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Examining the Dynamics of Managing Information Systems Development Projects: A Control Loss Perspective

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Introduction

Coping with complex information technology (IT) projects remains a significant problem for practitioners. Recent industry reports reveal that nearly $1 trillion of the $2.5 trillion spent on IT investments in 1997-2001 was on underperforming projects and nearly $75 billion is lost annually on failed IT projects in the United States alone (Benko and McFarlan 2003; Standish Group 2001). Extant research in information systems development (ISD) identifies several social and technical factors that influence project performance. However, there exist some significant gaps in this research. First, the literature is silent on the relationship between project manager's competence and project performance. Nevertheless, IT project managers are held responsible for creating an environment of trust and openness (Savage 1990). At the same time, they are held accountable by senior executives for the performance of the knowledge workers role and competence involved in ISD (Perlow 1998). For example, "An insightful CIO once told me that "I can make a project fail, but I cannot make it succeed... Managers, I have worked with admit privately that success of IT projects requires commitment, but they are not clear where, when, and how they should get involved" (McAffee 2006, page 142). Accordingly, it is imperative to understand IT project manager's role and competence in managing the team and project processes is critical to foster success in contemporary ISD projects. This is reflected in the degree to which the project manager and team members are "in sync" with respect to perceptions of how the project is being managed.

Second, most studies assess IT project performance by evaluating end outcome variables like timelines, budget, and quality (for example, Nidumolu 1995). Generally, an IT project is considered failure if it does not meet budget and timelines. While informative, observing the end outcome variables hinder our ability to provide implications on actions that can be taken to correct the errors. On the contrary, studies using case study approach reveal that projects are successfully completed even after significant delays and budget overruns (Perlow 1998; Walsham 2002). In particular, these studies observe managerial interventions such as changing the reward structure, changing the supervision style foster smooth flow of project activities. Moreover, recent studies highlight the fuzziness involved in assessing project performance (Aldawani 2002; Robey et al. 1993). Accordingly, there is a need for developing an intermediate outcome variable that will allow us to capture the dynamics occurring within project episodes and allow us to provide implications for proactive behavior. We conceptualize this variable as the degree of *control loss*. In sum, we focus on both the IT project manager's competency and the intermediate variable of control loss to get deeper insights into dynamics of IT project management. Further, we explore how to foster success in IT projects.

Research Questions

We examine the relationship between degree of fit in IT project manager and team members' perception with respect to control strategies, influence tactics, decision rights and project characteristics, their influence on the intermediate variable of "control loss" and ultimately on project performance.

1. How does synchronization of control strategies, influence tactics, decision rights and project characteristics between IT project manager and team members affect control loss?

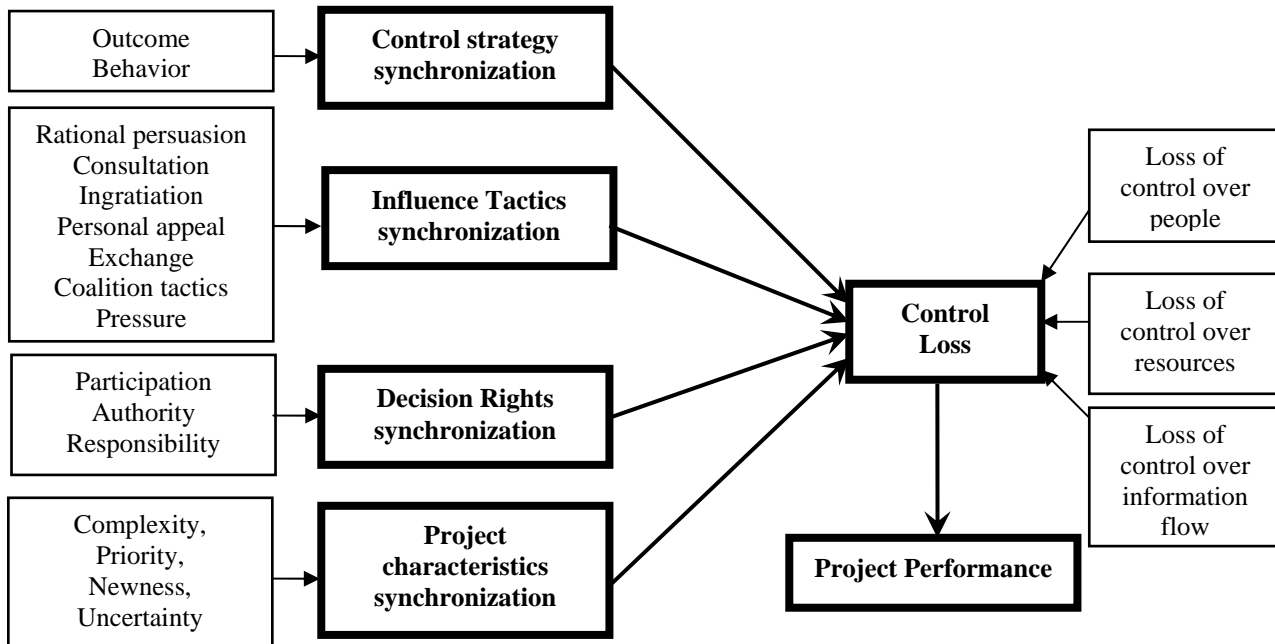2. How does control loss influence the project performance?

Figure 1. Research Model

Literature Review

To examine the research questions, I draw on literature from five different areas: control loss, organizational control theory, influence tactics, decision rights and IT project management (project characteristics).

Control loss

Control loss refers to slippage in achieving original intentions (Williamson 1967). In the past, scholars have applied several theoretical lenses such as resource dependence theory (RDT), information processing theory (IPT), and leader-member exchange theory (LMX) to explore control loss. Consequently, there exist different perspectives about control loss. RDT scholars define control loss as inability to control, allocate, and facilitate efficient use of resources (Pfeffer and Salancik 1978). IPT advocates view control loss as inability to control upward and downward information flow (Leifer and Mills 1996). LMX researchers describe control loss as inability to control people (Dansereau et al. 1975). In this study, we adopt a integrated view of control loss and define it as slippage which takes place in control when subordinates may not understand what they are supposed to do or may not choose to do what is expected of them or do not have the resources to do the task.

Organizational Control

Organizational control refers to a person, group, or organization attempts to affect what another person, group, or organization will do (Ouchi and Maguire 1975). It is a process of measuring, evaluating, rewarding and providing feedback (Ouchi and Maguire 1975). IS researchers commonly employ four control modes - outcome, behavior, self and clan control. Extant literature reveal strong support for use of outcome and behavior control, and mixed support for self and clan control (Henderson and Lee 1992; Kirsch et al. 2002). Further it was found that project managers employ a portfolio or a combination of control modes (Kirsch 1997).

Influence tactics

Influence tactics deals with the interpersonal mechanisms employed by the manager to influence the behavior of subordinates, peers and the superiors (Yukl and Tracy 1992). It is argued that the mechanism used by the manager affects the subordinate's commitment towards the task. Further it was also found that using appropriate mechanism foster compliance among subordinates (Yukl and Tracy 1992). Within IS literature, influence tactics is applied to study chief information officer (CIO) behaviors (for example, Enns et al 2003), but seldom used in ISD context.

Decision rights

Decision rights refer to location of decision making authority(Jensen and Meckling 1992). It is further classified into decision management rights and decision control rights. Decision management includes decisions regarding resource sharing, and implementation of approved decisions (Fama and Jensen1983). Decision control includes setting rewards and penalties for the decision agents and implementing monitoring mechanisms to evaluate performance (Fama and Jensen 1983). Researchers find that location of decision management and decision control rights influence the magnitude of agency costs and foster organizational performance (Nault 1998). Within IS empirical research there is very little discussion of decision rights, this is especially true for project management literature.

Project characteristics

Project characteristics refer to the project manager and team member's perception regarding the complexity, priority, newness and uncertainty of the project. Prior ISD research pays significant attention to these characteristics (for example, Nidumolu 1995). Further they assert that stakeholders perception of the project influence the amount and distribution of effort within the working unit in a counterproductive manner (Aladwani 2002).

In conclusion the primary goal is to gain insights into the dynamics of IT project management. This is achieved by analyzing the impact of *synchronization* of control strategies, influence tactics, decision rights and project characteristics on control loss and project performance. Synchronization reflects the degree of alignment between the perceptions of these stakeholders. Figure 1 depicts the overall research model.

Research Design

The ability to achieve the stated objectives requires selecting a research design that allows inclusion of both the project manager and team members' perspectives. Consequently, a matched-pair survey approach is chosen. The use of two respondents reduces the size of each survey, allows multiple perspectives to be included, and prevents any potential single-source bias. The choice of a matched survey with multiple respondents per organization increases the difficulty of data collection, but it also provides richer data. The level of analysis for this research is the project. Since organizations can have several projects, to be considered for this research the projects must be either ongoing or recently completed, multiple data points can be used from the same organization.

The organizations will be contacted using a multi-pronged approach that will include letters, email lists, and personal contacts. The ultimate goal is to identify ISD projects and the IT project manager/team members associated with those projects. To avoid potential selection bias, respondents within a team will be chosen using an external reference point. At this point, at least two team member responses are requested for each project. The project manager responses will provide information on – a) employed control strategies, influence behavior and decision rights, b) perceptions about the project characteristics. The team members will provide information on – a) appropriate control strategies, influence behavior and decision rights needed, b) their perceptions about the project characteristics. Control loss will be captured from both project manager and team members. At the conclusion of my proposed research, I expect to be able to make the following contributions to ISD domain.

Contributions

At the conclusion of my proposed research, we expect to be able to make the following contributions to academics and practice.

❖ Control loss is a widely discussed concept in management domain. Nevertheless, by applying several perspectives scholars have perplexed the concept of control loss. By using an integrated perspective of control loss we aim to develop a theory of control loss. Further, our research will be the first to measure control loss empirically. By doing this, we provide opportunity for researchers to include this concept in their research. This is imperative for IT project management research where the current measures of performance outcomes are being questioned. From a practitioner perspective, Organizations require managers to be proactive and take such measures to avoid project failures (for example see cases submitted by practitioners in Hoque et al. 2005). Accordingly, by assessing concepts like control loss an intermediate outcome variable and IT project manager competency, we bring in fresh insight into the dynamics of ISD projects, with implications for strong interventions during the projects.

❖ Our research contributes to IS theory by synthesizing concepts from management research and project management research with those in ISD research. In particular we bring in rich concepts like control loss, influence tactics and decision right to ISD domain. By doing this, our research extends the project management's nomological network.

❖ We also raise issues pertaining to the importance of the *manager's competence* in fostering synchronization on important managerial levers between the project manager and team members. This can provide guidance to management to develop project management strategies to fulfill its obligation, that is, to maintain a work environment that is conducive of optimal performance levels of its IT projects.

References

Aldawani, A.M. "An integrated performance model of information systems projects," *Journal of Management Information Systems* (19:1) 2002, pp 185-210.

Benko, C., and McFarlan, W. *Connecting the Dots: Aligning Projects with Objectives in Unpredictable Times* Harvard Business School Press, Boston, 2003.

Dansereau, F., Graen, G., and Haga, W.J. "A vertical dyadic linkage approach to leadership within formal organizations: a longitudinal investigation of the role making process," *Organizational Behavior and Human Performance* (13) 1975, pp 46-78.

Enns, H.G., Huff, S.L., and Higgins, C.A. "CIO Lateral Influence and Behaviors: Gaining Peers' Commitment to Strategic Information Systems," *MIS Quarterly* (27:1) 2003, pp 155-176.

Fama, E., and Jensen, M. "Separation of Agency and Control.," *The Journal of Law and Economics* (26), June 1983, pp 301-326.

Henderson, J.C., and Lee, S. "Managing I/S Design Teams - a Control Theories Perspective," *Management Science* (38:6), Jun 1992, pp 757-777.

Hoque, F., Sambamurthy, V., Zmud, R.W., Trainer, T., and Wilson, C. *Winning the 3-legged Race: when business and technology run together* Prentice-Hall, Upper Saddle River, NJ, 2005.

Jensen, M., and Meckling, W. "Knowledge, Control, and Organizational Structure: Parts I and II," in: *Contract Economics,* L. Werin and H. Hijkander (eds.), Basil Blackwell, Cambridge, MA., 1992.

Kirsch, L.J. "Portfolios of Control Modes and IS Project Management," *Information Systems Research* (8:3) 1997, pp 215-239.

Kirsch, L.J., Sambamurthy, V., Ko, D.G., and Purvis, R.L. "Controlling information systems development projects: The view from the client," *Management Science* (48:4), Apr 2002, pp 484-498.

Leifer, R., and Mills, P.K. "An information processing approach for deciding upon control strategies and reducing control loss in emerging organizations.," *Journal of Management* (22) 1996, pp 113-137.

McAffee, A. "Mastering the Three Worlds of Information Technology," *Harvard Business Review* (84:11), November 2006, pp 141-149.

Nault, B. "Information technology and organization design: locating decisions and information.," *Management Science* (44:10) 1998, pp 1321-1335.

Nidumolu, S.R. "The Effect of Coordination and Uncertainty on Software Project Performance: Residual Performance Risk as an Intervening Variable," *Information System Research* (6:3) 1995, pp 191-219.

Ouchi, G.W., and Maguire, A. "Organizational Control: Two functions," *Administrative Science Quarterly* (20:4), December 1975, pp 559-569.

Perlow, L.A. "Boundary control: The social ordering of work and family time in a high-tech corporation," *Administrative Science Quarterly* (43:2), Jun 1998, pp 328-357.

Pfeffer, J., and Salancik, J. *The external control of organizations: A resource dependence perspective* Harper & Row, New York, 1978.

Robey, D., Smith, L.A., and Vijayasarathy, L.R. "Perceptions of conflict and success in information systems development projects," *Journal of Management Information Systems* (10:1) 1993, pp 123-139.

Savage, C.M. *Fifth Generation Management: Integrating Enterprises Through Human Networking* Butterworth-Heinemann (Digital Press), Boston, 1990.

Standish Group "Chaos Chronicles Ii," West Yarmouth, MA.

Walsham, G. "Cross cultural software production and use: A structurational analysis," *MIS Quarterly* (26:2) 2002, pp 359-380.

Williamson, O. "Hierarchical control and optimum firm size," *Journal of Political Economy* (75) 1967, pp 123-138.

Yukl, G.A., and Tracy, J.B. "Consequences of influence tactics used with subordinates, peers and boss," *Journal of Applied Psychology* (77:4) 1992, pp 525-535.