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How Are Public Sector Organizations Assessing their IT Investments and Benefits - An Understanding of Issues For Benchmarking

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Abstract

Despite the growing IT spending by public sector organizations, evaluation of IT investments still presents a major problem for these organizations. A survey of the top 500 Australian public sector organizations and the in-depth case studies of three Australian public sector organizations were conducted. The main purpose of the study was to examine the key issues of IT investment evaluation and benefits realization in public sector organizations. The results indicated that effective deployment of appropriate IT investment evaluation methodology and benefits realization methodology are critical to the successful outcomes for IT project. A number of key IT evaluation issues were also identified: user satisfaction, top management support, change management, and user involvement.

Keywords: public sector, IT investment evaluation, IT benefits realization.

1. Introduction

Worldwide public sector IT spending had exceeded US$138 billion in 2006, representing 12.2% of overall IT spending [15]. Public sector IT spending is likely to grow to US$92 billion in 2010 in the US alone [32]. However, the resulting benefits from the huge IT spending are still not clearly understood by public sector organizations [12]. This is often due to the poor IT investment evaluation process implemented by these public sector organizations [24]. In other words, there is a lack of understanding of the impact of the proper IT investment evaluation processes of IT projects in the public sector organizations. The IT investment evaluation is an ongoing process which seeks to identify best practice and use it as

a basis for evaluating public sector IT project performance in order to set up clear goals and identify areas for improvement [12]. Indeed, most organizations do not have formal process to evaluate their IT projects and, instead, relied on limited cost analysis associated with their decision [38]. For example, without undertaking proper IT investment evaluation processes, organizations are at the risk of failing to establish clear IT project goals and design. Therefore, research in the public sector organizations is becoming critical, especially in how these organizations evaluate their IT projects and ensure that benefits expected from these projects are eventually delivered.

The main purpose of this study is to identify the key IT evaluation issues that are critical in implementation of IT projects by public sector organizations. A key contribution of the article is to identify and examine evaluation issues and other key factors faced by public sector organizations undertaking IT projects. The key issues presented in this article are of interest to senior public sector executives concerned with making decisions about IT investments and realizing IT benefits.

2.   Literature Review

2.1   IT investment evaluation and benefits realization

Evaluation of IT investment has been the subject of considerable debate by many academics and practitioners [40]. Many research studies have indicated that IT spending is directly related to organizational performance (eg. [14]). In addition, the complex role and scope of IT investment decision-making process are often the major constraints and difficulties in IT investment evaluation and benefits realization processes [22]. A lot of private sector IT projects fail to deliver what is expected of them because most organizations focus on implementing the technology rather than the adoption of the tools necessary to help to track and measure the IT projects [13]. For example, a study by Sohal and Ng [37] found that in large Australian organizations the potential of IT has not been utilized to meet the competitive challenges due to inadequate and inappropriate evaluation of the proposed IT projects. Moreover, they have reported that 59% of the responding organizations did not determine whether expected benefits were being realized.

A lot of public sector IT project failures have been reported. One of the major reasons for IT project failure is that most organizations fail to properly monitor and evaluate IT projects [31]. It should be understood that IT investment evaluation in the public sector is highly

complex, due in part to legal requirements that govern organizational processes [19], but also because it is a very politically sensitive process with many stakeholders holding very different and often conflicting perspectives [1]. While IT investment evaluation process in the private sector is generally seen as something normal, there are special characteristics of the public sector which makes it inappropriate or extremely difficult [4]. Sullivan and Ngwenyama [41] have found that some public sector guidelines do not effectively address IT investment performance monitoring and evaluation. According to Jones and Hughes [16], IT investment evaluation techniques are not widely used in public sector organizations. However, according to Forrester Research, only 55% of public sector organizations have intended to increase their efforts in evaluating their IT investments [15]. Hence, the inability of many organizations to measure and apply IT both, inter-and-intra organizationally is resulting in missed opportunities and a lack of business value.

Organizations that make extensive use of IS/IT evaluation methodologies or measures have higher perceived payoffs from IS/IT [42]. Misra [29] found that organizations need to choose the evaluation methodologies which: (a) lead to the desired behavior by both outsourcers and outsourcing contractors; (b) are within the outsourcing contractors' control; (c) can be easily measured by both the outsourcers and outsourcing contractors; (d) can be evaluated by objective criteria rather than subjective criteria; and (e) can be aligned with business objectives. It should be noted that there are many methodologies that can help to evaluate IS/IT investments. Andresen et al. [2] list more than 30 IS/IT investment evaluation methodologies, including Return on Management (ROM) [39], Information Economics Approach [30], and Options Theory [8]. However, many of these methodologies are difficult and costly for organizations to implement and relatively little research has been carried out to establish how widespread these methodologies are and what perceived value they bring.

Despite the importance of IT investment evaluation processes, they are inadequate in terms of ensuring that the benefits identified and expected by organizations are eventually realized and delivered [21]. The essence of benefits realization is to organize and manage so that the potential benefits arising from the use of IT can actually be realized [44]. Keen [18] and Lin et al. [21] have indicated that the identification and measurement of benefits is the most difficult issue in evaluating IT. According to Ward et al. [44], very few organizations have a benefits realization approach. Much attention is paid to ways of justifying investments, with little effort being expended to ensuring that the benefits expected are realized. For example, a survey by Forrester Research indicated that only 51% of public sector

organizations had considered making some serious efforts in realizing the expected benefits of their IT investments [15]. As the result, there is a massive imbalance between IT investment and benefits derived from that investment [25].

While the search for benefit identification can contribute to the success of an IT investment, organizations have often found it difficult to evaluate them and as a result tend to use notional arbitrary values for assessing benefits [6]. To help managers and decision-makers with the IT benefits realization process, a number of frameworks have been developed to assist them in realizing benefits from IT investments (e.g. Active Benefit Realization (ABR) [34], Cranfield Process Model of Benefits Management [44], DMR's Benefit Realization Model [43], and Model of Benefits Identification [6]).

2.2 Public vs. private sector organizations

Public sector organizations, unlike private sector organizations, are not designed to be efficient, but rather to be fair, open, objective, and accountable as they have been constrained by the legislations [7]. Public sector organizations have to meet multiple, often conflicting goals such as providing better service with reduced budgets and staff [7]. They may also be forced to provide services required by law, without consideration of economic and strategic aspects [11]. In contrast, the motivation for utilizing IT by private sector organization is internally generated and it forms part of the organization's strategy [5].

In addition, although both the public and private sector organizations face the similar problem of limited ability to use freed capacity for introducing newly developed products or services, the private sector organizations have an overriding goal of profit maximization [7]. While the private sector organizations are free to define what it means to achieve the best value for money for themselves, the public sector organizations, subject to external audit, often have to operate within a tight definition of best value that relates to economy, efficiency, and effectiveness [5]. Moreover, it has been claimed that public sector decision-makers are motivated by self-interest through a desire for power as well as broader interests of maintaining loyalty to work groups and agencies, with the desire to align public sector agencies with the ideology of the government providing the funding [47].

However, it has been widely reported that many IT program often has been plagued with spectacular failures and problems [41]. For example, it has been reported that the huge savings promised from the massive IT projects by the Australian governments failed to

materialize [33] [26]. The problems included impossible tendering timetables, dubious savings claims, deep dissatisfaction, non-delivery of service levels, allegations of conflicts of interest, and failure to properly monitor and evaluate the contracts [35][26]. Similar problems have occurred in the public sector IT projects in other countries [19][41]. One of the most often cited reasons for the spectacular failure in Australia and elsewhere was that most public sector organizations failed to properly monitor and evaluate their IT projects [31][41][45].

3. Research Design and Methodology

The main objective of this research was to address issues relating to how IT investment evaluation issues and other key factors faced by public sector organizations undertaking IT projects can affect the delivery of benefits. This needed both: (a) a broad overview of such environments obtained from a large number of organizations; and (b) an in-depth understanding of these issues obtained from a smaller number of organizations.

Therefore, this study adopts a pluralist research approach by using survey and case study methods. Eisenhardt [9] argues that multiple data collection methods and sources provide stronger substantiation of constructs and hypotheses, strengthening convergence of results. Mingers [28] indicates that "research results will be richer and more reliable if different research methods, preferably from different (existing) paradigms are routinely combined together". Thus, we believe that applying this mixed-method (and paradigm) approach to this study is able to explore these issues extensively and intensively.

This study started with a survey which gave an overview of how public sector organizations evaluated their IT project and benefits. Then, in-depth case studies were conducted to examine the broader issues of IT investment evaluation and benefit in three public sector organizations. The two methodologies are introduced below.

- **Survey**

The questionnaire addressed various aspects of IT investments evaluation and benefits realization processes and practices in Australian public sector organizations. The questionnaire was based on instruments used previously by Lin et al. [23] and Ward et al. [44] and their validity and reliability were derived from their acceptance in the literature. The main purpose of this preliminary survey was to obtain an overview of how public sector organizations evaluated their IT project and benefits. As a result, the six questions which were

considered the most important to achieve this purpose were extracted from the questionnaire and were shown in Table 1. Only simple descriptive analysis was applied in this preliminary survey and some of the statistical figures (i.e mean, standard deviation, Cronbach's coefficient alpha) were not considered to be crucial for the reliability and validity of the questionnaire.

Respondents were asked to indicate their agreement on a 5-point scale (1 for strongly disagree and 5 for strongly agree) with statements concerning six main questions (see Table 1). A simple descriptive analysis was then used to analyze the results which were discussed in section 4.1.

Prior to determining the sample size for the survey, a pilot survey of IT managers and CIOs of 10 public sector organizations was conducted. Some valuable feedback was received and the questionnaire was slightly adjusted for the main survey. For the main survey, questionnaires (accompanied by a covering letter to explain briefly the purpose and aim of the survey and a reply-paid return envelope) were sent to CIOs and IT managers of 400 Australian organizations randomly selected from the top 500 Australian public sector organizations (obtained from the Dun and Bradstreet mailing list). Two follow-up mailings or phone calls were carried out to increase the response rate. A total of 83 complete and usable responses were obtained, giving an overall response rate of 20.8%. The potential problems inherent in a survey make the analysis of nonrespondents a crucial exercise in order to avoid non-response bias [17]. One of the key assumptions in such an approach is that later respondents to a survey are more similar to nonrespondents than are earlier respondents [3]. A chi-square analysis was performed to compare late returns with earlier responses in order to check for non-response bias [3]. No significant differences were detected between the two samples on total number of employees.

Table 1 Survey questionnaire items

No	Items
1	Your organization has a formal IT investment evaluation methodology.
2	Your organization has a formal IT benefits realization methodology.
3	Your IT investment evaluation methodology is effective in ensuring successful information systems in your organization.
4	Your IT benefits realization methodology is effective in ensuring successful information systems in your organization.
5	You believe that your organization's current IT benefits realization process identifies all available benefits for an IT project.
6	You believe that your organization's current IT benefits realization process overstates the benefits in order to get approval.

● **Case Study**

In-depth case studies were then conducted to examine the broader issues of IT investment evaluation in three Australian public sector organizations involved in IT projects. The interviews focused on these organizations' IT contracts, the contractual relationship between these organizations and their contractors, IT investment evaluation methodology deployed, IT benefits realization methodology adopted, and the management of the IT contract transition period. Participants interviewed were from different levels of management to provide different perspectives on these issues. Each interview lasted approximately between 60 to 90 minutes. Most of the interviews were taped and the transcripts were sent to the participants for validation. Only five participants had minor amendments to their transcripts. In cases where there were differences in opinion between participants, either follow-up interviews were conducted or emails were sent to clarify their positions. In some cases, further explanation from the participants to improve the mapping of the responses to the research constructs [27].

The case study approach allowed the researchers to interview a range of IT specialists in each organization, observing practice and analyzing company reports. The findings from these information gathering approaches were analyzed iteratively by the researchers on an individual level, differences reconciled and then a judgment made on each of the major issues. Questions relating to a particular research theme, for example, IT investment evaluation methodology, were examined as a cluster. Divergent views within the same organization were assessed in terms of the relative strength of the perspective. This was done as a form of in-case analysis and to develop general explanations and interpretations [9]. The Cohen's Kappa statistic was used to analyze the level of correspondence between the researchers and there was a high degree of reliability between the researchers in relation to the interpretation (0.92). This is well above the 61% level suggested for a substantial strength of agreement [10]. The analysis of the case study results was also conducted in a cyclical manner and the results were checked by co-researchers and other IT evaluation experts [20]. The external experts were asked to trace the logical flow of the research study, research questions, case findings and analysis and identification of constructs and thereby identifying any gaps in the chain of evidence [46]. These steps enhance the construct validity, reliability and overall quality of the research.

The three cases were deliberately chosen in order to focus efforts on theoretically useful cases (following the theoretical, non-random sampling strategy by Eisenhardt [9]) and introduced below:

Organization A

The first organization (hereafter referred to as OrgA) was responsible for providing research and learning services to the community. The organization had undergone a major recast of its strategic directions recently and had invested heavily in a number of major of IT projects. It had not adopted any of the methodologies to assess its IT projects, which simply implies it did not have any expertise to adopt any of these methodologies.

Organization B

The second organization (hereafter referred to as OrgB) was responsible for buying goods, services and works for other government departments and it acted as a central contact point for government departments and contractors on contracting matters. It was a slightly more mature organization in terms of IT investment evaluation. Although it had failed to use any IT benefits realization methodology, it had adopted an informal IT investment evaluation methodology to assess most of its IT projects.

Organization C

The third organization (hereafter referred to as OrgC) was responsible for providing an important public service. Its main core functions include assisting members of the community in terms of emergency and need, emergency management coordination, and regulatory and information services. It had adopted both an informal IT investment evaluation methodology and a formal IT benefits realization methodology to assess all of its major IT projects.

- *Participants*

In total, 28 participants were interviewed, including some from their major external IT contractors. For OrgA, 8 key participants were interviewed and these included its CIO (responsible for carrying out IT investment decision), IT manager (responsible for managing all IT projects and contracts), and 6 project managers (responsible for coordinating IT projects and contracts). For OrgB, 12 key participants were interviewed and these included its CEO (responsible for making IT investment decision), CIO (responsible for carrying out IT investment decision), IT manager (responsible for managing all IT projects and contracts), 3 senior contract managers (responsible for implementing different IT contracts), 2 project managers (responsible for coordinating IT projects and contracts), and 4 senior contract coordinators and managers from its 3 major IT contractors. For OrgC, 8 key participants were interviewed and these included its CIO and Deputy CIO (responsible for carrying out IT

investment decision), IT manager (responsible for managing all IT projects and contracts), 2 senior contract managers (responsible for implementing major IT contracts), 1 project manager (responsible for coordinating IT projects and contracts), and 2 senior contract coordinators and managers from its major IT contractors. The data collection at these three cases continued until a point of theoretical saturation, which is when the value of an additional interview was considered to be negligible [9].

4. Findings

4.1 Survey Findings

Overall, the majority of the respondents were CIOs (87%) and IS/IT managers (9%). 16% of the responding organizations had more than 1000 employees, 25% had between 700 and 1000 employees, 35% had 400 and 700 employees, and 24% had between 100 and 400 employees. 67% of public sector organizations had used IT investment evaluation methodology while only 45% had used IT benefits realization methodology. For the effective use of IT investment evaluation methodology and benefits realization methodology, the percentage is comparatively lower (45% and 35% individually). This presents the fact that they had not used IT investment evaluation methodology and benefits realization methodology effectively although they had used them. This could be caused by the lack of knowledge of applying these methodologies. But an interesting phenomenon is the high percentage of "Confidence in benefits realization" and "Overstatement of benefits for approval". 78% of respondents express that they were confident in benefits realization while 70% admitted they might overstate the benefits.

In summary, IT investment evaluation methodology and benefits realization methodology are not popular and are not effectively used by Australian public sector organizations. Their high level of confidence in benefits realization and overstatement of benefits for approval could due to the bureaucracy and the legislative requirements of Australian government. While the survey was useful in obtaining an overview of the IT practices of the Australian public sector organizations in IT investment evaluation methodology and benefits realization methodology, case studies were needed to investigate detailed issues such as the ways of they deal with some other IT investment issues with their current evaluation and benefits realization processes and practices.

Table 2 Summary of survey findings

	N=83
Use of IT investment evaluation methodology	67%
Use of IT benefits realization methodology	45%
Effective use of IT investment evaluation methodology	45%
Effective use of IT benefits realization methodology	35%
Confidence in benefits realization	78%
Overstatement of benefits for approval	70%

4.2 Case Study Findings

A number of issues emerged from the analysis of the text data and some of the key issues surrounding the use of methodologies and their effect on IS/IT outsourcing contracts are presented below in some detail. Related information from the survey has been integrated into the discussion to further support the findings.

- **Adoption of the IT investment evaluation methodology or process**

None of the three case study organizations had adopted a formal IT investment evaluation methodology to assess their IT investments. However, both OrgB and OrgC had used informal IT investment evaluation methodologies or processes to ensure that their IT projects were evaluated. For example, a contract manager from OrgC said: "*...... there wasn't a formal structured documented methodology. It was developed up. And the approach is to be used for evaluation; the criteria to be used, the weighting etc. were all developed up and tailored for each of the contract.*" Documents such as service level agreements (SLAs), monthly reports, standard contract management, and public sector guidelines provided by organizations were stated by most participants as the IT investment evaluation methodology or process used for evaluating their IT projects. Most of these measurements were related to the contract conditions specified in the SLAs within each project but no formal IT investment evaluation methodology, process, or technique (e.g. Information Economics) was mentioned. The only exception was OrgA which failed to adopt any IT investment evaluation methodology or process (formal or informal). Some of the OrgA's major IT projects had to be scraped in the end because it could not tell whether the projects had produced any benefits to

the organization. These projects had never been evaluated throughout the life of the project development cycle. For example, the IT manager from the OrgA said: "*...... We did not evaluate any of these projects before and they had to be scraped....... We did not think it was that important to have some sort of evaluation methodologies in place when the projects started.*"

- **Adoption of the IT benefits realization methodology or process**

Both OrgA and OrgB failed to adopt any IT benefits realization methodology or process (formal or informal). In addition, none of the participants from these two organizations had any understanding of IT benefits realization process. Only OrgC had adopted a formal IT benefits realization methodology. A formal IT benefits realization methodology was introduced to the organization by an external IT contractor. The methodology was introduced to the organization after some concerns raised by several senior IT staff that some of its prior IT projects may not deliver the expected benefits. This may jeopardize the government's future funding for the organization. In order to ensure that its IT investments deliver the promised benefits as well as to bring the focus back to the OrgC's main business, a large internal change program which was part of the IT benefits realization methodology was undertaken by the organization. OrgC had determined in the very beginning that a formal IT benefits realization methodology was needed for the organization. The formal IT benefits realization methodology and the expertise to implement the methodology were acquired by an external IT contractor.

Feedback from OrgC indicated that the methodology to be very useful. OrgC has tried to sell and educate the principle of the methodology to everyone within the organization. In addition, OrgC had attempted to minimize the user resistance while maintaining the pressure for them to comply with the organization's change program. The Value Management Office was subsequently set up to help to achieve these goals. This clearly demonstrates the resolve by the OrgC to implement the methodology as well as to increase the acceptance of the methodology among its users. A lot of time and resources were invested by OrgC to ensure that the organization as a whole understood and accepted the methodology. For example, one of its senior contract managers said: "*The methodology is an end-to-end process...... the benefits realization process, is development of plans at the local level...... So it involves their buy in and they confirm the quantum, the amount of saving and almost commit to it. ..... Another aspect is the reporting. Unless you have sort of scrutiny, what occurs is no guarantee*

that savings will actually be ever released…..We also have another aspect which is to do with harvesting where……we actually take those savings and reapplying them strategically elsewhere in the organization. So the harvesting has a fair bit of rigor to it." As a result, OrgC was able to ensure that its IT projects had delivered the intended benefits to the organization.

- **User satisfaction**

The success of IT implementations can be attributed to perceived usability of the systems and the satisfaction of the users towards the new systems. It was a bit surprising that to find that user's reaction about implementing the new IT projects was not taken into account by OrgA at all. The organization rushed to implement the IT projects and did not have the time to consult its users about the new systems. There were a lot of user dissatisfaction and resistance to the new systems and in the end most of the newly implemented IT projects had to be abandoned or modified. For example, one project manager revealed that: "*We rushed to implement these new systems, I guess, without consulting with the users first…… They were not consulted fully even during the implementation phase…… There were strong dissatisfaction among users to use these systems. They did not understand why the old systems were not good enough.*" For OrgB, the user consultation phase was carried out during the system implementation stage but there was still a strong user dissatisfaction after the installation of the new systems. A lot of efforts had been put into minimizing the user resistance and in increasing user satisfaction during and after the system implementation stage. One senior contract manager said: "*…… most of the users have appeared to accept the new systems reluctantly now. So it is a good outcome for us after all……*" It was a different story with OrgC. OrgC had ensured that the user consultation phase was completed before the implementation of new IT projects. A lot of efforts and resources had been spent on soliciting supports from the users. Users training sessions and information seminars were held regularly to sell the new systems. This had clearly demonstrated the resolve of OrgC implement the new systems as well as ensure high degree of satisfaction among the users. Its IT manager pointed out that: "*…… Some of the push backs we are getting in an organisation like ours are that the reporting mechanism that we have can be viewed as a bit of a burden on operational tasks…… But we are rolling out various new systems and we are asking them to report on their agreed benefits……. if there are problems then we are trying to handle them, trying in some way to make it easier for them. But if there are issues then I will talk to them and people who are involved in the reporting to try to boost them along and bring them along.*"

- **Top management support**

Top management support and good management practices were found to be positive related to the delivery of IT benefits [36]. The implementation of IT projects by OrgA was strongly supported by its top management. A lot of financial resources were invested in its IT projects, despite the fact that OrgA did not possess the requisite IT infrastructure and capabilities to implement them. For example, its CIO said: "*Our senior management is very keen to undertake these IT projects…… The success of our organization depends heavily on the satisfaction of our customers.*" However, this was not the case for OrgB All of its responding participants had revealed that they were forced by the government to implement these IT projects and were not too sure that these projects would be successful. While they admitted that these IT projects were important in achieving their organizational objects, they were not happy about the way the government handled the whole situation. For example, its CEO said: "*We were told to save the government some money by reducing staff level…… which is driven by value for money considerations…… But certainly change at this level if it's not managed well, it will be regarded as very threatening to the stakeholders.*" One of its project coordinators revealed that: "*There is certainly been a reduction in the number of the public servants…… some people were not happy about the whole situation.*" Top management at OrgC was more supportive about the implementation of its IT projects the OrgB They could see the need for implementing these IT projects although they were too forced by the government to implement them.

- **Change management**

The success of change management depends largely on the level of user resistance and systems usability issue can often be related to user resistance. As indicated earlier, no strategy for minimizing user resistance was put in place for OrgA There was also no business process to carry out the change management before, during, and after the system implementation. User resistance was one of the main reasons for OrgA to abandoned and modified most of its IT projects. For OrgB, the strategy and business process for change management was only put in place during the systems implementation stage. One external senior contract coordinator commented: "*They should have done this before the implementation stage…… It is a lot more difficult to counter user resistance during the implementation stage.*" Fortunately, for OrgC the whole process for change management was started before the system implementation stage. None of its participants had mentioned anything about user resistance during the interviews since the change management was perceived by all stakeholders as a big success.

- **User involvement**

User involvement has a positive influence on the successful outcome of system implementation [24]. This implies that getting users involved in the project implementation and evaluation processes may improve their attitudes toward the system, and enhance the importance and relevance users perceive about the system. However, none of the participants from the three case study organizations was involved with any of the original IT project justification and negotiation processes. It appeared that the IT project justification process was handled by other units within the organizations. For example, one project manager from OrgA said: "…… *The original IT project justification and negotiation processes were handled by other people within the organization…… We were not involved in the processes and those people are not involved in the current process.*"

There appeared to be an "organizational memory gap" where units within the three organizations possessed knowledge of different sorts (i.e. contract negotiation, motivation for IT investments, investment evaluation and/or benefits realization) of the entire IT systems development cycle. However, the knowledge did not seem to be shared by all units because different units participated in different stages of the IT project development cycle. It is arguable that all three organizations' project implementation and evaluation processes would be even more successful if the participants were involved in the original IT project justification and negotiation processes as well as the benefits realization process.

5. Conclusions

As mentioned earlier, effective deployment of appropriate IT investment evaluation and benefits realization methodologies are critical to the successful outcomes for IT projects. The survey findings indicated that 67% of public sector organizations had used IT investment evaluation methodology while only 45% had used IT benefits realization methodology. For the effective use of IT investment evaluation methodology and benefits realization methodology, the percentage is comparatively lower (45% and 35%, respectively). The findings revealed that they had not used IT investment evaluation methodology and benefits realization methodology effectively. This could be caused by the lack of knowledge of applying these methodologies. But an interesting finding is that a high percentage of survey respondents had confidence in benefits realization but also had overstated the benefits in order to get the required approval. That is, 78% of respondents said that they were confident in

realizing benefits while 70% admitted they might overstate the benefits.

The results from case study indicate that most organizations have suffered from poor IT investment evaluation practices. A number of issues have emerged from the data and some key issues have been presented in this article. These include linkage between the expected outcomes of the IT projects and business strategy, user satisfaction, top management support, business process and change management, and user involvement in the IT project justification and negotiation. OrgA which had not adopted any of the evaluation methodologies were forced to abandon and reassess most of their IT projects while OrgC which had adopted both methodologies had completed and implemented most of the IT projects successfully.

Finally, the survey responses are from a single individual from the responding organization and those interested in the research issues may be more likely to respond. They may be more likely to carry out evaluation and be satisfied with their evaluation practices than the average non-respondent [37]. Furthermore, our study took place at a particular point in time. Further research could be conducted to capture opinions of respondents at various stages of IT project development process. Alternatively, our study could be replicated in a few years' time to examine how IT benefits realization and investment evaluation have changed and are being managed in light of emerging technologies such as e-commerce.

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