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# KNOWLEDGE SHARING STRATEGIES FOR PROJECT KNOWLEDGE MANAGEMENT IN THE AUTOMOTIVE SECTOR

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Project Knowledge Management is regarded as a field of increasing importance for both researchers and organisations. This led Volvo Technology, the innovation business unit within a Swedish automotive multinational corporation, to explore through a qualitative case study how Project Knowledge Management could be improved to support knowledge sharing between projects within the organisation. The current situation of Project Knowledge Management is described through a developed theoretical framework and with input from thirteen semi-structured interviews conducted and analysed in an iterative fashion. The description shows that the contributor employs the codification strategy to share knowledge with other projects while the receiver adapts a personalisation strategy to retrieve knowledge from other projects. This description was analysed and compared with current research through brainstorming. Since there are current initiatives within the organisation to improve the codification strategy, this research focuses on improving the personalisation strategy. The recommendation was to promote Communities of Practice. Six semi-structured interviews were conducted to evaluate the relevance of the recommendations. The recommendation was found to be relevant for improving Project Knowledge Management within Volvo Technology.

Keywords: Project Knowledge Management; Project Management; Knowledge Management; Knowledge Sharing; Personalisation Strategy; Codification Strategy.

## INTRODUCTION

In recent economic times, the management of knowledge has become even more a competitive advantage for companies (Anantatmula, 2010). At the same time, temporary organisations are becoming increasingly common within organisations (Lindner and Wald, 2010). These have led to the emerging importance of the field of Project Knowledge Management which stems from the intersection of the two traditional fields of Project Management and Knowledge Management.

This paper focuses on how Project Knowledge Management could be improved to better support knowledge sharing between projects within the specific case company of Volvo Technology. It is based on a research project conducted within the frames of a Master's dissertation (Johansson, 2011). A theoretical framework that was developed to describe and analyse Project Knowledge Management within the organisation will be presented. The framework shows the interaction between the key

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concepts of knowledge sharing strategies, roles and key success factors. The article also exemplifies how this framework was used to arrive at specific recommendations for Volvo Technology. These outcomes of the research project can guide organisations who wish to improve their Project Knowledge Management.

## **PROBLEM STATEMENT**

Several authors have recognised that the management of knowledge in a project context poses particular challenges to companies (Anantatmula, 2010; Lindner and Wald, 2010; Boh, 2007; Bresnen et al., 2003; Schindler and Eppler, 2003; Disterer, 2002; Kasvi, Vartiainen and Hailikari, 2002). The fact that projects are temporary organisations causes project knowledge to be spread throughout the organisation at the end of the project. Disterer (2002, p.512) refers to this as “knowledge fragmentation”. Because of time pressure, lower priority is given to activities which do not directly contribute to the project deliverables (Schindler and Eppler, 2003).

Previous studies within the field of Project Knowledge Management have addressed the above challenges by identifying specific actions and key success factors to manage knowledge in a project context. However, research has shown that the application of Project Knowledge Management remains limited within organisational practice (Hanisch et al., 2009). In order for organisations to leverage the results of previous studies, an understanding of how organisations can cater these results to their particular situation needs to be developed. To address this need, a research project was conducted as a case study to explore how Volvo Technology could leverage current research to improve their Project Knowledge Management between projects within the organisation. Volvo Technology was chosen for the case study because it is a project based organisation where projects are conducted across department borders. Volvo Technology is part of the Volvo Group which has its headquarters in Gothenburg, Sweden. The organisation focuses on innovation and has a mission to take the lead in technologies that are perceived to be of essence for the Volvo Group (Volvo Group, 2011).

## **DEFINING PROJECT KNOWLEDGE MANAGEMENT**

Project Knowledge Management is the intersection of two traditional fields. According to Hanisch *et al.* (2009, p.149), Project Knowledge Management is “knowledge management in project situations and thus the link between the principles of knowledge management and project management.” Knowledge Management refers to how organisations manage the knowledge resource in a company to achieve a business benefit. As Kamara, Anumba and Carrillo (2002, p.206) point out, knowledge management “is not an end in itself, but a means to achieve business goals.” Project Management refers to the process of ensuring that projects deliver the intended benefits. A ‘project’ is a temporary organisation within a permanent organisation defined as “unique, transient endeavours undertaken to achieve a desired outcome.” by the Association for Project Management (2006, p.2).

## **METHODOLOGY**

The research project on which this paper is based was conducted with a qualitative case study. The knowledge sharing could be observed through employees’ subjective descriptions which made a qualitative study appropriate (Bryman and Bell, 2007). To capture the employees’ subjective description of the concerned current events into a

holistic description, the case study appealed as the most suitable research method (Yin, 2009).

As a first stage, a theoretical framework had been developed through a narrative review of relevant literature. In the second stage, thirteen semi-structured interviews were conducted in order to describe the current status of Project Knowledge Management at Volvo Technology. This followed an iterative fashion with the support of the theoretical framework.

Based on the description of the current status, recommended improvements to the existing Project Knowledge Management endeavours were identified and evaluated through mind-mapping and brainstorming techniques in a similar process to analytical induction. Finally, six interviews were performed to evaluate the relevance of the recommendation. A list of the employees interviewed and the date of the interview can be found in Table 1. The names were anonymised with role descriptions as their code names, given in the Table 1, which will be used when referring to information from the interviews.

Table 1. Employees interview at Volvo Technology

Interviewee:	Date interviewed	Interviewee:	Date interviewed
Current status of PKM		Recommendation relevance	
Development Engineer	2011-02-01	PM Frugal Innovation	2011-04-04
Information Responsible	2011-02-01	PM Transportation	2011-04-15
Communication Responsible	2011-02-10	PM Safety	2011-04-15
Systems Engineer A	2011-02-10	PM School	2011-04-18
Technology Area Director	2011-02-11	PM Design	2011-04-19
Group Manager A	2011-02-15	PM Blog	2011-04-19
Project Manager	2011-02-15		
Systems Engineer B	2011-02-17		
Process Modeller	2011-02-25		
Senior Vice President	2011-02-28		
Knowledge Management Specialists	2011-03-04		
Group Manager B	2011-03-10		
Knowledge Management Task Force	2011-04-07		

## THEORETICAL FRAMEWORK

A The theoretical framework structured the description and analysis of Project Knowledge Management between projects within Volvo Technology. This framework described the relationship between three important concepts identified by reviewing literature within the field of Project Knowledge Management and is visualised in Figure 1.

The first concept portrays the two roles within the knowledge sharing process: the ‘contributor’ and the ‘receiver’. The second concept explains the two knowledge sharing strategies that these roles can adapt: the ‘codification strategy’ and the ‘personalisation strategy’. The third concept describes the three ‘key success factors’ which impact upon the roles’ adaptation of the knowledge sharing strategies.

An understanding of the roles within the knowledge sharing process is essential since the business benefits of Project Knowledge Management are only achieved when

knowledge is transferred between employees. In this transfer, there are two principal roles. Employees act as 'contributors' when they share their knowledge and as 'receivers' when they utilise knowledge that has been shared. These roles are rarely mentioned explicitly in Project Knowledge Management literature. However, the existence of the two roles can be inferred from statements such as "dissemination and usage of existing knowledge is critical" (Disterer, 2002, p.519). When the roles are referred to in Project Knowledge Management literature, the focus is on how to get contributors to share their knowledge. An example is the following statement: "from an individual standpoint, a person would not like to share her proprietary knowledge unless rewards outweigh the perceived value of the knowledge" (Anantatmula, 2010, p.240). However, the business benefit is only achieved once the receiver utilises the knowledge shared by the contributor. Therefore, understanding the receiver's role is equally important.

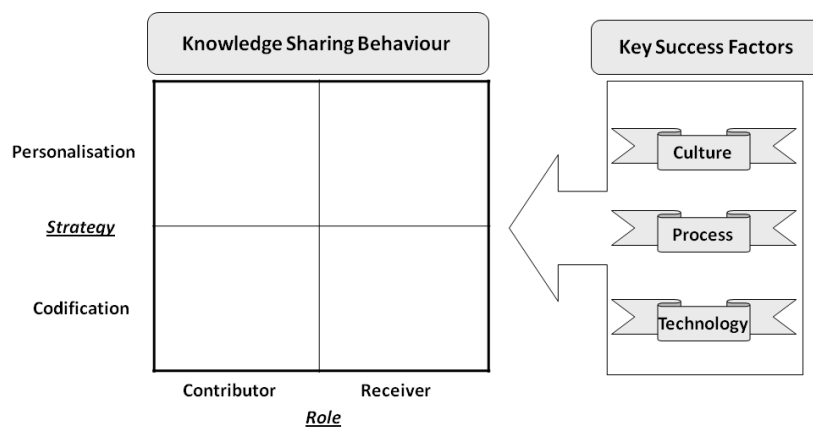


Fig. 1. Theoretical framework for Project Knowledge Management

When sharing knowledge, the contributor and the receiver can adapt two different strategies: the 'codification strategy' and the 'personalisation strategy'. When the codification strategy is used, knowledge is transferred through written material (Hanisch et al., 2009). This strategy is associated with explicit knowledge which can be codified (Adenfelt and Lagerström, 2006; Koskinen, 2004). The application of this strategy is usually done through various systems and documents. The personalisation strategy, on the other hand, is "the transfer of knowledge by personal interaction" (Hansich et al., 2009, p.152). This strategy is well adapted for tacit knowledge which cannot be codified. Adenfelt and Lagerström (2006, p.192) define tacit knowledge as "knowledge that resides within individuals". This strategy can be leveraged through making contributors visible in the organisation by using subject-matter experts who can indicate relevant specialists. A similar approach is the use of a "phone book" which describes employees' experiences and competencies (Disterer, 2002). A personalisation strategy concept, which is gaining higher attention, is the concept of Communities of Practice defined as "groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis" (Wenger, McDermott and Snyder, 2002, p.4).

The codification and personification have complementary strengths. The codification strategy allows large amounts of knowledge to be shared efficiently while the

personalisation strategy allows knowledge to be customised to the needs of the receiver (Boh, 2007). Due to these complementary qualities, both strategies should be used within organisations. However, researchers have traditionally focused on the codification strategy. This one-sided focus is criticised by several researchers (Adenfelt and Lagerström, 2006; Koskinen, 2004; Bresnen et al., 2003; Kamara, Anumba and Carrillo, 2002; Kasvi, Vartiainen and Hailikari, 2002). There is a shift in focus to the personalisation strategy in recent research which was best summarised by Kasvi, Vartiainen and Hailikari (2002, p.572): “As the main focus in knowledge management concentrates on [Information and Communication Technology] tools and explicit knowledge (codification), face-to-face interaction (personalisation), needs to be strengthened”.

The final concept in the theoretical framework is the ‘key success factors’ which influences the use of the codification and personalisation strategies by the contributor and receiver. The three key success factors are: ‘culture, process and technology’. Organisational culture is defined as “shared beliefs, values, and practices of a group or groups within the organization” (Anantamula, 2010, p.242). Culture affects the knowledge sharing behaviour of the contributor and receiver through norms. Several authors have identified culture as one of the most important success factors. Lindner and Wald (2010, p.11) claim that “knowledge culture is by far the most important factor of success”.

Processes within an organisation guide employees into a certain behaviour. Lindner and Wald (2010, p.5) have further described this as, “the generation, storage, dissemination and retrieval of project knowledge can be facilitated by systematic processes”. Finally, technology either supports or hinders knowledge sharing between employees. Traditionally, unrealistic expectations have been placed on technology as enabler of Project Knowledge Management. It was perceived that implementing a knowledge management system would automatically improve knowledge sharing. As stated by Hanisch et al. (2009, p.154), “the support by information technology tools has proven to be a necessary but not sufficient factor for the quality of project knowledge management”.

## **PROJECT KNOWLEDGE AT VOLVO TECHNOLOGY**

When the theoretical framework for Project Knowledge Management was used to describe Project Knowledge Management at Volvo Technology, a mismatch of knowledge sharing strategies between the contributor and the receiver was identified. The contributor was pushed to use the codification strategy. The receiver, on the other hand, was pulled to use the personalisation strategy. This mismatch of strategies is represented in Figure 2.

When asked how they shared knowledge with other projects from a contributor perspective, the interviewees mentioned various codification strategies. It ranged from common folders and systems where documents were stored to wiki tools where employees shared their knowledge through articles. An example of how knowledge was shared by a project at Volvo Technology was the “white book”. Group Manager A described the “white book” as a report that was written at the end of a project and which documented key information from the project. This report was then stored in a common database.

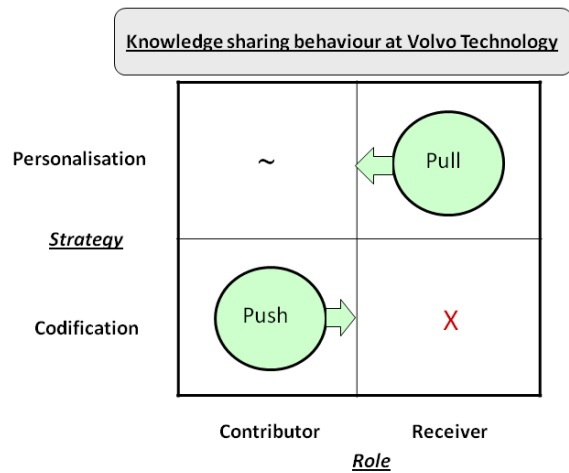


Fig. 2. Current knowledge sharing behaviour at Volvo Technology

When asked to switch to the receiver role and describe how they receive knowledge from other projects, the interviewees described their personal network. Referring to her team, Project Manager said that they “always ask the colleague first” when they need some information from other projects. If the colleague could not provide the necessary guidance, he or she often recommended another colleague. This chain continued until the receiver had found the right contributor. The speed at which the receiver could find the contributor depended on the size of the receiver’s network which was correlated to the receiver’s experience within the company. According to Group Manager A, “The longer you are here, the wider your network”. The receiver’s use of his or her personal network to retrieve knowledge from other projects is described in Figure 3.

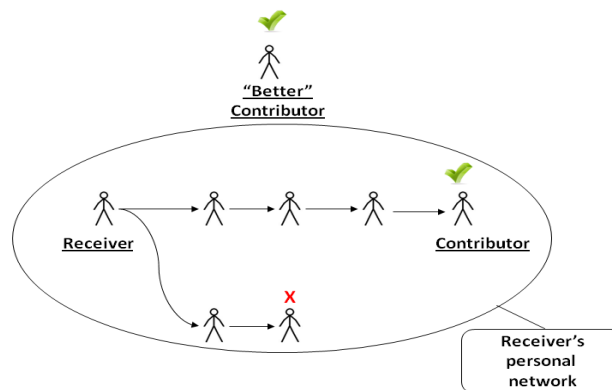


Fig. 3. Description of personalisation strategy used by receiver

So what caused the differences between the contributor’s and the receiver’s behaviours? The answer was found when considering the driving forces behind the behaviour of each role. When describing knowledge sharing from a contributor perspective, the interviewees mentioned norms and processes as reasons for codifying knowledge of their projects. In the words of Development Engineer: “We are writing reports because we should!” This could be described as “pushing” contributors to use the codification strategy. The receivers, on the other hand, were free to choose strategy for retrieving knowledge from other projects.



At Volvo Technology, the personification strategy was chosen by employees because of its convenience compared to other alternatives. They were pulled to the solution that required the least amount of effort for a given benefit. As described by Communication Responsible, the receiver “always takes the quickest way!” When asked about the codified knowledge available in various systems, the interviewees expressed that it was too difficult to retrieve. As stated by Systems Engineer A and Systems Engineer B: “It takes too much time!” Because of the confidentiality culture within Volvo Technology, the employee first had to get access to the folder with the documents. Once access had been granted, it was difficult to find the correct document. The quality of the documents themselves was also an issue as context was often lost making them difficult to interpret. Context which is taken for granted as common knowledge by the author might not always be familiar to the reader.

## IMPROVEMENTS AND RECOMMENDATIONS

To improve Project Knowledge Management within the company, the strategies used by the contributor and the receiver needed to be matched. This could be done by getting the receiver to use the codification strategy and the contributor to use the personalisation strategy. Since the codification strategy and the personalisation strategy complement each other, improvements in the use of both were needed. These two improvement possibilities are described in Figure 4.

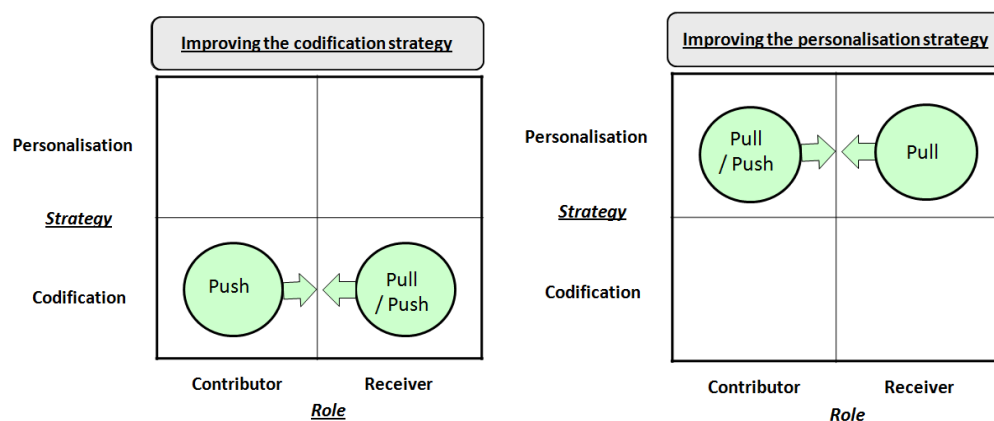


Fig. 4. (a) General improvement approach for codification strategy; (b) General improvement approach for personalisation strategy

To improve the use of the codification strategy, the organisation was recommended to either push or pull the receiver. The receiver could be pushed to use the codification strategy through norms, processes and rewards in the same way as the contributor. However, it was preferable to pull the receiver to use the codification strategy by making it easier for the receiver to find the information that was needed. This would reduce the effort-to-benefit ratio described above and would thereby naturally shift the receiver’s behaviour. Simultaneously to this research project, there was a project within Volvo Technology aimed at making codified knowledge more easily assessable to employees. This was done by designing one portal focusing on the receiver’s need for accessing different sources of information. As actions to improve the codification

strategy within Volvo Technology were already taken, the research project did not explore further improvements for the codification strategy.

For improving the use of the personalisation strategy, two options were at hand: either push or pull the contributor to use the personalisation strategy. The contributors could be pushed through various processes and norms. However, it could be difficult to plan the needed personal interaction in a structured way since required knowledge sharing could not always be foreseen. In order to create a pull of knowledge sharing between the contributor and the receiver, the knowledge of the contributor needs to be made visible in the organisation so that the receiver can easily find the right contributor, even when he or she is outside the receiver's personal network. This is exemplified in Figure 5.

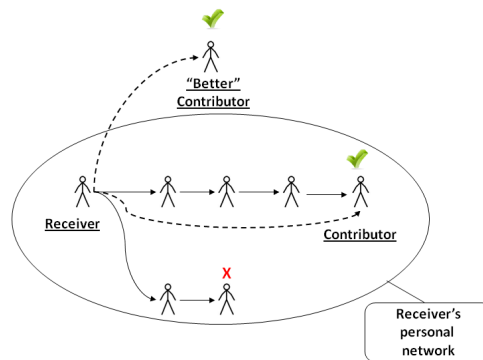


Fig. 5. Finding the right contributor efficiently

Several ways of making the knowledge of the contributor visible in the organisation were described in the literature reviewed. A method currently used by Volvo Technology was the 'appointment of subject-matter experts', known as Technology Area Directors. However, this approach was limited to contributors in the selected subject-matters. Volvo Technology had also attempted to implement a phone book approach. According to the interviewees, this approach had not worked since entering competencies into the system lead to additional work for an employee in terms of requests from colleagues.

Communities of Practice as a concept, on the other hand, has yet to be leveraged by Volvo Technology and addresses some of the short comings of the two other methods. Communities of Practice have a wider application than the subject-matter experts since they can form around people with common interests or problems, not necessarily tied to a certain subject. Also, they address the contributor's incentive lacking in the phone book approach since Communities of Practice create value for all participants. Contributors participate voluntarily since they benefit from interactions with receivers as the roles are continuously exchanged. Therefore, the recommendation given to Volvo Technology through the research project aimed at leveraging Communities of Practice in order to improve the use of the personalisation strategy.

While exploring the relevance of the recommendation through interviews with six project managers, two existing Communities of Practice were identified within Volvo Technology. The constellations were not referred to as Communities of Practice but displayed characteristics of them. One community consisted of project managers who met once per month to discuss common problems. Problems mentioned by Project

Manager included “tough conversations” and “Earned Value Management”. ProVA was another community described by PM Frugal Innovation which consisted of production engineers who met to discuss health, safety and ergonomics in the production facilities. The community was started when employees with similar problems got to know each other during a one year project on the topic. Due to the existence of Communities of Practice, it can be concluded that the concept can be leveraged within Volvo Technology to support the use of the personalisation strategy.

## **CONCLUSION**

The research project identified Communities of Practice as a way for Volvo Technology to further improve Project Knowledge Management in support of knowledge sharing between projects within the organisation. This personalisation strategy complements other initiatives to strengthen the codification strategy. By considering contributor visibility and motivation, Communities of Practice address shortcomings of the methods currently used within Volvo Technology. The existence of successful Communities of Practice within the organisation validates the relevance of the recommendation.

This article has provided an example of how current knowledge within the field of Project Knowledge Management could be leveraged in a company. The specific recommendation is limited to Volvo Technology and cannot automatically be generalised to other organisations. However, the developed theoretical framework can be considered generally applicable since it is based on previous research from different companies. The framework can therefore be used by practitioners for describing and analysing the current situation of Project Knowledge Management within their organisations in a similar way as has been done in this research project. The discussion regarding the recommendation for Volvo Technology could also provide some guidance in the possible subsequent actions and made the tie between academia and industry a fruitful one.

## **ACKNOWLEDGEMENTS**

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