

FACTORS INFLUENCING THE IDENTIFICATION OF IT INDIRECT COSTS – A CASE STUDY

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Abstract

Organizations expenditure on Information technology (IT) related investments continue to rise in the face of the fierce competition in the various marketplaces. Nevertheless, the problem of evaluating such investments remains a challenge to managers due to the inability of the evaluation techniques to accommodate the indirect costs associated with IT investments. This negatively affects the accuracy of the justification process and the investment decision. According to literature, indirect cost factors are not easily identified or quantified because they human and organizational dimensions. Indirect costs, proven to be problematic to accommodate within traditional appraisal techniques, make IT managers choose to ignore them and neglect to include them in IT investment budgets. The research suggests an alternative solution to the problem of quantifying such indirect costs by calling for a more accurate identification of those costs which would enable a more robust management and finally control of such costs. Using a case study the paper highlights the investment decision making process in an international resource company and confirms the call for a more robust identification process. In addition the paper maps each indirect costs factor to the lifecycle stage(s) in which it occurs and presents the factors that influence the quality of the identification process.

Keywords: IT Evaluation, Indirect Costs, Identification, Factors.

1 INFORMATION TECHNOLOGY EVALUATION – A FOCUS ON INDIRECT COSTS

Stewart (2008) indicates that a large number of organizations are investing large amount of resources into information and communication technology (ICT) seeking to gain competitive advantage. With the rising IT costs, still organizations may lose significantly is they do not make an appropriate investment in IT (Josh and Pant, 2008). While there is a widespread agreement among academics and practitioners that ICT investments should be carefully justified, measured and controlled, there are serious doubts regarding the fitness of traditional evaluation techniques for ICT investments (Milis and Mercken, 2004; Joshi and Pant; 2008). Likewise, Joshi and Pant (2008) confirm that the process of evaluation has become more complex and difficult. As Milis and Mercken (2004) state, intangible/hidden costs make the use of such techniques very difficult and affect the reliability of their outcome. They also highlight the fact that emerging techniques developed for the purpose of accommodating such indirect costs are difficult to use due to the fact that the problem of estimating the indirect/hidden costs remains unsolved. The increased consideration of indirect cost factors by project champions in the broader evaluation of the success of Information systems has been expressed by Lederer and Prasad (1995). However, Love et al., (2006) states that the literature remains somehow vague when it comes to prescribing a comprehensive review of hidden or indirect costs. While many organizations are readily aware of the strategic benefits that can be leveraged from IT adoption, many are reluctant to invest in such technology with the reason being the hidden costs involved with implementation (Ghoneim el al., 2003; Mohamed and Irani 2002). This fact was confirmed by Bannister (1999) who argued that one of the difficulties presented by IT costing includes questions of

cost identification. In general IT costs are significantly underestimated (Fitzgerald, 1998) while in fact according to Hochstrasser (1992), indirect costs can be up to four times greater than those of a direct nature. When evaluating ICT investments up to 40% of relevant costs incurred on ICT can be outside traditional ICT budget estimates. Up to 65% of ICT managers suggested that they were probably failing to identify full cost through the formal evaluation process (Willcocks, 1994; Strassmann, 1990). Alshawi et al., (2003) highlighted that while some managers may be aware of such indirect costs, others simply choose to ignore them to gain senior managements support. This is done by attempting to minimize the cost portfolio while increasing the benefits portfolio. Such misleading action would result in an inaccurate investment decision making process.

Irani et al., (2006) in their study attempted to review various cost taxonomies seeking to tackle the gap in literature surrounding IT cost evaluation. The study showed that to carry out a robust comprehensive evaluation process, it is essential for decision makers to not only incorporate hidden/indirect costs into the decision-making process but also categorize such costs and ensure that this forms part of the organizational learning for future information systems adoption. Another exploratory study by Ghoneim and Irani (2005) examined the level of awareness of IT managers of the various indirect cost factors that occur throughout a project's lifecycle stages. Ghoneim and Irani (2005) highlighted that managers do not account for the full range of indirect cost factors due to lack of awareness about such costs and to political reasons to secure the funds against other capital projects. The study called for more in-depth research to understand the reason behind the differences in the identification of indirect cost factors that was evident in the outcome of the analysis. The rationale here being that if such costs can be identified; they can then be managed. Such management would enable control and reduction, which lie at the genesis of the rationale that underpins the efficiency and effectiveness of cost managing information systems. The first step towards fulfilling such an aim is to explore the factors that affect the identification of the indirect cost factors.

2 RESEARCH METHODOLOGY

Qualitative research emphasises the processes and meanings that are not examined or measured in terms of quantity, amount, intensity or frequency (Garcia and Quek, 1997). This research deals with identifying and investigating in-depth IT indirect cost factors and their drivers, and the probable existence of a causal relationship between them. IT indirect costs are a product of human behaviour and the interaction with the system being implemented throughout the development lifecycle. The amount of rich and descriptive data needed is less likely to result from the use of a quantitative research method, which suggests the use of a more qualitative approach. According to Yin (1994), case study research as a strategy is most appropriate when the 'how' and 'why' questions are being posed. Furthermore, when the researcher has little control over events, and when the focus is on a phenomenon within a real-life context. Due to the constraints in the size, only the decision making process, investment justification and indirect costs identification will be presented in this paper.

2.1 Data Collection

The data collection procedure has followed the major prescriptions by most textbooks in doing field-work research (e.g., Yin, 1994). A variety of secondary data sources were used to collect data with regard to the development of IT taxonomies for evaluating IT investments, such as internal reports, budget reports. A variety of data sources have been used to derive the findings presented in this paper, which include interviews, illustrative materials (e.g., newsletters and other publications that form part of the case study organisation's history), and past project documentation. Interviews were conducted with the Project Manager (PM), Business Systems Manager (BSM), Business Systems Coordinator (BSC) and the Senior Consultant (SC). The duration of each interview was approximately one hour, where every interview was conducted on a one-to-one basis, so as to stimulate conversation and

breakdown any barriers that may have existed between the interviewer and interviewee. The author acted as a neutral medium through which questions and answers were transmitted and, therefore, endeavoured to eliminate bias.

2.2 Background to the Organization

GOLDCOMP, headquartered in Johannesburg, is a leading global gold producer with 22 operations on four continents. The company conducts an extensive worldwide exploration programme and is involved in gold-mining, refining, and development of gold deposits. The company was formulated through the merger of GOLDCOMP and a major rival company following a disciplined acquisition strategy that the company adopted since it first started in 1998. This business merger formed Africa's foremost gold producer and one of the world's leading resources companies. GOLDCOMP was established in 1998 through the consolidation of a major Corporation's gold mining operations, mineral rights, and exploration activities. Since then, the company expanded through the acquisition of smaller competitors worldwide, resulting in a mixture of cultural environments and work habits. The mixed cultures caused the company to inherit a loose management style through the decentralisation of the business processes, which in the light of this research is showing in the lack of a standardised financial system which affects how investments are appraised and evaluated in each region. Although all major investments decisions are made in Johannesburg, each of the 8 regions is self-managed. In other words, all non-mining investments decisions are taken locally, and then procedures followed for investments' justification and evaluation are determined by the CFO, and moreover, they even differ from one subsidiary company to another.

3 FINDINGS AND DISCUSSIONS

The interviews conducted discussed a range of topics relating to the nature of the decision making process in the company thus considering whether IT investments are considered strategic or not. Also the main motivations for IT adoption are investigated. Another aspect of enquiry is IT budgets and expenditure planning. The interviews also covered the investment justification process and its nature and finally the factors that influence the identification of the indirect cost factors.

3.1 Nature of Information Technology Decision Making Process

The nature of IT decision-making is affected by two factors, namely the nature and culture of the company, and the sector it belongs to. In the case of GOLDCORP, as expressed by the Business Systems Manager (BSM), because of the way the company has evolved, taking over other companies, and has not put into place a common structure, every region still has its own processes and policies that have been used since each company operated individually. In addition, GOLDCOMP, as a resource company, gives less attention to investing in IT projects. It fails to see the non-financial benefits of investing in a new technology; its judgment is based solely on financial returns, as the Business Systems Coordinator (BSC) explained. One factor that affects the IT investment decision-making is the management model adopted by the company. In the case of GOLDCOMP, there is no worldwide strategy for IT adoption; there is no standardisation or integration between the different business systems; they operate globally on a stand-alone basis. When asked if the business systems differ from one region to another the, BSC explained:

“Yes, definitely, I know that in South Africa they have a range of legacy systems; they have a large internal IT support team who maintain and develop them.”

In addition, the IT manager has control only over the maintenance of the systems and the infrastructure. As for IT investments, the decision to approve or reject lies strictly in the hands of the Chief Financial Officer (CFO). When the Senior Consultant (SC) was asked to comment on the fact that the CFO has control over IT investment decisions, he explained:

“I guess that is something you tend to find in resource industries. Unless they have sort of matured to the point of having a Chief Information Officer you tend to find that the IT tends to be under the CFO, and yes, you tend to find CFOs accountants with a very accounting view of the world, and sort of can understand the accounting system without necessarily having a deeper understanding of the business.”

As most CFOs, at GOLDCOMP, they are one-way minded when it comes to capital investment, as the SC confirmed:

“From a resources company’s point of view, I can put an SAP or I can drill a well, which one is going to give me the better return?!”

3.1.1 Information Technology as Strategic Investment

GOLDCOMP invested in IT for two main reasons, namely due to compliance issues or to necessary upgrades in software when support for old systems is not offered by the vendor. This shows that its investment strategy is a reactive one that only reacts to changes in the environment. This implies that IT is not considered as a strategic investment to the company, although it is used in every aspect of its business. In other words, IT comes second in the capital investment agenda. When asked about IT being considered a strategic investment, the BSC replied:

“I think historically it has been seen more as just it has been done because it had to be done. It has not really been viewed in a strategic way.”

Most of the recent IT investments in GOLDCOMP have been forced, due to compliance issues. For example, the AXIS 1 solution and the SAP implementations were not done in a very strategic way. In the case of SAP implementation, there was not a lot of value from it; it was put in as a standard system, and people within the company were told that they had to use it, rather than consulting the business first and looking for ways to improve the processes before putting in place a standard system and forcing employees to use it.

In addition, what makes IT a non-strategic investment is the nature and focus of the company, as the BSM indicated:

“It is the focus of the company; their main business is producing gold, not developing clever business systems. They cannot see how IT can improve their overall productivity.”

The main priority for the company has therefore always been the development of the mine sites and supporting them, which are more of a technical process. The Senior Consultant (SC) involved in the SAP portal summarised GOLDCOMP's behaviour towards IT investments in one sentence:

"They do not care about IT!"

This behaviour and attitude towards IT investments could have a cascading effect on the adoption process (i.e. justification, evaluation, implementation, and post-implementation processes), and subsequently how well the indirect costs are identified and included within budget proposals.

3.1.2 Main Motivations for Information Technology Adoption

GOLDCOMP had some work done to review the management of information, and it highlighted the fact that it had variable information and inconsistent information, and it had no formal or no real document management processes, and so the SAP portal was seen as a way of addressing these issues. In general, the main motivations for IT adoption at GOLDCOMP are summarised in Table 1:

Motivation for IS Adoption	BSM	BSC	SC	PM
Improve productivity of business process	Medium	High	Medium	High
Improve performance of business process	Medium	Medium	High	High
Seemed like the thing to do at the time	High	High	High	Medium
Support strategic direction of organisation	Medium	Low	Low	Medium
Improve service quality	High	High	Medium	High
Other	Legislation Certifications Improve competitive advantage Start getting a one voice view of the world			

Table.1: GOLDCOMP Motivations for IT Adoption

According to the senior consultant (SC) of the SAP portal project, the main motivations for the SAP portal projects are:

- Consolidating their intranets into one, and starting to produce one view of the organisation's position on things for their employees.
- Making this information available to their third party contractors, as well as internally.
- Having the possibility of finding the latest version of policies, procedures, forms and so on, which is a problem at the moment.

3.1.3 Information Technology Budgets and Expenditures

IT budgets and expenditures planning is conducted on two levels, namely the corporate level and the local level. The corporate level planning is done in Johannesburg, which sets the agenda for all the desktop expenditures. At the local level, the CFO sets the budgets for the systems, the business systems, and any local IT instructions which are encoded by the corporate level. Then the BSC will manage the budget of the business system, and the IT coordinator who works under the BSM will manage it for the IT infrastructure.

When asked if the company is planning to standardise its financial portfolio and the way costs are allocated for IT investments, the BSM replied:

“In some areas they are planning to, they are trying to establish some standards but not to a very detailed level. Because I don't think they can see the benefits of doing it. For example, trying to get everyone into the ERP system.. they just can't, there is no value in it because they just operate pretty much individually as individual regions.”

GOLDCOMP, as any other resource company, is very picky as the SC describes: when resource prices are up it is doing very well, and this in turn would affect IT expenditure levels, and when resource prices are down, it is cutting costs and pulling back. So, the level of IT expenditure depends on the fluctuation of the resource prices and how well the company is, in terms of its production and sales. Furthermore, IT investment proposals have to compete against the favourable exploration and mining projects. Furthermore, GOLDCOMP does not have a cost allocation scheme or guideline to follow during investment proposals' preparation, and budget setting.

3.2 Information Technology Investments' Justification

According to the SBM and the BSC, the justification of IT investment depends on the scale of the project. The SBM is authorised to decide upon investing in small projects, but for large projects, this is done currently in consultation with the CFO. This scenario is about to change, as GOLDCOMP is putting in place a governance process which involves representatives from each department of the business, and this would be like a forum which would review and approve proposals.

A major issue that affects investments' justification in general at GOLDCOMP is the fairly relaxed management model, according to both the Project Manager (PM) and the SC. The SC explains:

“It is a big company that is operated like a small company. It does not have a lot of bureaucracy and does not have a lot of standard methodologies, and so. Decisions are made without a great deal of formality and rigour.”

In contrast to the SAP portal project at GOLDCOMP, the PM explains that at the end of the project, as far as financial justification is concerned, the portal project was not. The SAP portal project was justified initially because the licensing costs came free with the initial SAP licensing that was present at the time. So that was one more lucrative reason for the company to invest in that portal. In addition, it had the technical resources required in the sort of third-party consultation firm which provided the technical aspects throughout the entire project's lifecycle.

A major fact highlighted by the PM (who also represents the third-party consultation firm) is that people at GOLDCOMP did not know what a portal can deliver; they knew it was functional, they knew it had features, but they did not know what the end product looks like.

"They did not know what was there at the other end of the tunnel! They could not feel it, they could not touch it, and they did not know it. So they were very sceptical walking towards it."

Before the involvement of the third-party consultation firm, the CFO at GOLDCOMP had already made his decision to invest in the SAP portal. When asked about whether or not having a proper justification and evaluation of the portal project affected the investment decision, the SC replied:

"Yes... I think if we had done a thorough evaluation, we might not have gone ahead with the SAP portal, and chosen a different product."

An important fact is that even though the consultation firm was not in favour of the SAP portal decision, it did not question GOLDCOMP's decision to invest. It simply accepted the task being delegated to it, and did not consider to do what was in the best interest of their client. There is a conflict of interest between the consulting firm and its client (i.e. GOLDCOMP), as described by the BSC:

"It is their interest towards the solution, because all they want is the implementation contract."

This implies that, in some cases, consultation companies might seize the opportunity to take the advantage of going ahead in implementing a system that has been approved internally by its client. Thus, escaping from any blame when the system fails, and benefiting from any additional consultancy required in terms of modifications to the system or to the company's processes to suit the new system. Some consulting firms might see the need for such modifications beforehand, but choose to hide them, so they can generate more profit by fixing the damage caused by a wrong investment decision while fully blaming the client for it. This view is shared by the BSM who commented on his experience with the consultation firm:

"It was not a good experience really. We have learned lessons from this; we obviously just don't have a very broad and not well defined scope to start with, and we need to set clear limits in terms of time and costs involved in such consultancies."

This in turn was translated into monetary terms, as stated by the SC:

“For the portal project, the thing that should have been controlled was probably our costs. Yeah, the project delivery, as consultancy costs. Our cost is the largest component of the portal cost.”

3.2.1 Nature of Justification Process

Primose (1991) highlighted the fact that some IT managers consider the justification process as a hurdle that needs to be overcome, not as a process to determine the worthiness of the investment. This was due to some political reasons, such as competing against other capital investments to secure the required funds. This turned the justification of IT investments into a mechanistic process, where only the direct or initial costs are highlighted, and an extensive list of benefits is generated and presented in a way that makes the investment more appealing to senior management.

The decision to invest in the portal project was based solely on the opinion of one person who was convinced that it was worthwhile investing in it. This was expressed by the SC, who thought that the previous BSM who initiated the project had a fairly clear idea of what he was aiming to achieve from the portal project, but his view was shared only by one or more people on the board. Thus, there was no proper justification conducted, and the project was presented in an appealing manner to the CFO, where the SAP portal came with no extra costs, and there were only benefits to be harvested. The decision to invest was based on the conflict of personal interest against the overall welfare of the company. The former BSM saw an opportunity to acquire the SAP portal free, and without going through the hassle of justifying the investment to the CFO, as money and finance were not an issue. What he did not see was how the company would benefit from such an investment.

According to the PM, the justification process is not a mechanistic one, and it makes the company better identify and determine its needs, and the best way to achieve them.

“I think what it does is it forces you to think about what you are going to get out of it, and forces you to think what you really need, and how you should approach the investment.”

When asked about the determinant of success of the justification process to ensure the delivery of its objective, the SC replied:

“I think you have to be clear about what the outcome is that you are looking for from making this investment, otherwise it’s a good chance you won’t get any.”

This statement concurs with what the PM said about GOLDCOMP in not knowing what was at the end of the tunnel and what the portal project could deliver, and still it went ahead with the investment.

3.3 Factors Influencing the Identification of IT Indirect Costs

The case study analysis showed that the quality of the identification process is influenced by:

IT’s Strategic Relevance: This implies that whether or not IT is considered a strategic investment for the organisation would affect the identification of IT indirect costs. In the case of GOLDCOMP, IT was not considered a strategic investment, and hence no effort was made to identify the full cost implication of such investment, since top management support was not guaranteed. The more IT

investments are regarded as strategic, the more accurate the conduct of the identification process, as top management involvement and interest would improve the process.

Decision-making Process: When the decision making process is considered mechanistic and therefore no rigorous investment evaluation is conducted, then the probability of properly identifying the indirect costs is reduced. This is due to the fact that investment decisions might already be taken, as in the case of the SAP portal, when the investment decision was made without conducting an investment evaluation. Hence, there is not much attention given to the identification of the full cost portfolio of the investment.

Justification Process: For most managers, the justification process is a hurdle they need to overcome to secure the required funds. In such case, managers tend to pay less attention to the indirect costs, and tend to maximise the portfolio of benefits to make their proposals more appealing. This hinders the indirect cost identification, as well as the decision-making process. The investment justification process should be therefore considered a differentiating process between different investment proposals, and when it is highly appreciated by management, it would affect the accuracy of the identification of the indirect costs drivers. This is due to the fact that managers will demand details of the full cost portfolio of the proposed investments, which will encourage IT managers to include the indirect costs, and show that they were accounted for prior to the approval of the investment. This, in turn, will affect the future IT investment proposals, as the accuracy of their previous justification would give either a negative or positive impression to top management. Thus, if management consider the justification process to be an important process, this will promote the identification of the indirect cost factors.

Stakeholders' Pool: It is essential to identify the pool of stakeholders that will affect and be affected by the implementation of the IT/IS investment. This is due to all of the indirect costs being related to the stakeholders of the systems, and how well they manage and adapt to the change brought about by the new system. Therefore, it is essential to identify the business units, departments or employees that will be affected by the investment, in order to pinpoint the areas where the indirect costs are most likely to occur.

Management Experience: The proper identification of indirect costs is affected by the experience management has with IT investments. The more experienced the IT managers, and the more mature the organisation, the more aware managers tend to be about IT indirect costs. The empirical research findings presented suggest that management experience with IT investments affects their ability to identify IT indirect cost factors. For GOLDCOMP, the product that the company produces relies on heavy machinery, and thus management does not have much experience with IT investments, as expressed during the interviews with the BSM. This hinders the chances of identifying the indirect costs, as management have an accounting mentality and hence regard IT investments as tools, and therefore fail to identify and account for the indirect costs related with such investments.

4 CONCLUSION

It appears from the empirical evidence that proper investment justification affects the investment decision. In order for the justification process to stop being seen as mechanistic, executive managers should become more aware of the full cost portfolio of IT investments. This would ensure that IT managers can safely produce project proposals that reflect the real financial consequences of IT investment, without harming or decreasing their chance of being accepted against other capital

investments. Interestingly enough, it was found that, in some cases, resource companies relate IT investments directly to their annual sales; when the sales are up, they tend to invest more. Hence, investment in IT is not based on the strategic importance of the investment but on whether the company is making a profit selling its main product. This is also seen in the adoption strategies of being proactive rather than reactive.

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