

Motivators and Inhibitors for Managing IT Project Knowledge: Findings from Three Exploratory Case Studies

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Abstract

Managing knowledge on IT projects is an important factor in contributing towards project success. The focus of this research is based around how individual 'knowledge workers' within 'IT project teams', might contribute to their organizational units becoming 'knowledge management enabled', i.e. 'having a propensity towards applying knowledge management principles in their activities, procedures, and processes'. Findings from three exploratory case studies are discussed in an attempt to understand what motivates knowledge workers to engage in knowledge sharing activities and what factors inhibit them from doing so.

Keywords

IT Project Management, Knowledge Management, Managing Project Knowledge, Motivation

Introduction

Today's corporations recognize that to be successful, they need to understand modern project management techniques (Schwalbe 2002, p2). Much of the current research on IT benefits realization has however focused on the business results of companies and other organisations, (Willcocks et al. 1997; Remenyi et al. 1995). This research addresses two other levels that are described by Thorp et al. (1999), and aims to provide evidence that will help improve the workplace performance of knowledge workers at both an individual and group level, which would ultimately be expected to flow on to contribute to more reliable IT project deliveries.

Although the potential importance of managing knowledge for competitive advantage has been widely discussed, (Nonaka et al. 1995), it is suggested by Bresnen et al. (2003), that only comparatively recently has attention been specifically directed towards managing knowledge in project environments. Often, valuable knowledge assets created during IT projects, that include the relationships and rules embedded in software, project design criteria and decision history, testing and training scenarios and scripts, and user experiences, are lost, ignored or not leveraged to their fullest potential, (Clark 2001).

A better understanding of how to enable effective knowledge management in IT project management has considerable practical significance. While much theory exists on knowledge management, little empirical work has been undertaken and hence there are large gaps in the

body of knowledge in this area according to Alavi & Leidner, (2001). The research objective is to investigate reasons why IT project team members are motivated towards or inhibited from sharing project knowledge.

Three exploratory case studies were undertaken to investigate factors that appeared to be associated with knowledge sharing behaviours in IT project teams and the motivational nature of these behaviours. The paper proceeds by first giving further background to the research problem and then outlining the observations from the three case studies. Conclusions regarding the knowledge sharing motivators are then presented.

IT Project Environments and Knowledge Workers

IT Projects

Projects are distinguished from other organizational operations by their temporary and unique nature. Temporary, in terms of having a definite commencement date and an equally distinct completion date, and unique, in that they create a product or service that is different from all other products or services (PMI 2000). The temporary nature of the project delivery method does not however imply that the deliverable itself is necessarily of a temporary nature, (PMI 2000, p5). Even though one of the defining qualities of projects is that they have both definite beginnings and definite ends, (Olson 2001), making them of temporary duration, they must still be viewed as but steps that exist within a broader framework of organizational objectives and a given context and environment. Paradoxically, projects that are successfully managed strictly to comply with a project's predetermined contractual obligations might ultimately provide less overall benefit than if the project was managed with concomitant consideration of an organization's broader requirements.

Knowledge Workers

Taylor's scientific management principles, (Taylor 1967), was based on the notion that it was management who understand the processes that workers undertake and who understand the links between all the various processes in the production chain. There is now an increasing awareness that the knowledge that had always been residing tacitly with workers, can be made explicit by capturing and codifying it for the purposes of re-use, transfer and the creation of new knowledge, (Nonaka 1991). The significant difference from earlier management practices is an implicit acceptance by management that workers are able to provide worthwhile knowledge regarding their activities.

Knowledge in Projects

Of all the project management knowledge areas described by PMI (2000), it is communication management that Müller (2003), shows as having the largest impact on project results. Gross (2001), suggests that achieving any quality product or service requires that knowledge workers share data, information and experiences, and in order to optimize knowledge sharing, an organization must possess both a supportive culture and a suitable infrastructure. Much of the literature simply discusses the importance of communication in projects. As this research focuses on the motivations for project team members to communicate data, information and knowledge, it might be more appropriate to discuss project communication in terms of a subset of knowledge management.

Knowledge Management and Motivation

Late in his career, Abraham Maslow moved into the new area (for him) of industrial psychology and in his studies of high performing teams observed that in exceptional teams, one of their most striking characteristics was shared vision and purpose, (Maslow 1965). Over 35 years later Senge (1992), suggests that shared vision is vital for the learning organization because it provides the focus and energy for learning.

Frame (1999), suggests a strong link between Herzberg's two factor theory and project management competence, although Drucker (1999), admits that we still know little about the productivity and motivations of the knowledge worker. The single factor that holds most influence over the abilities of individuals to share knowledge has however been identified as organizational culture (Earl 2001; Frame 1999; Santosus et al. 2001).

Research Approach

The research approach chosen was that of multiple case studies. Yin (1994), suggests that if 'how' or 'why' questions are being asked in an explanatory study, then a case study approach is favoured. No control is required over behavioural events and the study focuses on contemporary events, making the case study a relevant approach. Yin summarizes a case study as an empirical inquiry that

- investigates a contemporary phenomenon within its real-life context, especially when
- the boundaries between phenomenon and context are not clearly evident,

which is the case in this research.

The primary method for gathering evidence in the case studies was semi-structured interviews. Data was also gathered, however, from secondary sources including company records. In addition, in one case organization the paper's lead author was employed on one project in the organization so participant observation was also possible.

Exploratory Case Study 1 – the value of knowledge

In the late 90s, an agreement was made between a multi-national beverage manufacturer and a small Australian electrical engineering company, to provide an automated storage and retrieval system (ASRS) facility as part of the client's production facilities in Asia. The experiences from 20 months of involvement with the vendor organization was documented in a teaching case written by one of the system designers, (Jewels 2003) providing an example of the special mode of evidence collection that Yin (1994), calls 'participant-observation'. The investigation concluded that project knowledge would not be captured or applied if the level of (in)competency of the project team or of the organization in which it operated was at a level described as 'unconscious incompetence'. Put simply, knowledge would not be applied if the reasons for applying it were not fully understood by the participants.

The case provided evidence that individual knowledge workers or teams may be motivated to perform 'heroic' feats with little or no organizational/management support – even though they believe that they are on a 'death march', (Yourdon 1997).

The case highlights the need for an understanding of the rationale or principles involved in each of the project management knowledge areas listed by the PMI (2000). Using the example of 'risk management', the case suggests that no risk management strategy was undertaken because there was no understanding of the real reason for undertaking risk

assessments. With regard to knowledge sharing, this case illustrates a scenario of ‘unconscious incompetence’; an organizational culture which did not support knowledge management practices, because the culture was one in which sound project management in general was neither understood nor valued. In this situation, employees might with great personal effort ensure partial success of some aspects of the project, but were provided with no encouragement to share knowledge that might have contributed to overall project success.

Exploratory Case Study 2 – leadership and organizational form

The initial case study was conducted with an Australian based, medium sized electricity generation organization that had engaged external consultants to investigate the proliferation and extent of MS Access databases within three locations, their two power generating plants and their head office.

Over 110 semi-structured interviews were conducted to identify what databases were in existence, the purposes of the databases, who had created the databases and whether the databases were either duplicates or still in active use. The organization had gone through a ‘type of privatization’ when the energy generation sector was deregulated, and when a new market/trading section was introduced it showed clear evidence of a different organizational culture to that of more established sections with their tradition of a public sector based structure. Although this particular phenomenon has not been properly investigated the investigation appeared to confirm work by Duvall (1999), who suggests that many organizations conserve resources by avoiding risks that might result in failure, which she describes, as ‘playing not to lose’ rather than ‘playing to win’, (p206). Organizations that operate with a philosophy of failure prevention tend to enact policies and procedures designed to conserve (control) scarce or valuable resources. Employee behaviour evidenced was that some individuals (mainly the new trading division) would share knowledge without fear of retribution even if the ‘knowledge’ subsequently turned out to be ‘wrong’ or inappropriate. Discussion of ‘risky’ knowledge was encouraged, ultimately leading to learning across project teams in the longer term. Members of other parts of the organisation were however, reticent to share what they believed could be ‘bad’ knowledge believing that although there was no benefit to them in sharing knowledge there could be adverse personal consequences. Analysis of the case study findings appears to confirm the view of McDermott et al. (2001) that culture is often seen as a key influence on effective knowledge sharing.

Exploratory Case Study 3 – informal networks

A study conducted in 2001 tested a published knowledge re-use theory, (Markus 2001) by matching the expected and actual responses to a set of predetermined questions linked to that theory. Semi-structured interviews were conducted over a period of six days with twenty-eight employees of an application service provider to a Queensland (Australia) state government department. The research team prepared a semi-standardized set of questions that would take about three quarters of the interview time and the remainder of the scheduled time was used to revisit issues that had arisen during the more structured questioning, by referring to the question topic guide. Data was examined for evidence of both ‘knowledge hoarding’ and ‘knowledge sharing’ and the motivational aspects of these behaviours.

It was clearly evident that formal knowledge sharing processes were not taking place in the way that management had hoped. It was not the case, however, that the subjects appeared to be intentionally hoarding knowledge to benefit themselves. The reasons for subjects not sharing knowledge was related more to:

- organizational barriers e.g. security policies, no information about available KM tools
- cultural issues e.g. perceived low importance of personal data, perceived applicability of personal data for others
- either not having the knowledge to share or not understanding its importance.
- the lack of resources (including time) to actually undertake the process of sharing.

(Jewels 2002; Jewels et al. 2003a)

Further, there was strong evidence that employees were intrinsically motivated to share knowledge despite the organizational barriers mitigating against sharing. When there was a perceived failure to provide processes for adequate individual, team or organisational learning, many individuals would engage in an alternative 'informal network' strategy to ensure that they would be able to do their work, (Jewels et al. 2003b). This use of existing 'user controlled' knowledge sharing networks appeared to be affecting the proper utilisation of management's formally introduced knowledge management strategies. This study suggests that when there is a perceived failure to provide a process for adequate individual or organizational learning, individuals would automatically adopt alternative strategies, one being that of engaging in informal networks. The interviews suggested that employees in this company had strong intrinsic motivations 'to get the job done' and could see that sharing knowledge within and across project teams was likely to lead to better project outcomes. The informal knowledge sharing mechanisms was a means to this end. There was little evidence that they were motivated in this behavior by extrinsic rewards such as salary, as individual remuneration was not tied to the success of group projects in which the individuals were involved.

Conclusions

The study began with a question as to what moderating variables influenced knowledge sharing by IT project team members. All three studies confirm that organisational cultures and values play a significant role in how project knowledge is managed. There is an indication that organisational cultures are influenced by the attitudes and actions of team leaders, yet there is conflicting evidence of the impact of that influence. It appears however that the value of managing project knowledge must be clearly understood by individuals before they engage in project knowledge activities and in circumstances where these values are not already understood, team leaders should champion the ideals.

In the first case study, the organization placed little or no value on knowledge about project management in itself, and in this environment, no observable knowledge sharing occurred. In the second case, cultures of user empowerment and acceptance of risk-taking were associated with observable knowledge sharing practices and in the third case employees were engaging in knowledge sharing practices that were informal rather than management initiated. In all three cases, however, there was strong evidence that IT staff were motivated by intrinsic needs for task accomplishment. Each case appears to confirm the independence and self motivation of knowledge workers described by Drucker (1999), in their willingness to 'get the job done' by whatever means available to them.

This study contributes to the sparse empirical work on knowledge management and yields insights into how knowledge sharing can be encouraged in project management teams. One unsurprising conclusion is that the organization must first recognize and value project management knowledge in itself. Cultures that support employee empowerment and free exchange of ideas, even if risky, are also likely to be conducive to knowledge sharing.

Management should also be aware of informal knowledge sharing mechanisms that may be in existence before implementing more formal processes. Knowledge management practices should also leverage off the evident tendency for IT workers to be intrinsically motivated by satisfaction with task achievement.

The findings from three disparate exploratory studies have provided evidence of what appears to be common features relating to knowledge sharing in knowledge intensive project environments, as well as indicating a number of issues that might relate to motivators or inhibitors to knowledge sharing. A survey document is currently being designed that includes quantitative measures for all the constructs that have been identified in this research as contributing towards knowledge sharing behaviour.

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