Project escalation and IT management

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Escalation is considered a costly problem that occurs frequently in IT projects. Project escalation has been a major issue in academic research for several decades. According to the relevant literature, the factors that contribute to escalation can be mainly categorised into tangible and intangible; more specifically, project and organizational factors are seen as tangible risks that can hinder project success. A brief overview of a risk categorization framework is presented here for its validity in identifying project escalation factors. In contrast, the IS literature deals primarily with intangible factors, as it provides a solid theoretical base for understanding escalation as a social phenomenon. Within this context, four prominent theories (self-justification theory, prospect theory, agency theory and approach avoidance theory) are discussed and contrasted for their relative applicability for explaining escalation of commitment. Moreover, escalation is reviewed as a phenomenon and suggestions for further research are also presented (for example, certain considerations on de-escalation).

Introduction

The extensive literature available on project escalation in the Information Systems (IS) field clearly indicates that it is a well documented and costly problem. However, what is concerning is that this problem is certainly not uncommon. Alarming findings from the Standish group's (2003) survey indicates that 43% of software projects were over budget and 54% had time overruns (Pan *et al.* 2006). Through their lifetime, these projects continue to absorb scarce resources (time and money) while failing to deliver any real value to the organization. According to Mahring (1998) successful IT project management requires specific competences and various other prerequisites that in several ways differ from those required for managing an ongoing business. It is a skilful and complex task that demands the successful alignment of both technical and social systems that are operational within an organization (Keil *et al.* 1998, Leitheiser 1992).

The issue of IT project management failure has enticed both practitioners and academics alike for several decades. The phenomenon of '*escalation of commitment*' to IT projects has attracted much attention in recent years (Keil 1995, Mahring and Keil 2003). Keil and others describe escalation as a situation where decision makers continue to invest resources into a course of action that is not producing the desired result (Keil and Robey 2001, Pan *et al.* 2006). Other researchers suggest that managers continue to do so when they are faced by uncertainty of goal attainment as a cause of negative feedback relating to previous resource allocations (Brockner 1992, Keil 1995).

The majority of literature on escalation is comprised of works from both management and IT/IS journals. The literature from management journals predominantly adopts a critical perspective of IT management and considers the organizational factors involved. On the other hand, literature found in IT/IS journals adopt an explanatory perspective, by providing a set of theoretical tools for understanding the phenomenon. As an overall result, the literature forms a bilateral view of escalation, from an organizational (tangible), as well as a social (intangible) perspective.

Another useful way of categorising the literature is by using the Burrell and Morgan social paradigms framework. The two different approaches found in the literature (tangible and intangible) fall into the 'functionalist' and the 'interpretivist' paradigms, respectively. Literature in management journals takes a functionalist view, as it tries to formalise project management and thus develop best practices. Whereas the majority of literature in IS/IT journals is highly interpretive (Burrell and Morgan 1979). However, the main focus of this paper will be to consider the latter, looking at the theories considered in the IS field.

Escalation of commitment

While any type of project is at risk of escalation of commitment, Montealegre and Keil (2000) proclaim IT projects are especially vulnerable to this phenomenon. Software by nature is intangible, thus making it difficult to determine accurate estimates of the quantity of work completed. Consequently managers continue to invest resources without having any bearing of where the project is headed.

The aforementioned literature suggests that there is a positive correlation between project complexity and project escalation of commitment (Brock *et al.* 2003, Glass 1997, Montealegre and Keil 2000). Complexity factors can be defined as inherent risks that can hinder project success. These complexity factors may include: absence of a clear vision and statement of requirements, size (resources required to complete the project), lack of stakeholder involvement, unrealistic expectations due to estimating difficulties and organisational politics and a lack of strategic focus.

Practitioners and academics who advocate IT project risk management recommend that by mitigating these risks to success, the frequency of project failure can be reduced (Keil *et al.* 1998). Extensive research is underway to establish a framework for identifying these project risks. One key example is a Delphi study that presents a categorisation of the main risk factors identified by project managers into a 2x2 grid (Keil *et al.* 1998). The grid is constructed under two dimensions: (1) '*perceived importance*' of a particular factor in relation to the other risk factors identified; (2) '*perceived level of control*' representing the degree to which the project managers believed they could prevent the risk from arising; see
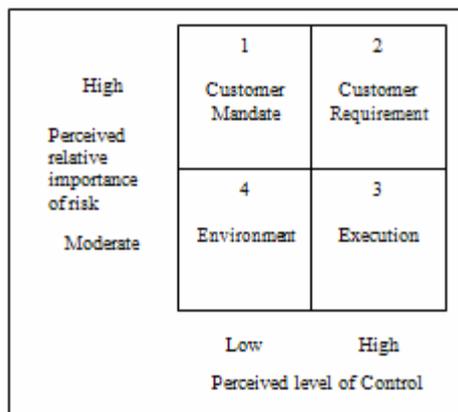
(Figure 1).

Figure 1   A risk categorization framework (Keil *et al.* 1998)

Theories to explain Escalation behaviour

The discussion of the various theories to explain escalation of commitment dates back over four decades. While some have gained much support and stood the test of time others have been quick to be dismantled and rejected by the majority (Brockner 1992). This has generated a great deal of controversy with relation to the integrity of some of the theories put forward. The end result falls into three categories. First, some theories have been extended and adapted; second, new theories have been offered as replacements and finally some have been put forward as supplementary to each other. However, four theories are clearly distinguishable in respect to the extent they are cited and their application in empirical research (Keil *et al.* 2000).

Self-Justification Theory (SJT)

According to Keil and others (2000) *'self justification theory posits that individuals tend to escalate their commitment to a course of action (and risk unpredictable outcomes) in order to self justify prior behaviour'* (Keil *et al.* 2000, Staw and Ross 1987). The central construct to self-justification theory is based on the theory of cognitive dissonance put forward in the 1960s by Festinger (1957). Self-justification theor*y* asserts that individuals will try to justify prior erroneous decisions by rationalising them against a perceived error in judgement so that future decisions are grounded in a '*retrospective rationality*'. Henceforth prior losses or costs incurred are considered relevant for making decisions in the future (Keil *et al.* 2000, Staw and Ross 1987). This creates a paradoxical status quo at every decision making round because the need to justify prior decisions encourages further resource commitment. Moreover, according to a role playing study carried out found that personal responsibility plays a central role in the notion of psychological self-justification (Staw 1976). Findings from the study concluded that those individuals with a high level of responsibility for previous decisions are more likely to find a greater need to justify the previous decisions they have made.

Since its first proposal in the mid 1970s, numerous publications have either extended or invoked self-justification theory to explain and understand escalating commitment. However, later studies carried out to replicate Staw's classic example failed to find escalation. Therefore in recent years research has advanced to explore alternate or "supplements" to explain

the phenomenon (Brockner 1992). Brockner (1992) suggests that although self-justification theory proves to be both a good starting point and explains a significant portion of escalation behaviour, its theoretical base is more coherent when considered in conjunction with other escalation behavioural theories.

Prospect Theory (PT)

Whyte (1986) contrasts prospect theory with self-justification theory and suggests that it better serves as a replacement for explaining escalating commitment (Keil *et al.* 2000). Prospect theory explains decision makers' risk taking propensities when faced by uncertainty. The underlying construct is that individuals whom have not accepted previous decisions as being wrong will exhibit risk seeking behaviour. Consequently they will continue to follow a failing course of action. Moreover, they are more likely to practice risk seeking behaviour when posed with two negative alternatives (Keil *et al.* 2000, Whyte 1986). The decision maker will thus have to either choose to abandon and accept the definitive loss of the initial investment or continue with their chosen course of action and risk a possibly larger loss in quest of goal attainment.

The results from Garland and Newport (1991) laboratory experiments support the prospect theory interpretation of escalation. The participants were said to exhibit the so called *'sunk cost effect'* in which they continued to invest resources into a failing course of action in pursuit of goal attainment (Keil *et al.* 2000). Considering this, it can be legitimately argued that prospect theory explains the retrospective decision making process decision makers' exhibit in self-justification theory; whereby, the decision maker justifies to him/herself that previous decisions were correct (not coming to term with an earlier loss) and continues to invest resources in the hope of success. Therefore by adopting this perspective it can be said that prospect theory facilitates a more coherent understanding of self-justification theory rather than replacing it (Brockner 1992).

Agency Theory (AT)

The underlying concept of an agency relationship can be best defined as a 'contractual agreement'. This relationship arises when one individual (the principal) engages another individual (the agent) to perform some activity on their behalf. Also, this often involves delegating some responsibility and autonomy to the agent (Jensen and Meckling 1976, Keil *et al.* 2000). Central to this concept is the notion of *goal incongruence*; in this situation, an agent will act in a way that will maximise their utility or safeguard their interests, rather than follow a path that maximises the best interests of the principal. Also the concept of *information asymmetry* is said to be central to all principal-agent relationships. The concept postulates that the agent possesses some private information that the principal cannot access without a cost and as a result encourages self interested behaviour.

Findings from Harrison and Harrell (1994) lab experiments support the agency theory interpretation of escalation. In the experiment subjects were made to believe they had knowledge of some private information which was not available to their superiors. The result was that the subjects continued with questionable projects, in the hope to safeguard their reputations (Keil *et al.* 2000). Moreover, according to Keil et al (2000) agency theory does particularly well to explain es-

calation within a software management context as noted before. The inherent risks in software projects make them very difficult to monitor and control. Therefore, it is possible for agents to conceal the status of a software project from their superiors and allow it to escalate. This approach also suggests why some software projects suffer from the '90% syndrome' – where the project is reported to attain 90% successful completion in a short period of time relative to how long it takes to complete the remaining 10%; hence the true progress of the project is never truly realised and additional resources are continued to be committed by agents for project completion (Abdel-Hamid 1988)

Approach Avoidance Theory (AAT)

Approach avoidance can best be conceptualised as a *'behaviour that results when driving forces that encourage persistence seem to outweigh restraining forces that encourage abandonment'* (Keil *et al.* 2000). These driving forces can include: (1) the size of the reward; (2) the cost of withdrawal (sunk cost effect); and (3) proximity to goal attainment (completion effect). Consequently these competing forces create inconsistencies in the decision maker's rationale for abandoning a failing course of action.

Proximity to goal attainment or the *completion effect* is a key tenet of approach avoidance theory. The concept suggests that a decision maker is more likely to commit to a particular course of action depending on how close they feel they are from goal attainment. The closer the person feels they are to completion of a specific course of action the less likely they are to abandon it. The aforementioned *90% syndrome* serves as a good example to explain the concept.

Results from a series of experiments carried out by Conlon and Garland (1993) uphold the goal proximity theory of approach avoidance. However, they argue that the *sunk cost effect* may in fact be invoked from within 'proximity to goal attainment' and the two should not be considered as the same. In other words goal proximity is a 'pulling' force on the decision maker because of the possible rewards in the future. Conversely the cost of withdrawal act as a 'pushing' force for goal attainment (Keil *et al.* 2000). Later works by Mann (2003) suggest that the approach avoidance rationale could serve as a foundation to bring several other theories into one over-arching model to understand escalation. Pan and others (2006) support this suggestion and propose that approach avoidance captures the essence of complex escalation situations that often comprise both push and pull factors. Where self-justification theory serves to better understand the pull; and agency or prospect theories explain the push factors that encourage escalation of commitment.

De-escalation- the way forward

While escalation attempts to understand why individuals adhere to a failing course of action, de-escalation tries to examine how they may extricate themselves from it (Pan *et al.* 2006). De-escalation of commitment can be defined as the process that leads to a reduction in commitment and the enactment of redirection away from a previous decision (Montealegre and Keil 2000). According to Keil and others there is relatively limited empirical research available on de-escalation of commitment (Keil and Robey 1999, Montealegre and Keil 2000, Pan *et al.* 2006). However, recently the focus of research has been and is changing more towards de-

escalation as a model and its practical implications in practice (Keil 1995, Keil and Robey 1999, Ling Pan *et al.* 2005, Montealegre and Keil 2000).

In a study by Keil and Robey (1999) in which they examined the specific actors and the actions needed to de-escalate they found top-management to be the most frequently cited actors that brought about a de-escalation of commitment. Moreover, they found that actors who were not directly involved in projects are the most likely to initiate de-escalation. This is interesting because the lack of involvement from senior management is often cited as a key reason for escalation (Brock *et al.* 2003). Also, it is not surprising that indirect stakeholders are more likely to initiate de-escalation considering the central tenets of self-justification theory. Conversely Keil (1995) suggests a list of implications that managers and organizations can apply to reduce escalation. The overall approach is to set up pre-emptive measures to stop escalation from occurring rather than suggest best practices on the process of de-escalation. He suggests that managers can take measures at an individual level to minimize their own risks. Moreover, they can introduce policies to reduce their organization's exposure to escalation. Both approaches are beneficial because they open new deltas for further research and discussion, paving the way towards a research area where the accumulated knowledge on escalation can be adapted to develop implemental models of de-escalation. For instance Montealegre and Keil (2000) in their study on the Denver International Airport baggage handling system develop a model of the de-escalation process (Pan *et al.* 2006). The model outlines de-escalation as a four phase process: (1) problem recognition; (2) re-examination of prior course of action; (3) search for alternative course of action; and (4) implementing an exit strategy.

Implications, Limitations and Conclusions

One approach to developing a rational model of de-escalation for IT projects can be to adopt a pre-emptive approach as suggested by Parnas and Clements (1986) for software design. By recognising the intrinsic factors involved in software design developers can counteract them by adopting risk mitigating strategies. In other words by accepting these risks one can better prepare for and stop them from happening. Therefore, using the theories and de-escalation models available, practitioners can develop policies to stop escalation from occurring from the outset. As Mahring (1998) points out IT management differs from organisational management in that it demands a strong appreciation of technology in business and technical competence as well as traditional organisational management skills including project management, leadership and organisational control. When considering this, practitioners need to develop a new hybrid management methodology for managing IT projects as is suggested by Markus (2004). In her paper she advocates that it is not sufficient to use managerial methods from both technology and change management for using IT as a driver for change. But instead to adopt a new set of managerial practices altogether, adeptly named 'Technochange' (Markus 2004). Therefore, IT managers need to develop a new set of project management practices that are coherent with software development.

The main aim of the paper has been to provide a concise overview of escalation as a phenomenon and its significance within an IT management context. The main limitation of the

paper is its generalist view and the relatively low level of detail provided for the various factors involved, however a more detailed examination is beyond the scope of the paper. Also, another area which needs to be considered is how escalation is defined by the various stakeholders e.g. users, developers and management as is the nature of escalation it is highly open to different interpretations. However, the approach adopted here was to address the reasoning for escalation rather than to consider its effects. To rid of escalation is a difficult task but one that is not impossible; the theories considered above serve as an excellent starting point to achieve the end goal of reducing escalation of commitment.

Conclusively, all four of the theories considered work to highlight that project escalation is a multi-faceted phenomenon that can be a result of several underlying factors. Through the review of the theories and the examination of the literature on the factors of escalation in the theories, it can be seen that no single theory is able to fully explain escalation. Also the diversity in the perspectives adopted in the theories serves to show that escalation is a highly complex phenomenon. There are a great many issues that need to be considered when trying to prevent escalation; self and project evaluation, resource management, technical competence and many more. The usefulness of each factor is dependent on the situation; therefore it is difficult to fully understand escalation through the use of a single theoretical perspective. Instead the practitioner needs to be aware of these factors and hence be ready to deal with them. However, a key point to note is that this does not necessarily mean that each factor is operational independent of the others. But, instead as the theories considered above show it is often the case that not only do they contribute to a better understanding of the other but they may also be the cause of the other as is the case for self-justification theory and prospect theory. The two together serve to better understand why agents may choose to hide project progress from their principal which is the central cause of escalation as proposed by agency theory. On the other hand, approach avoidance theory encompasses all the other theories in an overarching framework to explain escalation. In the end escalation as a phenomenon requires a holistic consideration of all four theories as a starting point to reducing escalation.

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