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# A Process View of Information System Benefits Management and Evaluation

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## Abstract

We report research in progress into the issue of Information Systems (IS) benefits management and evaluation, based upon a process view of system delivery. Several authors have proposed ways of monitoring and evaluating IS implementation, suggesting particular methodologies to achieve benefits. In this paper we summarize the advice of different authors and identify key processes in the management of IS implementation. This leads us to an analysis of the generic management processes of IS delivery. The resulting process model provides a framework for the analysis of actual organizational practices.

## Introduction

Despite the increasing investment in Information Technology (IT), and the strategic role played by information systems (IS) in today's organizations, understanding how to deliver IS successfully still remains one of the challenging issues facing the IS field (Brancheau and Wetherbe, 1990; Lucas, et al., 1990; Swanson, 1988). In particular, the evaluation and achievement of IS benefits remains problematical and has attracted the attention of several researchers. The benefits of IT investment fall into four broad classes (Wen et al., 1998), the purposes of which are to (1) increase productivity and operating process performance, (2) facilitate management support, (3) gain competitive advantage, and (4) provide a sound framework for business restructuring or transformation. Moreover, resolving implementation issues is important for at least four reasons, as highlighted in both empirical and descriptive research studies (Gottschalk, 1999):

1. The failure can cause lost opportunities, duplicated efforts, incompatible systems, and wasted resources.
2. The extent to which strategic IT planning meets its objectives is determined by implementation.
3. The lack of implementation leaves firms dissatisfied and unwilling to continue their IT planning.
4. The lack of implementation creates problems establishing and maintaining priorities in future strategic IT planning.

One way to view the managerial issues surrounding IS delivery is through the "IT Interaction Model" (Silver et al., 1995). In this view, the IS is embedded within an organizational environment consisting of the firm's strategy, existing business processes, IT infrastructure, and organizational structure and culture. Carrying out an IS project involves passing through four broadly defined stages, from project initiation, through construction, to introduction and adaptation. Once the IT is put to use, consequences and outcomes emerge that impact upon the organization and the IS itself. The IT Interaction Model is silent about the management processes that control the IS project but it is evident that the study of these processes will provide important insights to explain IS success or failure. These aspects are examined in the following section.

## Critical Management Processes

The critical management processes include financial reporting and control, planning, evaluation, project management, IT implementation, benefit management and project governance.

### *Financial Reporting and Control*

An IS project will flounder without adequate financial resources. Moreover, the process of financial control and cost allocation can enable or inhibit the particular stage of development that the project has reached (Applegate et al., 1999). For example, whether the IT function operates as a profit center, or an allocated or unallocated cost center will lead to different attitudes and motivations on the part of users and developers. No general financial control process is likely to be a perfect solution to a given organizational culture, to particular attitudes towards the IT function, or the current state of IT sophistication. Moreover, the financial control process is normally tied to a periodic reporting cycle, and this raises the issue of reporting non-financial performance measures as well.

### *Planning*

IS planning is a primary function of management, and organizations that develop formal IS plans are likely to be more successful than organizations that do not (Davis and Olson, 1985). IS planning is the process for integrating IS considerations into the corporate planning process,

linking the application of IT to business goals (Earl, 1989). Planning objectives include (Raghunathan and Raghunathan, 1994): enhancing management development; predicting future trends; improving short-term and long-term IT performance; improving decision making; avoiding problem areas; increasing user satisfaction; improving systems integration; and improving resource allocation.

### ***Evaluation of the IS***

The evaluation process searches for and makes explicit, quantitatively or qualitatively, the impacts of the IS project and the wider strategy from which it has come (Farbey et al., 1999). Like all the generic processes discussed here, evaluation consists of several sub-processes that may occur concurrently or at different points in time. Several authors have suggested that IT investments are not frequently or adequately evaluated (Saarinen and Wijnhoven, 1995; Ward et al., 1996). However, evaluation plays a key role in ensuring IS success (Remenyi et al., 1997) because it is necessary to evaluate any problem before it is possible to correct the problem. Evaluation helps to eradicate any difficulties that might have occurred, and highlights concerns over issues such as effectiveness measurement, cost justification, and cost containment (Niederman et al., 1991). Evaluation is difficult because of the delay between the delivery of an IS and its effect, and the multiple, often divergent, perspectives of evaluators. Therefore, evaluation should not simply be viewed as a set of tools and techniques, but as a process which must be understood in order to be effective (Symons and Walsham, 1988).

### ***Project Management***

The project management process supports and facilitates the delivery of systems, particularly those which are complex, subject to uncertainty, and under market, time and money pressures, or otherwise difficult to manage (Jaafari and Manivong, 1998). This includes the management and control of all decisions, activities and procedures to put IT to use, such as project scheduling, resource allocation, and the development methodology employed. Surveys of practitioners (e.g., Clegg et al., 1997) suggest that poor project management is most often perceived to be the reason why systems fail to meet their objectives.

### ***IT Implementation***

Implementation is a procedure directed by a manager to install planned change in an organization (Nutt, 1986). IT implementation begins with the very first idea for a system and the changes it will bring (Lucas, 1985). Normally, IT alone does not create change in an organization but it is the method of implementation and use of IT that determine the changes that will occur. This shows the need for process studies of IT implementation

(Markus and Robey, 1988). Implementation is complete when the system has been successfully integrated with the operations of the organization.

### ***Benefits Management***

Benefits management is the process of organizing and managing IS development so that the potential benefits arising from the use of IT are actually realized (Ward and Murray, 1997). A factor that differentiates successful from less successful organizations in their deployment of IT is the benefits management process (McGolpin and Ward, 1997). Active benefit management needs to be distinguished from evaluation because, although the evaluation process is important, it does not ensure that the desired benefits will be delivered (Ward and Griffiths, 1996). These benefits depend not only on IT but also upon the commitment and shared understanding of the many changes that have to be made to business processes, organizational structures, and so on. Few organizations adopt benefits management in support of their systems development or project management and investment appraisal approaches. The process begins by identifying potential benefits, which are sufficient for an investment justification to be produced, and it culminates with a review, after the project has been completed, to determine whether benefits were delivered. The effort expended on ensuring that the benefits anticipated are achieved is a wise investment, normally leading to constructive effects (Ward and Griffiths, 1996).

### ***Project Governance***

Governance is the process of directing, commanding and determining that the organization pursues its central purpose. In the context of IS projects, governance is centered on business requirements and outcomes, and serves to integrate the previous processes with business change. The characteristics of project governance can be summarized as (Pennington and Wheeler, 1998): vision – setting the framework of norms, values, priorities, general direction and aims; policy-making – agreeing strategic courses of action and defining subsequent change; leadership – motivating and championing actions to deliver the vision; ultimate accountability – commitment to the ownership of all business actions and outcomes.

These processes can be fused into an integrated model, as follows.

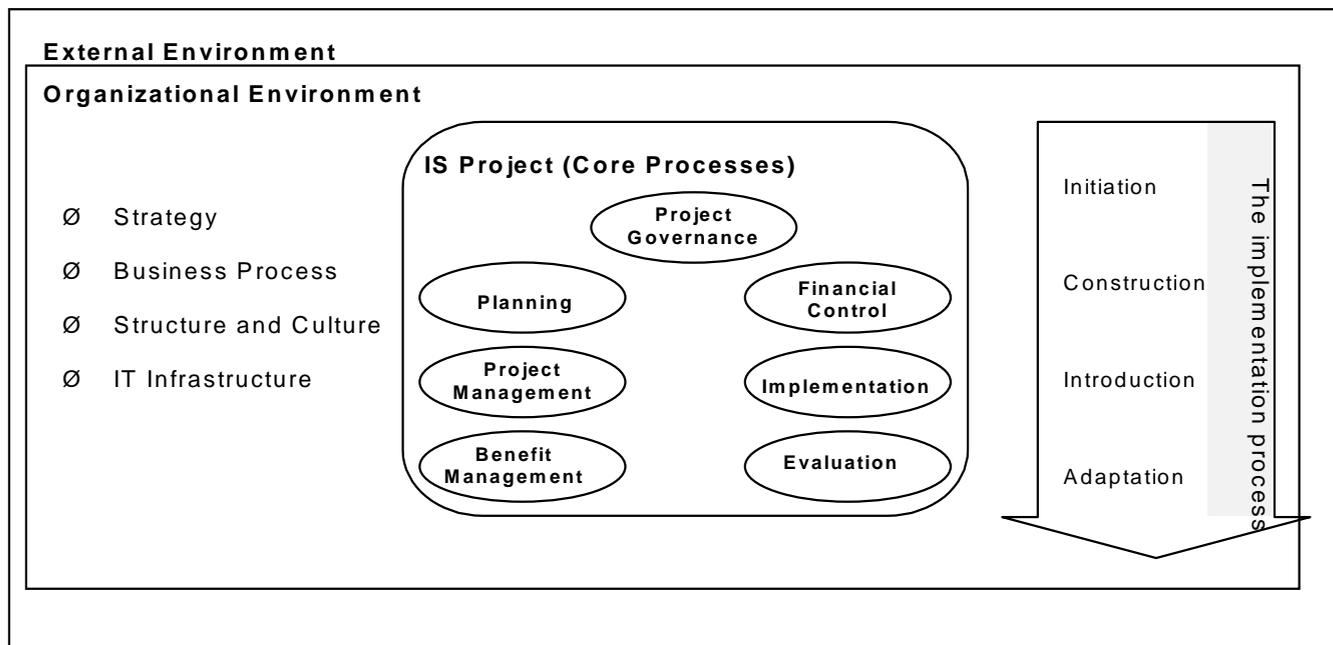
## **Proposed Conceptual Framework**

The proposed conceptual framework for examining IS evaluation and implementation is based on a process analysis representation. Figure 1 is an adaptation of the Information Technology Interaction Model (Silver et al., 1995), which shows the organizational and external environment of the IS project, but now includes the core processes that system development managers can influence directly. The possibility of changing the

organization or its environment may be largely out of the control of managers involved in IT projects, but a recognition of the interaction between the IS and these factors is, none the less, essential. This suggests the need for an overarching governance process that provides superordinate control of the other processes that have been discussed above.

central purpose. The synthesis of these processes leads to a tentative model that provides a generic framework for the investigation of actual organizational practices. In some organizations, certain processes, such as benefits management, may be absent, while others may have management processes that are highly effective. By using this process model to capture empirical evidence of current management behaviors, it is hoped to clarify and add to current knowledge and best practice.

Figurer 1. IS Delivery: A Proposed Process Model



## Conclusion

A number of authors have proposed ways of monitoring and evaluating IS implementation, suggesting particular methodologies to evaluate and achieve benefits. We have identified the key processes in the management of IS delivery. For example, financial control is the mechanism for funding the project but, if a standard financial control process is used for the IT function, this may be problematic in the context of a variety of IS projects in a changing corporate environment. The planning process involves identifying suitable IS projects to enable an organization to deploy its resources effectively to achieve its goals. Evaluation is the process of seeking out satisfactory or disappointing performance in order to improve the system. It is closely linked to benefits management, which is the active process of identifying and tracking outcomes that justify the cost of the project. Project management is the systematic approach that defines activities, roles and responsibilities, resource requirements, time scale, and key deliverables. Implementation is the operational level delivery of the IT systems, ideally leading to a seamless outcome without impeding current operations. Finally, governance is the process of ensuring that the organization pursues its

## References

- Applegate L. M., McFarlan, F. W., and McKenney, J. L. *Corporate Information Systems Management*, (5th. Ed.), Irwin/McGraw-Hill, Singapore, 1999.
- Brancheau, J. and Wetherbe, J. "The Adoption of Spreadsheet Software: Testing Innovation Diffusion in the Context of End-user Computing," *Information Systems Research* (1: 2), 1990, pp. 115-143.
- Clegg, C., Axtell, C., Damodaran, L., Farbey, B., Hull, R., Lloyd-Jones, R., Nicholls, J., Sell, R. and Tomlinson, C. "Information Technology: A Study of Performance and the Role of Human and Organizational Factors," *Ergonomics* (40: 9), 1997, pp. 851-871.
- Davis, G. and Olson, M. *Management Information Systems: Conceptual Foundations, Structure and Development*, McGraw-Hill, Inc.: New York, 1985.
- Earl, M. *Management Strategies for Information Technology*, Prentice Hall. London, 1989.

- Farbey, B., Land, F. and Targett, D. "Moving IS Evaluation Forward: Learning Themes and Research Issues," *Journal of Strategic Information Systems* (8: 2), 1999, pp. 189-207.
- Gottschalk, P. "Implementation of Formal Plans: The Case of Information Technology Strategy," *Long Range Planning* (32: 2), 1999, pp. 362- 372.
- Jaafari, A and Manivong, K. "Towards a Smart Project Management Information System," *International Journal of Project Management* (16: 4), 1998, pp. 249-265.
- Lucas, H. *The Analysis, Design, and Implementation of Information Systems* (3rd Ed.), McGraw-Hill: Singapore, 1985.
- Lucas, H. Jr., Ginzberg, M. and Schultz, R. *Information Systems Implementation: Testing a Structural Model*, Ablex Publishing Corporation, Norwood, NJ, 1990.
- Markus, M. and Robey, D. "Information Technology and Organizational Change: Causal Structure in Theory and Research," *Management Science* (15: 5), 1988, pp. 583-599.
- McGolpin, P. and Ward, J. "Factors Influencing the Success of Strategic Information Systems," in *Information Systems: An Emerging Discipline*, Mingers, J. & Stowell, F. (Eds.), McGraw-Hill, Maidenhead, 1997, chapter 11.
- Niederman F., Brancheau, J. and Wetherbe, J. "Information systems management issues for the 1990's," *MIS Quarterly* (15: 4), 1991, pp. 475- 499.
- Nutt, P. "Tactics of Implementation," *Academy of Management Journal* (29: 2), 1986, pp. 230-261.
- Penington, D. and Wheeler, F. P. "The Role of Governance in IT Projects: Integrating the Management of IT Benefits". Fifth European Conference on The Evaluation of Information Technology, A. Brown, D. Remenyi, (Eds. ) Reading University, 1998, pp. 25-34.
- Raghunathan, B. and Raghunathan, T. "Adaptation of a Planning Systems Success Model to Information Systems Planning," *Information Systems Research* (5: 3), 1994, pp. 326-340.
- Remenyi, D., Sherwood-Smith, M. and White, T. *Achieving Maximum Value from Information Systems: A Process Approach*, Wiley, Chichester, 1997.
- Saarinen, T. and Wijnhoven, F. "Organizational Learning and Evaluation of Information Systems," *Proceedings of 1995 Information Resources Management Association International Conference*, Atlanta GA, 1995, pp. 439-447.
- Silver, M. , Markus, M. and Beath, C. "The information technology interaction model: A foundation for the MBA core course," *MIS Quarterly* (19: 3) 1995, pp. 361- 390.
- Swanson, E. *Information Systems Implementation*, Irwin, Homewood, IL, USA. 1988.
- Symons, V. and Walsham, G. "The Evaluation of Information Systems: A Critique," *Journal of Applied Systems Analysis* (15: 2), 1988, pp. 119-132.
- Ward, J., Taylor, P. and Bond, P. "Evaluation and Realisation of IS/IT benefits: An Empirical Study of Current Practice," *European Journal of Information Systems* (4: 4), 1996, pp. 214- 225.
- Ward, J. and Griffiths, P. *Strategic Planning for Information Systems*, Wiley, Chichester, 1996.
- Ward, J. and Murray, P. *Benefits Management: Best Practice Guidelines*. Working Paper ISRC-BM97016, Information Systems Research Centre, Cranfield School of Management, Cranfield, 1997.
- Wen, H., Yen, D. and Lin, B. "Methods for Measuring Information Technology Investment Payoff," *Human Systems Management* (17: 2), 1998, pp. 145-153.