely<br>True | <input type="radio"/><br>True | <input type="radio"/><br>Sometimes<br>true | <input type="radio"/><br>False | <input type="radio"/><br>Entirely<br>False |
| 2) When competing with outsiders (other units in the corporation, other businesses, government agencies, and the like), individual members trust colleagues because they can assist to each other very well. | <input type="radio"/><br>Entirely<br>True | <input type="radio"/><br>True | <input type="radio"/><br>Sometimes<br>true | <input type="radio"/><br>False | <input type="radio"/><br>Entirely<br>False |
| 3) The reasons for you to involve with this organisation:  |   |                               |  |                                |  |
| a) financial rewards   | <input type="radio"/>                     |                               |  |                                |  |
| b) prestige of membership  | <input type="radio"/>                     |                               |  |                                |  |
| c) interesting or challenging work   | <input type="radio"/>                     |                               |  |                                |  |
| d) opportunity for self-fulfilment or expression   | <input type="radio"/>                     |                               |  |                                |  |
| e) satisfying personal relations with colleagues   | <input type="radio"/>                     |                               |  |                                |  |
| f) external concerns (like to live in this area, convenient location, and the like)  | <input type="radio"/>                     |                               |  |                                |  |



## **Appendix 4      NP Hard Problem in ABC and ABB systems**

Computer technology has advanced to a state in which complex computation and data manipulation can now be carried out efficiently at a realistic cost. However, even with these modern day low-cost high-speed computer systems, model design is still an extremely important factor for a given system. In particular, the so-called “NP hard” problems (these are problems characterised by huge numbers of combinatory branches) are still problems that cannot be solved from first principles using these machines (some of these problems can be solved using super computers, at a great cost). It is not difficult to see that mini-combinatory-explosions can occur in some approaches taken in tackling a relatively simple problem. For example, in activity based analysis, an ABC cost computation involving hundreds of products of which each product consists of hundreds of activities effectively generate a computation task of 10,000 orders. If each activity is associated with a few drivers and a few other variations then the resultant computation tasks is again amplified by the multiplication of these two factors. Hence, it is quite possible to arrive at a situation in which solving a relatively simple problem may require a computer to go through hundreds of thousands or millions of transactional calculations. The end result is a perceived unacceptably slow system. Hence model design is an important factor in ABB system design since potentially an ABB analysis can suffer from the phenomenon of this combinatory explosion.