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Information Systems Evaluation Mini-track Introduction

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ABSTRACT

This is the sixth year of the AMCIS Information Systems Evaluation mini-track and once again a significant number of papers have been submitted. In this year's introduction the track chairs address two areas of continuing need for evaluation research. First there is the question of understanding the full range of mechanisms that lead to systems failure – that is systems that do not meet expectations. Identification, evaluation and management of these risks is an important area with room for further work. Second there is the rapid and pragmatic growth of systems in the public (e-Government) sector. The different notions of value within this area demand reappraisal and revision of systems evaluation methods. The track chairs also introduce the 12 papers selected for this year's mini-track. They cover issues ranging from conventional ex-ante and ex-post project evaluation to the assessment of modelling languages and organisational readiness.

Keywords

Business Value, IS Evaluation, IS Failure, Risk, eGovernment.

INTRODUCTION

Information Systems Evaluation continues to be a popular topic for investigation and in its sixth year this mini track is the largest of the non-SIG sponsored tracks. After filtering the abstracts we received some 23 papers for review and this year we have 4 sessions (12 papers), all presenting interesting and informative pieces of research. As in previous years we have prepared an introduction to the track both to introduce some of our own concerns about the area and to guide you through the papers to be presented.

Evaluation, Risk and Information Systems Failure

It is still common to see articles and theses beginning with claims that the vast majority of Information Systems (IS) fail. This, of course, begs the question of what constitutes IS failure. Although definitions vary within the literature the common thread seems to be that a project fails if, in some way, it does not meet the expectations of its users or sponsors (Smith and Keil, 2003). These expectations may be hard measurable targets like implementation costs, delivery deadlines or functional requirements. Alternatively they may be soft targets like increased business volumes, improved product quality or more efficient working practices.

The whole point of IS Evaluation is to predict (ex ante) or assess (ex post) how well an IS project meets the various expectations of stakeholders. To view evaluation in simple cash or cost-benefit terms only addresses one particular area of expectation when engaging in an IS project. Although a cash return on investment is necessary for a business operation to remain healthy a positive result cannot be taken as an indication the project will succeed (or is succeeding) in meeting its stakeholders' expectations. Yet despite this understanding at least on major drug company still makes the major measure of

IS success the achievement a positive cash return within the first year. While they accept a long-term investment view in drug development, they cannot take such a view of IS projects.

An almost inevitable consequence of updating the IS environment is to produce changes in working practices. These changes may be by design or they may be unforeseen consequences of an IS project. This adds to the problem by creating significant knock on effects which can end up being more significant than the immediate change in the IS. Finally there is the effect of uncertainty. Given the complexity of all but the most trivial IS, many events and changes over the life of the project have the potential to overturn its ability to meet some expectation or other. Arguably IS projects are thus inherently risky and evaluation methods play an important role both in assessing the level of risk and in monitoring for early warning of unwanted effects.

Given the risks and the wide range of expectations that can be placed upon an IS project, the surprise is perhaps that some succeed in meeting all the different stakeholders' expectations rather than the rate of 'failure'. IS Evaluation techniques and strategies must, therefore, be prepared to address a wide range of issues both before and after the start of a project. There are certainly many potential avenues of investigation still to be explored.

E-Government Evaluation Issues

Last year we commented on the emergence of public sector evaluation issues, particularly within the European arena. Although central government has been a major user of Information Technology (IT) for decades, local and regional government has only recently adopted IT as a pervasive networked technology to support all its activities. In this respect the parts of the public sector more akin to small and medium scale enterprises (SMEs) but they have tended to be dragged rapidly into the information age.

Political pressures at both national and international level have driven rapid implementation programmes with the aim of achieving a modern Information Society. The deployment of ICT within local and regional agencies is seen as an important element whereby the public sector is leading by example in the adoption of the technology (Cabinet Office, 2000; DTLR, 2002; EU, 2003). Given the availability of central government funds and the desire to deliver quickly, system design has been driven to make many decisions for short-term pragmatic reasons. Innovation has tended to be sporadic and piecemeal.

The consequence of this is that few deep insights into the potential of e-Government have emerged from these local and regional government bodies - that which has been identified as worthy of dissemination is difficult to interpret and apply. Where there has been limited research funding, for example from the UK Office of the Deputy Prime Minister, the projects have remained developmentally based. E-Government has merely provided a new outward looking face to many of its stakeholders whether they are the citizen, service-chain or other Governing authorities.

Both the UK and the EU will attain significant targets for coverage of public authority function in 2005 making this a particularly opportune moment to ask questions about the value tax payers are receiving for these investments. However, the expected revolution in the process of governance has simply not occurred.

The public sector has its own distinct concepts of value and ethical practice (Bannister and Lalor, 2001) that mitigate against simply applying the evaluation methods accepted within private sector organisations. As evaluators we need to ask fundamental questions about the nature of value, best practice and efficiency or effectiveness in this context. A recent UK government initiative (Gershon, 2004) defined efficiency within the public sector as making best use of the resources available for the provision of public services. Instead of simply seeking lower costs Gershon defines several different forms of efficiency gains, including such non-cashable gains as enhanced quality of service, for the same level of inputs, releasing resources to the front line, and "allocative efficiency"[1].

The evaluation of e-Government projects, from all angles, can be expected to be an area that demands our attention for some time to come.

THE 2005 PAPERS

Turning to the four sessions we have this year, the 12 selected papers provide an interesting programme for this year's mini-track. They cover issues ranging from conventional ex-ante and ex-post project evaluation to the assessment of modelling languages and organisational readiness.

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[1] Changing the balance between different outputs aimed at delivering a similar overall objective in a way that achieves a greater overall output for the same inputs.

Session 1

One of the critical problems in ex-anti project evaluation or selection is the assessment of potential "Business Value". Although this benefit to the organisation is often the key reason for embarking IS projects it is often only an indirect consequence of the new process making it subjective and difficult to quantify. The track begins with a paper from Elizabeth Frisk, and Nancy Roztocki[2] looking at how much corporate decision-makers consider stakeholder interests when they are trying to assess the potential business value of a project. Based on a survey of 70 Swedish companies they find support for the conventional wisdom that consideration of stakeholder interests is important in the evaluation of feasibility. However, the impact is not a direct one. Frisk and Roztocki find that the impact of different level of stakeholder consideration is on the choice of the evaluation methods used. Also, since there is not a single current IT evaluation method addressing all stakeholders' interests, applying a portfolio of methods is also necessary to generate a positive outcome.

Investment in Information and Communications Technology (ICT) often impacts the business process chain at several points making the overall assessment of Business Value complex. The second paper from Zaheeruddin Asif and David Schuff[3] examines the socio-technological impact of IS projects and proposes a holistic model of information technology cost that integrates this with process perspectives. They hypothesise that net value is reduced by "social disruption" and that necessity for social contact, dependence on tacit knowledge and forced new social structures all generate such disruption. This research in progress is now at the stage of empirical testing through a survey of IT executives.

In third paper for this session, Ajit Appari and Michel Benaroch[4] examine the risk-return relationship for IT investments and attempt to quantify it so as that executives can manage IT investments more effectively. They propose a generic risk-return model based on arbitrage pricing theory and proceed to an empirical demonstration of the model as proof of concept. Given the wide range of potential risks, this demonstration is confine to market risk factors, which are independent of the context or firm and can be estimated from publicly available data.

Session 2

Ronaldo Zwicker and his colleagues open the Saturday morning session with a study[5] that examines the whole portfolio of IT applications within an organisation. To this end they consider the level of informatization (which we might also call IT penetration or integration) to be an aggregate of the levels of IT assets, usage, management, and impact within an organisation. This model is used with an in depth survey of some 830 Brazilian industrial companies to assess relationships between level of informatization and factors, such as company size and process complexity. The survey confirmed that increased company size and process complexity was associated with higher levels of informatization. However, this was not necessarily associated with increased IT spending and the use sophisticated technology. There is evidenced that smaller companies may benefit by investing in effective use rather than in sophistication.

Robyn Raschke and Julie Smith's paper[6] examines another factor in the ability of an organisation to make effective use of ICT. Ross Ashby's Law of Requisite Variety (Ashby, 1956) tells us that in a dynamic environment, a firm's ability to respond and adapt is dependent on the agility of its business processes. This paper offers a definition of operational agility and examines the potential of IT to contribute to (or hinder) that process agility. As research in progress the next step is to conduct a field study to identify variations in processes and to deepen or understanding of agile process adoption.

In the next paper we return to the theme of assessing business value. Radhika Jain and Balasubramaniam Ramesh[7] examine the balanced scorecard approach put forth by Kaplan and Norton (1992) and propose using it as a pivot to negotiate the strategic value of a proposed business processes changes and to gain support from the various stakeholders. This approach is intended to help managers identify potential improvements and gain support for their implementation. Fieldwork to assess this framework is currently in progress and Jain and Ramesh anticipate the production of a negotiation support tool that can be used by IT managers at some future date.

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[2] The Effect of Stakeholder Consideration in IT Investment Evaluation on Business Value *(Friday 2:30)*.

[3] A process-based framework for assessing IT value *(Friday 2:30)*.

[4] A Viable Approach to Measuring the Risk-Return Relationship of IT Investments *(Friday 2:30)*.

[5] Measuring the Informatization Level of Businesses: A study of Brazilian industrial companies *(Saturday 9:30)*.

[6] Business Process Agility *(Saturday 9:30)*.

[7] Negotiating Strategic Business Value of BPM Systems: A Balanced Scorecard Approach *(Saturday 9:30)*.

Session 3

Our ability to evaluate appropriately and accurately depends upon the way we model an IS project and its context. Jan Recker's paper[8] opens the next session by looking at the issue of choosing an IS modelling language. This paper considers the potential to select one where the underlying assumptions about the nature of knowledge are at variance with those defining the problem context. IS researchers (and practioners) need to be aware that epistemological assumptions not only determine artefact creation but also artefact evaluation. If the philosophical stance is unclear or inconsistent between the development and evaluation phases of a project then the resultant findings may be invalid and the value of the work undermined.

Ahmad Ghoneim and Zahir Irani's paper looks at the impact of ICT through a study of the indirect costs associated with IS investments[9]. This paper presents an exploratory study that identifies several indirect cost factors relating to management and staff resources, management and employee time, and organizational restructuring. The study shows that some costs actually occurred in about 95% of projects but they were only anticipated by fewer than half of the respondents. The paper analyses these results more deeply and compares these reported costs with cost taxonomies found in the academic literature. This suggests that there is a significant misalignment between the academic and practitioner models of indirect ICT project costs.

The third paper in this session, from Cesar Munoz[10], looks at a particular type of computing project. Unlike a traditional in-house IS service, utility computing, or Application Service Provision (ASP), aims to provide software and network applications on a pay-as-you-go basis, like telephone, water and energy services. This paradigm is particularly important in the SME sector where the resources for major in-house investment are not available. However, the delivery and financing structure of such services is radically different and new methods are needed to assess business value and make a strategic selection of the utility service provider. Munoz proposes an extension of the real option valuation model using a hybrid of the balanced scorecard and the Analytic Hierarchy Process (Saaty, 1990) to quantify the "intangibles" or qualitative aspects of such a project.

Session 4

Rather than attempting to evaluate the outcome of a single project the paper from Ali Reza Montazemi and John Siam[11] examines the results of investment in a specific business area. Based on interviews with the senior managers and traders in several financial institutions they produce an overview of ICT support for traders in fixed-income trade markets. These markets differ from the centralised "auction" style of trading in the stock market because "bargaining" or "negotiation" plays an important part in striking a deal. At present only about 5% of trading is conducted electronically. Montazemi and Siam conclude that this low penetration arises from a failure to recognise traders as knowledge workers and develop trading systems that enhance their competence. Knowledge work relies heavily on both informal and formal communication and failure to appreciate this can disrupt rather than enhance working practices (Hayman and Elliman, 2000).

Such problems of fit between the necessary elements of working practice and the technology lead us into consideration of the readiness of an organisation to accept new technology. History has show us time and time again that invention can only become innovation if idea has found its time and place. The Technology Acceptance Model (TAM: Davis, 1989) is widely accepted as model for assessing the ICT adoption process. In their paper, Edward Mahinda and Brian Whitworth[12] examine the need to extend TAM to include quality factors – like security, connectivity, flexibility, extendibility, privacy, and reliability – as other relevant indicators. In an experiment, with graduate students role-playing senior IT managers, they found that security and reliability were also important elements in adoption decisions.

The introduction above discussed notions of IS failure and risk in relation to the many and varied expectations of stakeholders. The last paper of the track returns to this theme. Sorin Gudea and Terry Ryan's paper[13] tackles one particular, and implicit expectation, namely that stakeholders expect IS projects to be a success. They argue that this almost universal expectation of IS success is not necessarily found in other business areas and ask why it has come to be accepted in our

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[8] Evaluation of Conceptual Modelling Languages: An Epistemological Discussion *(Saturday 11:30)*.

[9] An Exploratory Study of IT Indirect Costs Associated with IT Projects in the UK *(Saturday 11:30)*.

[10] A Framework for Valuation and Selection of Utility Computing Projects *(Saturday 11:30)*.

[11] State of Information Technology Support for Traders in Fixed-Income Markets *(Saturday2:30)*.

[12] The Web of System Performance: Extending the TAM Model *(Saturday2:30)*.

[13] Why Do Organizations Expect Every Information Systems Project to Be Successful? *(Saturday 2:30)*.

domain. Working with a sample of project managers, accountants, executives and IS staff a series of interview transcripts exploring this question were obtained and analysed. As to be expected the organisation's goal of a return on all monies spent plays a part but from all the factors that emerged it was those that related to people's inner motivation and needs to strive for success that stood out. Gudea and Ryan note that all respondents were part of the American culture that stresses individualist and personal goals. It will be interesting to see whether further research into cultural and national differences identifies other driving factors.

CONCLUSION

It is clear that evaluation, as a discipline, continues to face diversity of contexts as it tries to answer a wide range of managerial and strategic questions. In the contributions this year there are a significant number of papers attempting to grapple with the notion of the Business Value of an ICT investment. Many of these are seeking to move away from direct fiscal measures and develop a more appropriate notion of value – an approach that accords with our concerns to understand, and mitigate against the risk of IS project failure. Refining the notion of value is also an important issue in the growing area of e-Government evaluation.

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