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Learning Lessons in Government Sponsored Projects

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Abstract

This exploratory research investigates the effectiveness of an attempt to benefit from 'lessons learned' through the implementation of a formal project management methodology. A synthesis of the relevant literature forms a basis for the research and identifies existing weaknesses. Building on research to date, a series of pilot interviews relating to government sponsored information systems projects is used to develop a conceptual model, and this is used to illustrate the transfer and conversion of knowledge through a full or partial cycle of identification, storage, access, absorption and finally 'knowledge in action'.

The research which this 'research in progress' paper introduces, aims to facilitate improved knowledge management for both academic and practitioner audiences through identifying what has worked well in previous projects, as well as issues that could have been managed better. It develops a conceptual model which will be improved and developed further through a series of case studies.

Keywords

Knowledge management; project management; organizational learning

Topic/ Track:

Knowledge Management

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Introduction

Effective knowledge management has been identified as offering clear benefits to organizations in terms of differentiation, competitive advantage and performance improvements (Cummings and Bing-Sheng 2006; Edmondson 2008; Nonaka 2007). In fact Nonaka argues, "In an economy where the only certainty is uncertainty the one sure source of lasting competitive advantage is knowledge" (Nonaka 2007: 162). Yet there is significant under-exploitation of these potential benefits. With a failure rate of over 80% for knowledge management programmes (Storey and Barnett 2000) there is obviously a problem of significant proportions in putting knowledge management into practice. More significant yet, how many organizations operate without even attempting to implement a formal knowledge management programme, with the attendant loss and degradation of existing knowledge, or lack of exploitation of latent knowledge sharing opportunities?

Davenport and Prusak (1998) argue that knowledge management "...is not rocket science ...It's good sense and managerial basics". A particular target for improving knowledge management is in the area of government sponsored information system (IS) projects. In recent years there has been considerable criticism of the management of such projects (Committee on Public Accounts 2000a; Committee on Public Accounts 2005) and the number, size and cost of government sponsored IS projects emphasises the importance of research into more effective methods of knowledge management in this area.

Although this is the first phase of a wider research project, the main objectives are to:

1. ascertain where application of knowledge management tools may offer some benefit in lessons learned from previous projects.
2. develop a conceptual framework to improve understanding of this complex area, with the intention of developing future recommendations and suggested improvements in knowledge management processes.

This paper will argue that retrospectively identifying either good practice to be embraced, errors to be avoided, or solutions to known problems is insufficient as a means of changing the way that an organization manages its 'knowledge in action', or how it applies or develops knowledge in practice. However, it is an important first step in achieving more effective knowledge management.

Literature Review

The concept of Knowledge Management is often oversimplified, with reference made to the use of knowledge management systems as if their implementation is sufficient for effective use. Of the many useful definitions of knowledge management, Schultz and Leidner (2002) argue that it is,

"the generation, representation, storage, transfer, transformation, application, embedding, and protecting of organizational knowledge" (Schultze and Leidner 2002: 218).

This includes several stages which focus on the effective organizational use to which the knowledge is put, insisting that the knowledge is applied, embedded and (unusually) ‘protected’. O’Leary (2002) takes a more pragmatic perspective, suggesting that Knowledge management can be defined as the organizational ‘efforts designed to:

- (1) capture knowledge;
- (2) convert personal knowledge to group-available knowledge;
- (3) connect people to people, people to knowledge, knowledge to people, and knowledge to knowledge;
- 4) measure that knowledge to facilitate management of resources and help understand its evolution’’ (O’Leary 2002a, 273) cited in (McCall et al. 2008)

Part of the problem is that in terms of adding organizational value, knowledge is often part of a series of related processes (Nonaka and Takeuchi 1995; Ruey-Lin 2008) including knowledge creation, knowledge transfer and knowledge – in – action; whereas much of the literature uses the term ‘knowledge’ as a noun, or artifact and often as something that exists independent of context. There is strong focus in the literature on “hard” knowledge management systems, databases and ‘ontologies’, while at the other end of the spectrum there is some emphasis on knowledge as unique, and being both person specific and context specific. This fundamental perspective or understanding of what knowledge is, and its level of tangibility and complexity, significantly affects the approach to knowledge related processes such as knowledge sharing and knowledge transfer

Knowledge can be regarded from an instrumentalist perspective, able to be picked up and used as a practical tool or acquisition; where it is merely a matter of finding effective storage, search and retrieval tools for the exploitation of latent parcels of knowledge through more effective sharing, transfer or exchange. A more sophisticated, multi-faceted approach to knowledge was identified by Aristotle (Aristotle 350BC) when he highlighted the difference between viewing knowledge in an absolute sense (episteme), typified by mathematical, or scientific knowledge, alternatively viewing knowledge as

that which is used in a more practical, productive context (techne). Aristotle also identified a third, ethical, perspective of knowledge, which was set in the context of the time and has largely fallen into disuse.

One of the ‘step changes’ in our understanding of knowledge management as an organizational process came with the differentiation between information and knowledge, and the categorization of knowledge as either ‘explicit’ knowledge, including language and documentation, and able to be expressed, documented or stored; or ‘tacit’ knowledge which of its nature is less tangible and includes personal experience and skills, and often learning of which we are unaware (Polanyi 1966). One of the fundamental aspects of knowledge creation is the relationship between explicit and tacit knowledge, and the conversion processes which can allow the transformation of tacit knowledge to explicit, and vice versa (Nonaka et al. 2006). This conversion according to Nonaka and Takeuchi (1995) allows potential for a cycle of knowledge conversions, from tacit to tacit; tacit to explicit; explicit to explicit; and explicit to tacit. Nonaka argued that a ‘knowledge spiral’ allowed the transformation of knowledge through these processes which he described as socialization, externalization, combination and internalization, respectively. It is the process of externalization and internalization that allow most leverage of knowledge by the organization as it is these that allow greater levels of diffusion (Nonaka 1991). However, for very specialized, or high value knowledge (such as project management) transfer of knowledge on a smaller scale, including one to one communication, coaching or mentoring, may still be effective.

There are certain constraints to such conceptual models which result in the failure to meet expectations in large or complex knowledge management projects. (Leonardi and Bailey 2008) argue that there are problems in knowledge transfer for those working across time and geographic space. In addition, Carlile (2004) identified three boundaries that limited the transfer of knowledge:

Syntactic boundaries required only knowledge transfer on the expectation that all parties understood the knowledge transferred

Semantic boundaries also required translation of the knowledge, as it may not be universally understood

Pragmatic boundaries require knowledge transformation, in that the new users may have different interests or objectives and the knowledge needs to be matched to its new context.

This is important in that, depending on the degree of complexity of the knowledge in question and the receptiveness of the transferee, there needs to be a match between ‘donor’ and receiver in terms of language used, the ability and experience of the receiver, and the generalisability or transferability of the knowledge to a new setting (e.g. a different culture). Even then, people don’t passively accept knowledge, they actively interpret it to fit their context, “thus what makes sense in one context can change, or even lose its meaning when communicated to people in a different context” (Nonaka 2005: 297).

McCall et al. (2008) argue similarly that Knowledge Management Systems (KMS) “focus on bringing together the explicit knowledge that exists in organizations ... such as basic definitional information, procedures for performing tasks, and previous problem resolution examples”. More complex tacit knowledge is added to the Knowledge Management System as it matures, although often using different methods of storage, or access (e.g. ‘signposting’ experts who may be available for coaching, mentoring or workshops as a more effective method of knowledge transfer).

The concept of absorptive capacity views knowledge in a wider context and is utilised by (Boynton et al. 1994) to help explain the relationships between managerial IS knowledge, IS management processes and IS management climate, and IS use. In essence it relates to communication issues, in that it refers “not only to the acquisition or assimilation of information by an organization, but also to the organization’s ability to exploit it” (Cohen and Levinthal 1990).

Access to external knowledge and internal knowledge integration capability has a positive effect on project timeliness (Mitchell 2006). Although Mitchell (2006: 924) does caution that,

“The ability to integrate internally held knowledge requires a shared perspective of the problem, which permits existing knowledge to be combined and reformulated to produce new insights and solutions (Nonaka 1994)”

Mitchell suggests that it is the social interactions among individuals that transfer knowledge through internal methods of communication, and develop a common perspective or interpretation for applying this knowledge in a problem solving situation. “Where organizational units hold specialized knowledge, inter-unit linkages are the primary means of transferring that knowledge” (Mitchell 2006: 924)

Cummings and Bing-Sheng (2006) present a comprehensive overview of the context of successful knowledge transfer. They argue that the literature presents five contexts that can influence the transfer of knowledge in organizations and the subsequent internalization of that knowledge:

The environmental context – including entrepreneurial, learning, innovation and international environments

The source context – the knowledge sharing attitude of the knowledge source, the credibility and the intent of the source to complete the transfer (in a reciprocal exchange for example, the source could cease once his/ her benefit from the exchange had been achieved)

The relational context - the relationship ‘distance’ within or between individuals, groups or organizations engaged in knowledge transfer

The recipient context – including the recipient’s motivation, absorptive and learning capacity, intent and knowledge experience.

The knowledge context – knowledge is defined not as a dichotomy between explicit and tacit knowledge, but as a continuum of degrees of ‘explicitness’. It is also defined by its degree of ‘embeddedness’ (in people, tools, processes etc.)

This explanation is a much better presentation than most in the literature, of the complexity and variability which can influence the knowledge management process. Evidence of the failure of knowledge management programmes to meet expectations (Storey and Barnett 2000) suggests that underestimating this complexity could be a factor in such lack of success. One of the drivers of this research is the exploration of the degree of application of knowledge management theory, particularly in the context of government sponsored IS projects and using the vehicle of the PRINCE2 project management methodology.

Nonaka argues that “Making personal knowledge available to others is the central activity of the knowledge creating company” (Nonaka 1991: 165). Through the use of PRINCE2 as a mandatory project management methodology in government sponsored projects, the identification and codification of personal knowledge through “lessons learned” is a key objective. This is in response to ongoing criticism of past limitations of project management, ineffective use of consultants, and evidence of poor value for money (Committee on Public Accounts 2000a; Committee on Public Accounts 2005; Committee on Public Accounts 2007b) e.g.

“Departments should evaluate the performance of consultants and lessons learned from their use, not only for their own benefit but for that of other departments.”

(Committee on Public Accounts 2007a: 5)

The conceptual model which drives the research is illustrated in Figure 1 below and draws on and extends Alavi & Leidner’s (2001) work on knowledge transfer..

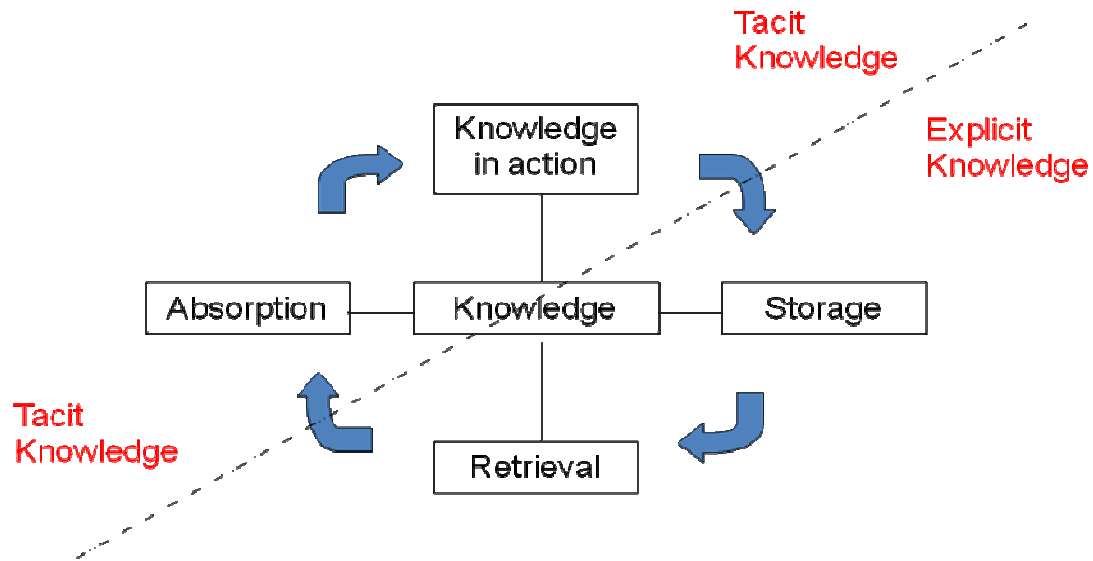


Figure 1. Conceptual model adapted from Alavi & Leidner (2001)

The aim is to progress through the cycle, but it is the proactive transfer and conversion processes that are crucial. ‘Knowledge in action’ with no reflection, identification of learning opportunity, conversion and storage, is ultimately transient experience and of no potential benefit to any other than the participants.

Edmondson (2008) would argue that this is, or should be, an evolutionary process and the ‘knowledge in action’ is constantly challenged and improved as new circumstances alter. This is similar to how Argyris (1976) sees his model of ‘double loop learning as a method of inviting challenges to established views, which may then subsequently be adjusted in order to take advantage of the best information available. Knowledge is not, therefore stable and static, but instead forms a dynamic and transient flow, or pool into which one can submerge. The reaction to this submersion can vary significantly depending on the ‘absorptive capacity (Cohen and Levinthal 1990) and to a degree the motivation and receptiveness of the individual or team to challenge their own mental models, and actively participate in the process. Thus the cyclical flow illustrated in Figure 1. (above) may not be smooth and self regulating, depending on the type of knowledge; how open it is to conversion; the type of individual etc. This appears to link with work by Heron and Reason (1996), where they describe four different types of knowing:

experiential knowing – direct face to face encounter with something or someone

presentational knowing – the expression of this via story etc

propositional knowing – concepts and ideas

practical knowing – consummates the other forms of knowing in action in the world - the knowing of how to do something

Argyris & Schon (1996) argue that temporary gains in knowledge often occur, and indeed this can be viewed as a “near miss” to organizational learning, in the sense that changes in behaviour, routines and “theory in action” are observed. But when these are held only in the minds of “individual carriers” as in the case of the many consultants used in government sponsored projects the benefit is lost when that knowledge moves on to another client, or even another project within the same client organization.

However, this paper will argue that identifying knowledge which is likely to be of benefit to the organization and codifying it in a way that makes it available to others is only the first (albeit important) step in implementing change with the purpose of effective exploitation of knowledge.

Context of the Research

Following a series of high profile IS project failures and several critical reports; the call for improved project management in government sponsored projects has been prevalent for a number of years. The Committee of Public Accounts report (2000b: 1) was highly critical, pointing out that there were,

“more than 25 cases from the 1990s where the implementation of IT systems has resulted in delay, confusion and inconvenience to the citizen and, in many cases, poor value for money to the taxpayer”

However, there is little evidence to show that the strategic lessons highlighted in this report have been acted upon, and further periodic reports by the same government audit

body have further underlined the perceived lack of improvement. One of the conclusions drawn, points out that,

“Only half of the recommendations in the Committee’s 2002 Report, “Better value for money from professional services”, have been properly implemented. Lack of progress has meant the government is still not achieving good value for money from the £1.8 billion spent on consultants.” (Committee on Public Accounts 2007b: 5)

Projects in a Controlled Environment (PRINCE) is a standard project management methodology developed in 1989 to improve the management of Government IT projects. PRINCE was further developed and enhanced to become PRINCE2 in 1996. This project management methodology is mandatory in all government sponsored projects. Within the PRINCE2 methodology it is required of project managers to complete a “lessons learned report” at the end of each significant stage of the project, and to complete the project with an overall ‘lessons learned’ summary report. This process attempts to formalise a means of continuous improvement through reflection, and codification of knowledge gained during the project.

“The Lessons Learned Report is created during the project to “disseminate useful lessons learned during the project for the benefit of other projects” (CCTA 1999: 66)

This mirrors the underlying principle of knowledge management.

Methodology

The research question driving this research is: “Lessons Learned”? How can Information Systems (IS) projects develop an effective ‘knowledge chain’ and move from knowledge transfer to knowledge utilisation? The research is focused on the management of large and complex information systems projects. In particular, eventually it is hoped to establish how knowledge gained from both good and bad experiences in projects can be identified, stored or made accessible, transferred to others, and utilised effectively.

The research strategy adopts a case study approach (Eisenhardt 1989; Yin 1994) using government sponsored IS projects. There are three phases planned for the research:

Phase 1

- Complete a literature review and synthesis of how knowledge can be better utilised through knowledge transfer and knowledge management. Explore the difference between knowledge storage, knowledge transfer and 'lessons learned' in the sense of knowledge utilisation.
- Pilot exploratory semi-structured interviews with experienced project managers in the UK public sector to establish the importance of the research.

Phase 2

- Survey government department IS project managers/ project offices on practice of 'lessons learned'.
- Are lessons learned reports completed and filed (as per PRINCE2 requirements)
- Under what circumstances and frequency are lessons learned reports retrieved?
- Establish if there is a problem:
 - In creation
 - Retrieval
 - Quality/ size of lesson
 - Other
- Triangulation: Lessons learned contributors/ Project Managers/ IS/ Project Director/ Project Office
- Additional documentation (PAC Audit reports etc.). Audit materials on project inception, progress, completion, review

Phase 3

- Exploration of issues arising from survey and early interviews. Further in-depth interviews with:
 - Senior Responsible Owners
 - Project managers
 - Within-case and cross case analysis

This research-in-progress paper follows Phase 1 of the research, introducing and synthesising relevant literature and clarifying the degree of use and the effectiveness of

lessons learned reporting as a knowledge management tool. This is set specifically in the context of large, complex, government sponsored information systems projects.

The research draws on, and extends early work by Alavi & Leidner (2001) by using a research strategy to develop understanding of the potential for knowledge exploitation within and between large, complex IS projects in the UK 'public sector'. The research design aims to draw from multiple sources, in the first instance building on established research in the literature, and using the researcher's own experience in information systems implementation, further focused through preliminary informal interviews.

Following four pilot interviews with project and programme managers, all with experience of managing multiple large and complex government sponsored IS projects, the research will develop case studies in order to draw lessons from the reflections of Senior Responsible Owners (SRO), Programme and Project Managers and consultants, as well as other interested stakeholders. Within-case analysis and cross case analysis will assist in the development of findings, which will be validated through consultation with 'industry experts'. The contribution of this research aims to inform both academic and practitioner audiences.

Preliminary Results

Pilot interviews were carried out with four experienced project managers who have all worked on multiple large projects within more than one Government Department or Ministry. The research is still at an early stage, however the results of the pilot interviews suggest some important results. A summary of some of the key points from the interviews include:

- All respondents agreed there were significant problems in government sponsored projects and much potential for learning lessons.
- There is variable adherence to the requirement to produce lessons learned reports. Where these are in evidence it is often a product of consultants who are qualified PRINCE2 practitioners adhering to self imposed standards.

- When the lessons learned are documented these most often leave with the consultant, either as personal learning, or as part of a knowledge management system hosted in the consultant organization.
- There is no standard or template to aid the production of aggregated lessons, or of reusable knowledge
- There is no central repository of lessons learned reports, and therefore no easy access to knowledge gained
- Because there is no synthesis of lessons learned there is no mechanism for identifying commonly repeated errors or solutions to common problems
- There is no attempt to qualify the types of lessons learned, in order to develop appropriate means of storage, or access routes
- There is no formal method of capturing knowledge from the multitude of external consultants employed.
- Importantly, there is a perception that there is still a significant shortfall in the required project management skills at all levels of the client organizations. While there is evidence of an ongoing training programme focused on the PRINCE2 project management methodology, the benefits of this have still to become apparent.
- There are structural (possibly cultural) and sometimes litigious influences which discourage the formal capture of lessons learned.

Analysis of the pilot interviews suggests that: the importance of the need for further research into knowledge management in the context of government sponsored IS projects has been confirmed; there is at best, a limited application of the principles of ‘lessons learned’ reporting as an integral part of the PRINCE2 project management methodology; there are significant barriers to effective knowledge management in the context of government sponsored IS projects.

Discussion

Why do we not learn from project failures? “We rarely try” argue Abdel-Hamid and Madnick (1990: 39), claiming that people tend to hide mistakes. Recent claims that the Office of Government Commerce (OGC) instructed staff to destroy final Gateway Review reports within seven days of issue, if true, would support this contention (Collins, 2007). With the potential furore that can be unleashed in the media with regard to Government sponsored IT projects, it is perhaps understandable that there is some

reticence to highlight any areas of weakness or mistakes. The ‘blame culture’ which is commonplace in organizations can be a powerful influence on staff’s readiness to proffer “learning opportunities” to others at the expense of their own reputation. Abdel-Hamid and Madnick propose that learning from successful projects is no less problematical, in that there is no desire to look for problems unless someone is dissatisfied. And so, in the first instance there appears to be a positive motivational force to cover up mistakes, and a lack of motivational force to learn from success even at the primary stage of identification of knowledge.

One of the traditional forms of knowledge sharing was through seeking out and exchanging knowledge with co-workers. This is limiting as soon as an organization becomes larger than this form of exchange can cope with. This is exacerbated when multi site organizations occur, and again when internationalization is involved. In the case of many government sponsored IS projects there are still a large number of consultants used, and they bring with them opportunities to learn, but also dangers of a dissipation of knowledge as they move from one project to another, between Departments or Ministries, or out of the organization altogether.

As mentioned earlier in the paper, identifying knowledge which is likely to be of benefit to the organization and codifying it in a way that makes to available to others is only the first (albeit important) step in implementing change through the exploitation of knowledge. It appears from the pilot interviews that this is not happening, at least not in any comprehensive or consistent way. There is a need for a better understanding of how even the most basic knowledge management steps, that is, the identification and storage of knowledge can be better implemented, before any more advanced knowledge management initiatives can hope to succeed.

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