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List of Papers Presented in Crystal Ballroom

No.	Title of Paper
2	THE USE OF ALTERNATIVE PROCUREMENT SYSTEMS TO SECURE EFFECTIVE PROJECT DELIVERY IN NEW ZEALAND <i>John Boon</i>
1.	UNCERTAINTY AND THE FINANCIAL FEASIBILITY OF PROJECTS <i>David G. Carmichael and Maria C. A. Salathat</i>
3.	PARTNERING AND SUPPLY CHAIN PRACTICE: AN INVESTIGATION INTO LEVELS OF INVOLVEMENT AND BARRIERS TO DIFFUSION <i>Keith Hogg and David Greenwood</i>
Session 2 - 18 November 2008 (3.00 - 5.00 pm) Session Chairperson: Associate Professor Ar. Saari Omar	
4	ROLES OF PROFESSIONALS IN CONSTRUCTION INDUSTRY <i>Abdelnaser Omran and Abdul Aziz Hussin</i>
5.	PROJECT MANAGEMENT SERVICE DELIVERY: USING COMPETENCY ANALYSIS <i>Deji Rufus Ogunsemi, Olukayode Sunday Oyediran, James Olabode Bamidele Rotimi and Damilola Ekundayo</i>
6.	STANDARD DESIGN MODEL AS AN ENABLER FOR PROJECT MANAGEMENT COMPETENCY: THE SAUDI CONSTRUCTION EXPERIENCE <i>S. Al-Otaibi, M. Osmani and A.D F. Price</i>
7.	SETTING UP OF PROJECT MANAGEMENT ENGINEERING EDUCATION DEVELOPMENT AND STRENGTHENING INSTITUTIONAL CAPACITY <i>Sitr Murnining Sih</i>
8.	TOTAL QUALITY MANAGEMENT OF CONSTRUCTION IN GHANA: IMPLEMENTATION AND ITS ASSOCIATED PROBLEMS AND BENEFITS <i>Simon Asinor Ad\$mtay</i>
9.	TOWARDS A QUALITY CULTURE IN THE MALAYSIAN CONSTRUCTION INDUSTRY <i>Wan Yusoff Wan Mahmood, Abdul Hakim Moharrimed, Mat Naim Abdullah & Mohd Saidin Misnan</i>
10	EXAMINE THE POSSIBILITY OF APPLYING TOTAL QUALITY MANAGEMENT IN THE FACULTY OF ENGINEERING EL-FATEH UNIVERSITY- TRIPOU -LIBYA <i>Abdulhamid Latif and (zedan Hatush</i>

PROJECT MANAGEMENT SERVICE DELIVERY USING COMPETENCY ANALYSIS

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ABSTRACT

Deciding the most capable amongst the range of construction professional(s), by virtue of their knowledge, skills and abilities to offer project management services, has become topical in Nigeria. This study therefore undertakes a competency analyses approach to determine which of the construction professions has the greatest potential for project management service delivery. Questionnaire survey of project owners and constructors opinions provided data for the analyses. These were analysed using mean item score (MIS) method. The results revealed Quantity Surveyors have the highest potential for project management service delivery because of their abilities to meet project objectives; while Civil Engineers, Builders, Estate Surveyors and Architects follow in this order respectively. Quantity Surveyors were better suited for this role because of their training and competencies. The paper recommends the acquisition of knowledge in legal issues, risk analysis and quality control, safety and environmental issues and project management; by other practicing construction industry professionals. It suggests the adoption of the quantity surveying profession by the Association of Project Managers in Nigeria.

Keywords: competency analysis, construction professionals, project management, service delivery.

INTRODUCTION

Since the 1990s, there has been an unprecedented growth and development in construction industry practice. The major driving force has been the need to adopt best practices from the manufacturing industry. A more customer-oriented approach to project delivery focuses at providing the utmost value for monies committed into today's complex structures. The supply-chain has shifted into an era of more integrated approaches with the partnering concept gaining more recognition.

Project management services offer an innovative approach for the achievement of project objectives. Professional Project Managers are now more than ever, responsible for the overall success of delivering the owner's physical development within the constraints of cost, schedule, quality, time and safety requirements (Oberlender, 1993). It is becoming more appropriate for project owners/promoters to appoint independent Project Managers to manage the design and construction of projects on their behalf in Nigeria (Odusami and Iyagba, 2001). However deciding on the most capable of these construction professionals (Architects, Builders, Civil Engineers, Estate Surveyors and Quantity Surveyors) to provide these services has been topical.

This study therefore undertakes a competency analyses approach to determine which of the construction professions has the greatest potential for project management service delivery.

BRIEF LITERATURE REVIEW

The construction industry is a collection of loosely integrated sub-sections that collectively construct, alter and repair buildings, civil and industrial or process engineering works (Andawei and King,

2001). The industry is unique by the variety of physical products it produces; its demand pattern; novelty; and the variability of its production environment.

Unarguable, the construction industry in Nigeria, and in other countries, play a vital role in its economic development. Its sector output is comparatively high in the total gross national product; whilst it employs a large proportion of the country's labour market (Mosaku, 1982). Its clientele and indeed the national economy will therefore gain from any healthy improvement scheme on offer.

Proper selection of the right caliber of construction professional to deliver project management services may contribute to project success especially as demand for project management services has outstripped supply (Birkhead, 2000).

Project Management - the goal post for project success

Kupakuwana and Vanderberg, (2005) suggest that good project management techniques and principles may lead to effective service delivery and product success. Successful projects are those where performance meet desired project objectives of timely completion; within established budgets; and of high quality. Kupakuwana and Vanderberg, (2005:29) reinforces these success criteria as a triangle of project objectives.

Construction Project Managers

Construction Project Managers are the project owners' expert representatives on construction projects. They coordinate the entire development process to ensure timely completion within budget and performance requirements (Moneke, 2001). Such responsibility demands a high level of technical training, experience and construction-related professional qualifications. Commercial prudence will suggest the appointment of a firm or persons for this service based on their abilities to deliver the triad of project objectives (Bamisile, 2004; Struckenbruck, 1981). Their capabilities are dependent on their innate qualities and on the knowledge gained during training.

Competency model for construction Project Managers

Birkhead (2000) outlines the generic knowledge areas of competent project managers in line with those developed by the project management institute and other educational accreditation bodies. These knowledge areas include integration, scope, time, cost, quality, human resources, communication, risk, procurement, safety, environmental, financial and claim management. These knowledge areas are laid out in chart form (Birkhead, 2000:2).

Similarly, Edum-Fotwe and McCaffer, (2000: 113) pictorially represented competency model include, technical, administration, contractual, team building, legal, communication and legal skill. Thus if a project manager is well grounded and is able to deliver in these knowledge areas, success on a construction project is almost assured. The probability of a successful race may be enhanced if the right horse is put in the race track.

The following sections present the views expressed by different authors on the potentials of respective professions for project management service delivery.

Architect's potentials for project management services

Oduami and Iyagba (2001) opine that architect's by virtue of their traditional roles as coordinating consultants and project administrators would have a greater potential to deliver project management services. Architects being the first point of contact by clients already enjoy clients' recognition as the master builder of necessity. Their traditional role gives them an edge in communication skills, contract management and project documentation.

Estate Surveyor's potential for project management services

Estate Surveyors have the capability for project management service delivery because of their resource management and estate administration backgrounds (Oduami and Iyagba, 2001).

Surveyors would make good fund managers that can provide clients with the highest value for monies invested in their capital projects. Their training on feasibility and viability assessments; financial risk evaluations and cost management; economics in property; and time management are relevant in project management delivery.

Quantity Surveyor's potentials for project management services

Zack Jr. (2004) believes that construction professionals with quantity surveying educational backgrounds have the highest capabilities to provide project management service. This is based on the premise that the professional quantity surveyor would have competencies in cost engineering and project control, which is the bedrock of project management. Quantity Surveyors are versed in cash flow analysis and management; profitability analysis, property business planning; and scheduling. Odusami and Iyagba, (2001) hold that the requirements for strict control in project budgets and control gives the quantity surveying profession potentials to provide project management service.

Civil Engineer's potentials for project management services

Civil Engineers may have the right credentials to deliver project management service because of their knowledge of both the technical/technological and management requirements of construction projects. Their active involvement in the physical realisation of projects provides them with in depth knowledge base for managing complex structures as professional project managers (Oladipupo, 2004).

Builder's potentials for project management services

The professional builder is versatile in construction processes because of prior training and experience (Odusami and Iyagba, 2001). They would normally have a balanced knowledge of all disciplines and are central to construction performance translating clients' requirements in the heart of the client and designed by the architect on paper into physical reality by virtue of his training.

RESEARCH METHODOLOGY

A questionnaire survey of project owners and constructors' opinions provided data for the analyses. The sample population (N = 50) were themselves contributors to construction project delivery and were chosen for their objective view of the subject matter. The survey spanned a period of one month.

Thirty two (32) responses were received however the analysis is based on thirty (30). This represents 60% of the total number of questionnaires administered. The Mean Item Score method was used to analyze some of the Likert-scaled questions to determine the competency levels of the professionals. Comparison of the respective Mean Item Scores enabled the determination of the professional with the highest potential to deliver project management service.

The Mean Item Score method is mathematically represented below:

$$MIS = \frac{\sum_{k=1}^n n_k}{N} = \frac{5n_5 + 4n_4 + 3n_3 + 2n_2 + 1n_1 + 0n_0}{N_5 + N_4 + N_3 + N_2 + N_1 + N_0}$$

Where

- MIS
- $\sum N$
- N_5
- 0 – 5
- = Mean Item Score
- = Total number of respondents
- = The number of respondents that chose 5, etc
- = The various marks for the ranking of the factors as applicable in each case.

DATA ANALYSIS AND RESULTS

Descriptive Summary

Table 1 gives a summary of the main categories of respondents that questionnaires were administered to. These were clients and contractors. 36.7% and 13.3% of the respondents were public and private sector project owners respectively. The remaining were administered to building contractors of which 26.7% were indigenous and 23.3% non-indigenous contractors.

Table 2 indicates the different professionals that had provided project management services to the group of clients and contractors surveyed. In between the respondents, 30% of their project managers had been Architects, 26.7%, 6.6%, 26.7% and 10% were Quantity Surveyors, Builders, Civil Engineers and Estate Surveyors respectively.

Table 1: Summary of Respondents

Characteristics	Frequency	Percentage
Public-sector owners	11	36.70
Private-sector owners	4	13.30
Indigenous contractors	8	26.70
Non-indigenous contractors	7	23.30
Total	30	100.00

Table 2: Profession of Project Managers

Profession of project managers	Frequency	Percentage
Architects	9	30.00
Quantity Surveyors	8	26.70
Builders	2	6.60
Civil Engineers	8	26.70
Estate Surveyors	3	10.00
Total	30	100.00

The nature of construction projects for which responses were received and for which project management services were rendered are presented in Table 3 below. A greater percentage (66.7%) of these was building construction projects; followed by civil works. Large industrial and heavy engineering projects are few and far between in recent times.

Table 3: Nature of Projects Handled

Nature of projects	Frequency	Percentage
Building Project	20	66.70
Civil Engineering Project	8	26.70
Industrial/Heavy Engineering Project	2	6.60
Total	30	100.00

Perceptive Views of Respondents

On management aspects of construction professionals

Respondents' views were sought on the performance of construction professionals employed for project management services on their development projects. A seven point rating system was developed so that respondents can rate performance levels on thirteen (13) management aspects. The survey result is presented in Table 4. The 13 management aspects are listed in the first column while the respective indices of performance by each of the construction professionals are indicated in next five columns.

Table 4: Client and Contractors' Perception of Project Management Services Rendered by Construction Professionals

Management Aspects	Architects	Index of Managerial Performance			
		Quantity Surveyors	Builders	Civil Engineers	Estate Surveyors
Integration Management	4.50	6.10	4.10	4.50	4.00
Scope Management	4.11	6.50	5.00	4.86	3.67
Time Management	4.89	6.50	4.00	5.50	4.33
Cost Management	4.33	6.50	4.00	5.63	5.67
Quality Management	4.33	6.13	5.50	5.38	5.00
Human Resources Management	4.22	6.13	5.50	5.13	4.67
Communication Management	4.89	6.63	5.00	5.38	5.67
Risk Management	4.11	6.13	3.50	4.25	3.67
Procurement Management	4.33	6.75	4.00	5.50	4.00
Safety Management	3.89	5.75	4.50	4.13	3.00
Environmental Management	4.44	5.75	3.00	4.86	4.67
Financial Management	4.38	6.88	4.50	5.50	5.67
Claim Management	4.33	6.75	4.00	4.63	4.33
Total	56.75	82.50	56.60	65.25	58.35

1 - Extremely Low; 2 - Very Low; 3 -Low; 4 - Moderately High; 5 - High; 6 - Very High; 7 - Extremely High

Comparatively the highest indices were recorded for quantity surveyors in 11 aspects of management. Quantity surveyors were only rated low in safety and environmental management. The lowest set of ratings was observed in the estate management profession, with poor ratings in scope management, risk and safety management. The other listed professionals have a fairly even spread of rating across all their management aspects.

Overall average performance in these management aspects was determined using the formula for Mean Item Score (MIS) previously discussed. Quantity Surveyors ranked highest with total MIS of 82.50; while Civil Engineers, Estate Surveyors, Architects and Builders with a total mean item score of 65.25, 58.35, 56.75 and 56.60 follow in that order respectively.

On essential skill sets of construction professionals

The survey goes further to determine performance indices of construction professionals on seven (7) essential skill sets (technical, administrative, contractual, team building, legal, communication and general). The clients and contractors rated these skills using a five-point ranking, from 1 - not effective to 5 - most effective.

The survey result is summarised in Table 5. A similar pattern of response is observed when compared with Table 4 results. Quantity surveyors were considered by respondents to exhibit comparatively high skills across all seven essential skill sets listed. For instance, respondents generally agreed that the quantity surveyors who rendered project management services on their development projects had the most effective technical skills.

The total MIS also indicate the highest value for quantity surveyors (32.90). Consequently civil engineers, estate surveyors, builders and architects were ranked below quantity surveyors, in this order.

Table 5: Clients and Contractors' Perception of Project Managers' Skill Sets in Project Management

Essential Skill Sets	Index of Performance Skill Sets				
	Architects	Quantity Surveyors	Builders	Civil Engineers	Estate Surveyors
Technical Skill	3.56	5.00	3.50	4.13	3.33
Administrative Skill	3.44	4.88	3.50	3.75	4.33
Contractual Skill	3.78	4.75	4.50	4.13	3.67
Team Building Skill	3.44	4.63	4.50	3.75	4.00
Legal Skill	3.11	4.38	2.50	3.50	3.67
Communication Skill	3.33	4.63	3.50	3.87	4.33
General Skill	3.78	4.63	3.00	3.62	3.33
Total	24.44	32.90	25.00	26.75	26.66

1 - Not Effective; 2 - Negligible; 3 - Effective; 4 - More Effective; 5 - Most Effective

Looking through the Table for the highest rating of skill sets exhibited by respective construction professionals; it is observed that architects had better contractual skills; quantity surveyors had better technical skills; builders, contractual and team building skills; civil engineers had good technical and contractual skills; and estate surveyors had good administrative and communicating skills.

On meeting project objectives by construction professionals

The survey participants were required to rate (on a scale of 1 to 5) the performance of the construction professionals who had rendered project management services for them; on the basis of the professionals' ability to meet three salient project objectives. These project objectives were timely completion; ability to meet cost targets; and their quality achievements.

The results obtained using the MIS is presented in Table 6. Respondents rated the professional quantity surveyors highly. The scores were comparatively high in all three project objectives. Architects were rated high, the highest is their ability to meet quality targets; builders in their ability to complete projects timely; civil engineers fared better in both time and quality targets; and estate surveyors were better at meeting quality targets.

Table 6: Clients and Contractors' Perception of Project Managers in meeting the Project Objectives

Project Objectives	Index of Performance Objectives				
	Architects	Quantity	Builders	Civil	Estate
		Surveyors		Engineers	Surveyors
Time Target	3.56	4.88	4.00	4.00	3.33
Cost Target	3.00	5.00	3.50	3.75	3.67
Quality Target	3.89	4.75	4.00	4.00	4.00
Total	10.45	14.63	11.50	11.75	11.00

1 - Negligible; 2 - Very low; 3 - Low; 4 - High; 5 - Very High

The pattern of the overall result is similar to previous ones, for the fact that quantity surveyors' achieved the highest score. The total MIS determined was 14.63 while civil engineers, builders, estate surveyors and architects were scored lower in this order.

DISCUSSION OF FINDINGS

The results presented in the Tables generally rate performance of the different construction professionals in Nigeria above average. The different scores generated for the different professionals are indicative of the fact that every professional has core areas of specialization in accordance with their training and traditional responsibilities previously held in the construction industry (Nkado and Meyer, 2001). Odusami *et al.* (2001) believe that training and up skilling of construction professionals irrespective of previous educational backgrounds, could improve competency to levels needed to provide project management services. Present day project management services demand the best trained with a diversity of knowledge, not limited, to cost/cash flow management, construction technology, marketing, information technology, law, economics etc. Zack Jr. (2004) explains that the probability of project success will be higher if construction professionals develop their knowledge base on every key areas of project management.

The survey result on essential skill sets are in line with Edum-Fotwe and McCaffer (2000) which noted that the skills exhibited by construction professionals depend on their managerial capabilities, which are a function of the knowledge acquired through training in the relevant disciplines.

The pattern of scores on the ability of construction professionals to meet project objectives is encouraging. The essence of project management service delivery is to achieve the objectives of time, cost, and quality using available resources (Onwusonye, 2005).

On a general note, construction professionals were scored low in risk, safety and environmental management. This confirms Zack Jr. (2004) assertion that risk, safety and environmental

management are relatively new fields that construction professionals should strive to be competent in. Considering the complexity of modern day construction products and processes, virtually all of the professionals will have to address this weakness.

CONCLUSION

The current study was an opinion survey of clients and contractors on the performance of construction professionals who had rendered project management services on some construction projects in Nigeria. The survey's objective was to determine amongst the construction professionals the one with the greatest potential of delivering project management services.

The analyses of the survey responses scored quantity surveyors highest in every management aspect; essential skill sets; and the ability to meet desired project objectives. It is thus concluded that quantity surveyors have the highest potential for project management service delivery in Nigeria.

Consequent upon these investigations, the paper recommends the following:

that construction professionals should improve their knowledge base in risk management; health and safety management; and environmental management.

that educational and vocational training should be developed to enhance the practice of project management in Nigeria. These might take the form of a post-qualification certificate targeted at the various construction-related professions.

that as a policy initiative, the Association of Project Managers of Nigeria, adopt quantity surveying as a career path towards project management consultancy practice.

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