

Critical Organisational Challenges in Delivering Value from IT: In search of the independent variables

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Abstract

The literature is filled with examples of IT projects that disappointed their sponsors on at least one measure of success. Managers today frequently go beyond the traditional project success measures – on-time, in-budget and meeting the scope of requirements - to embrace measures of the actual business benefits and the factors that deliver real business value. This paper is the third in a series of published papers that explore the challenges and opportunities facing organisations in deriving value from IT. Previous papers have explored issues around hybrid value models. This paper focuses on the search, identification and analysis of the independent variables that affect an organisation's ability to extract value from IT. The paper draws together existing published work in the area with the results of field work conducted with CIOs of organisations in Lebanon. It proposes a framework that will assist managers to understand the complexities and interactions of independent variables that contributing to creation of IT value.

Keywords/phrases: IT Value; IT Challenges; IT Capability; IT Competencies; Lebanon.

1. Introduction

To date, the greater part of IS/IT literature comes from research conducted in Europe and the USA. While some of the lessons learned are no doubt universal, it is clearly interesting to examine the experience of organizations operating in countries that are less developed or going through periods of particular challenge. This paper draws on a research project conducted in the Lebanon, which was designed to explore and assess the key challenges Lebanese organizations face in deriving business value from Information Technology (IT). One of the authors, himself a former Chief Information Officer, was able to interest and bring together a group of senior executives from Lebanese organizations. A one-day forum was organized to enable CIO participants to collaborate to discuss key challenges. This led to establishment of a more lasting community of practice, the 'CIO Lebanon Association' which was officially approved by the Lebanese Ministry of the Interior. As a result of this process, it was possible to establish a protocol and conduct interviews with participant members from 36 organizations, representing four key industries: banking, retail, healthcare and higher education. Two interviews took place with each of the participating CIOs, followed by a process of collaboration via email to confirm and to prioritize the challenges raised. The project forms a unique contribution to what is known about the value of IT investment in the context of a country facing challenges of a non-business nature.

This paper, the third in a series (see Nicolian, et al, 2014; 2015) uses insights from this research together with an extensive review of relevant literature to synthesize the various independent variables suggested to affect value derivation. These are organized into related themes and categories to develop a guiding framework of exploration.

The difficulties in realizing business value from IT have been well-articulated in both academic (Peppard and Ward, 1999; Melville et al., 2004; Kohli and Devaraj, 2004; Peppard et al., 2007; Caldeira and Dhillon, 2010), and professional circles (Gartner, 2007; ITG, 2008; PWC, 2006). Literature is filled with examples of IT projects that have disappointed organizational stakeholders in terms of benefits or value delivered, according to a range of differing measures of success. In the quest to find the "silver bullet" for deriving business value from IT, scholars and researchers have prescribed a number of different cures. Some advocate the use of IT Governance methods (Marshall et al., 2007; Sambamurthy and Zmud, 1999; Peterson, 2004; Weill and Ross, 2004). Others suggest the use of formal benefits management processes to manage value throughout the lifecycle of the IT value proposition (Ward and Daniel, 2006; Peppard et al., 2007; Ashurst et al., 2008). Yet

others have explored the significance of developing organizational competencies (Mata et al., 1995; Ross et al., 1996; Peppard et al., 2000; Caldeira and Ward, 2003; Peppard and Ward, 2004; Bhat and Grover, 2005; Caldeira & Dhillon, 2010). The predominant IT value models that emerge from both the academic and professional circles appear to be process-centric, paying scant attention to the role of individual skills and the impact of contextual factors in deriving business value from IT.

It may be that people tend to underestimate the complexity and uncertainty they will experience in bringing about technological change in business environments. Benko and McFarlan (2003) describe this using a metaphor of an 'information frontier'. In their words:

“Why a frontier metaphor? Because it aptly captures recent experience: a decades-long period of progressive and lasting change, rich with opportunity and fraught with uncertainty. Frontiers are new terrains in which people roam, settle, and create value. Frontiers fundamentally alter not only what we do, but also how we see the world around us. ... By their nature, frontiers are confusing, volatile and – above all – unpredictable. The adoption of new ideas is a social, as well as a business, process” (2002, p.6).

There is a plethora of studies that have chronicled the critical success factors and challenges involved in IT projects, and the lessons learned have been incorporated into value models. Some of these models have not taken into account complex projects, such as ERP, however. The majority of studies have also diminished the role of the IT artefact itself (the product dimension) and emphasized behavioural and managerial factors. The search for a comprehensive IT value model, combining multi-dimensions such as process, people, product and context, and one that emphasizes the value of the inter-relationships between these dimensions, has remained elusive. It may be that an organization develops the best processes to plan, deliver and use IT/IS, and yet not develop the necessary people skills to exploit these processes effectively. In contrast, an organization may hire and develop the best human resources, but not build the proper organizational processes to support such resources. An organization may develop excellent people and process competencies, but not nurture the proper organizational and cross-organizational environment needed to empower its people and processes. Furthermore, an organization may pay attention to developing appropriate people, process, and other contextual factors, but not select (or build) the appropriate IT artefacts. Figure 1 provides a composite view of factors considered by various authorities to be involved in derivation of 'value' from IT.

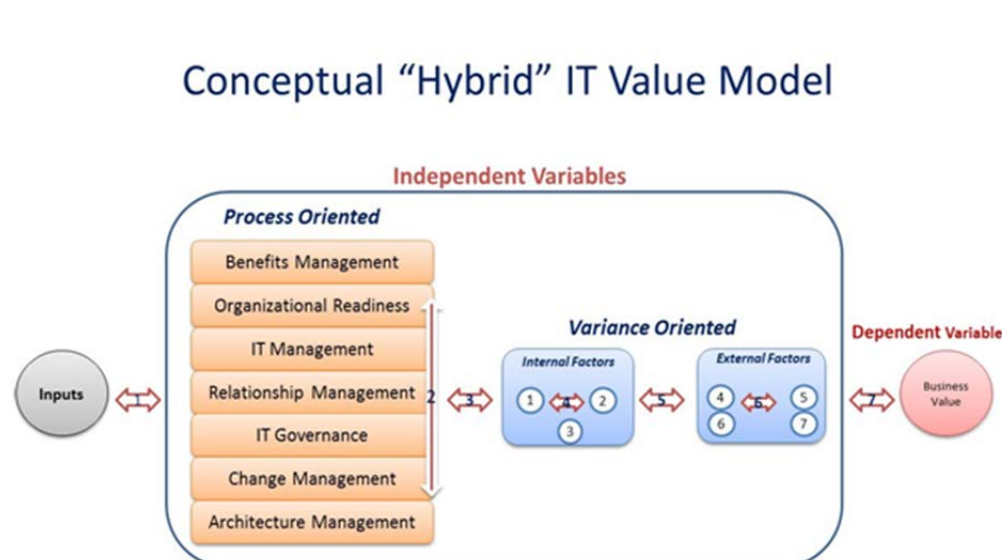


Figure 1: Conceptual IT Value Model (from Nicolian, et al, 2015)

This paper critically appraises the factors that may affect the realisation of value from IT investments, and attempts to identify a framework for independent variables that should be considered when seeking to derive value from IT investment.

2. A Framework of the Independent Variables

It is important to consider the distinction between dependent and independent variables in relation to this topic (DeLone and McClean (1992; 2002). In this paper, the dependent variable is considered to be the desired outcomes from IT investment, as defined by key stakeholders. The term 'IT value' is used in reference to this. Sources of value might include enhanced efficiency in existing processes; readiness to embark on new initiatives; or expanded opportunities to please customers and generate revenue. It is recognised that IT value is not a homogenous quality – every organization and its management face a unique set of objectives and challenges, and its key stakeholders will define 'value' accordingly. The independent variables are therefore those factors that affect and mediate an organization's ability to derive value from IT. Figure 2 illustrates the framework, showing the complexity inherent in the relationship of dependent and independent variables.

While investment decisions take place within the boundary of an organization, the organization operates within an environment of influential factors that it cannot control. In the case of the Lebanon in recent times,

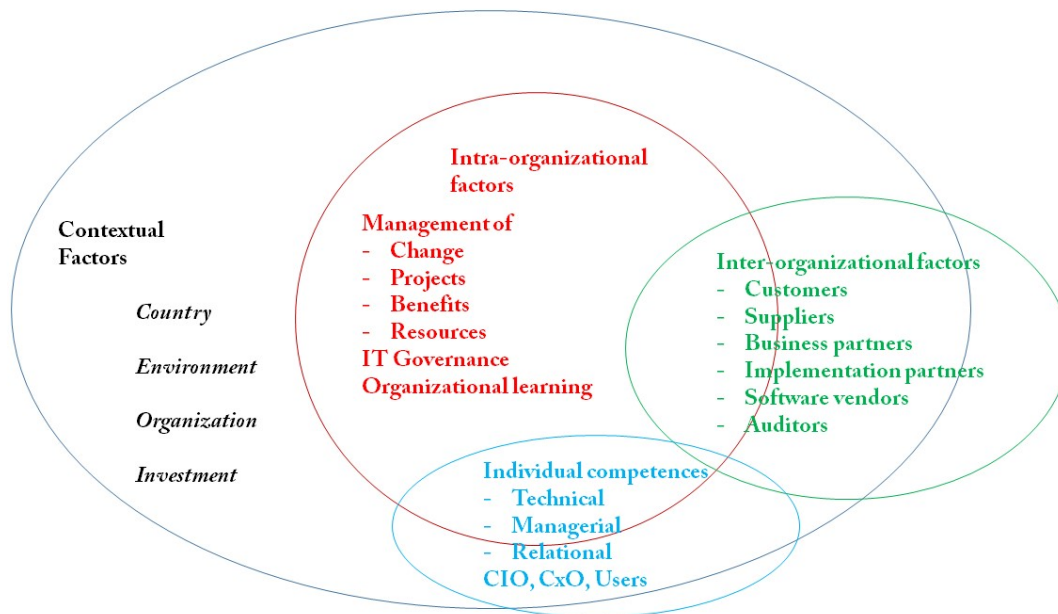


Figure 2 – IT Value – A Framework of Independent Variables

these factors have included a fifteen-year civil war and wars with neighbouring countries with resultant political and economic instabilities.

Corporate culture, particularly as it relates to the level of innovation within a firm, has been shown to influence the effectiveness of information system adoption and use (Orlikowski 1996) and authors such as Wade & Hulland (2004) and Peppard and Ward (1999) have also commented on the effect of organisational structures on IT value. In 2007, the IT Governance Institute commissioned research into the incidence of IT project failure (Thorp, 2008), gathering evidence from a variety of organizations of differing sizes and fields. Out of almost 1700 projects, only 3% were formally cancelled, but 31% either delivered or were expected to deliver *negative* value. Thorp attributes persistence with already failing projects to corporate cultures of blame, in which cancellation would have been viewed as a sign of weakness.

Within any organization, both primary and secondary research suggests a need to attend to aspects of management practice. However, how it is appropriate to address, for instance, change management will vary from one organization to another depending on its history, culture and activities. Further complexities are added by cross-organizational relationships, not least with customers whose requirements and tastes must be addressed.

The rest of this section looks at some of the independent variables in more detail.

2.1 Individual Competencies

2.1.1 Technical, Managerial and Relational Competencies of CIOs

There is a very rich body of research evaluating the individual competencies needed by the Corporate IT function and more specifically the CIO. Periasamy and Seow (1998) identified five critical success factors for the CIO to deploy IT successfully to deliver optimal value to their organisation. These were requisite business knowledge, versatility and nimbleness, maintaining a level of technical competence, ability to manage, interact and motivate staff, and good working relationships with all levels of staff and external parties. Tagliavini et al. (2003) conducted an extensive review of literature to identify the competencies needed of CIOs and grouped these into three dimensions of 'Know How to Be' (e.g. interpersonal skills, long term vision), 'Know What' (e.g. managerial knowledge, technical knowledge) and 'Know How' (e.g. planning capabilities, technical expertise).

Research on different sectors indicated a number of CIO role aspects that would improve IS performance (Earl & Feeny, 1995, 2012). These aspects were: focus on business imperatives; interpret external IT success stories; establish and maintain executive relationships; establish and communicate IS performance record; concentrate on IS development effort; achieve shared vision of IT; and make business contribution. Lane and Koronios (2007) found that the role of the modern CIO has become increasingly business-focused and strategic, and that soft skills dominate the critical competencies. Ultimately, how a CIO leads and manages ICT staff will greatly influence how successful a CIO is in the role. They also found that CIOs still need to have high level understanding of key technologies so personal knowledge of, or access to, hard skills is also critical.

Given the diverse challenges faced by CIOs, individuals who take on that job must have a wide range of skills and attributes, including: technical; knowledge of ICT trends; corporate strategy competence; appropriate qualification mix (IT skills, and background in core business disciplines such as Marketing, Finance, and Strategic Management). Remenyi et al. (2005) used the analogy of the chameleon to describe the key characteristics of CIOs, including: ability to internalize change as a way of doing business; ability to see in multiple directions, keeping an eye on a wide range of current and future issues across the organization; ability to strike fast when required; and ability to hang on when the going gets tough.

What is revealing about the above characterization of CIOs and their required competencies is that the job seems heroic - the analogy of "Superman-Superwoman" seems very relevant. The various competencies required of CIOs may be summarized into three general categories: *business and managerial knowledge and skills, interpersonal or soft skills, and technical and IT-specific knowledge and skills.*

2.1.2 CxO and user competencies

Literature has predominantly viewed IT capability as arising from within the IT unit, ignoring the role of business users (or "clients") to strategically leverage IT. Unlike the abundance of research identifying CIO/IT function competencies, there is less research identifying IS competencies needed from the rest of the stakeholders involved in IS investments. In the early days of organizational use of IT, the main responsibility to acquire, implement, and maintain IT investments belonged to the IT function. Since the mid-1980s, as the strategic impact of IT became evident, researchers and practitioners alike have argued that the management of IT and leadership in IT must be a shared endeavour between IT professionals and line managers (Keen 1991, Sambamurthy and Zmud 1999). Brown and Grant (2005) argued for new organizational structures to encourage IT and business units to share responsibility over management of IT assets, leading to more efficient running of IT systems.

Academics and practitioners consistently prescribe for individuals who will be using the proposed IS/IT to be actively engaged in the implementation - to better define functional and non-functional requirements, and to meet the diverse cognitive demands involved with enterprise-level projects. In this context, IS professionals traditionally assumed overall project-leadership roles and 'users' were delegated to a contributing role in communicating business needs and information requirements. However, this arrangement of respective roles is changing as a consequence of users' pervasive exposure to technology and continuous involvement in IS implementations. Furthermore, as enterprise-level IS become increasingly meshed with the operations and strategy of the business, decisions emerge in the implementation process that are more effectively addressed by IT-competent users (Ross and Weill 2002; Peppard et al 2007) whose contextual knowledge is essential. In addition, IT-competent business professionals are also interested in acquiring greater project-leadership responsibilities in partnership with IS professionals (Bassellier et al. 2003).

2.2 Organizational-wide (Intra) Competencies

2.2.1 Change Management

The majority of CIOs indicated that it was very difficult, costly and time-consuming to implement business process changes and related behavioural changes in their organizations. This was a much-cited challenge and also a very dominant challenge in the literature (Benjamin and Levinson, 1993; Wade and Hulland, 2004; Caldeira and Dhillon, 2010). This challenge was more acute in larger and older institutions; in institutions that had not previously experienced major transformations projects; and in organizations where the average employee age was relatively high. The CIO of one of the largest and oldest Lebanese universities had been in the process of implementing a new ERP and experienced a great deal of resistance from faculty chairs and heads of departments. One example of such resistance was in the area of Procurement, where department heads refused to maintain their departmental budgets in the new ERP system fearing, as the CIO indicated, *“loss of control and/or not wanting to disclose their budgetary or spending practices with Management”*. The CIOs additionally attributed this challenge to a number of factors, including: ownership of IT projects resting upon the IT function; not adopting formal change management practices that clearly identify and communicate the required changes and responsibilities to make them; the lack of IT literacy of users and management; lack of a Benefits Management process; having powerful users with self-serving and hidden agendas; lack of change champions, and the lack of empowerment of CIOs to be change agents.

2.2.2 Project Management

Enterprise IS projects are very complex endeavours, involving many internal stakeholders from multiple business and IT departments and external organizations representing software vendors, consultant systems integrators, and other specific external experts. These projects are very lengthy, requiring a minimum of one to three years for completion, and are managed in successive phases covering the planning, implementation, and post implementation aspects. In addition, these projects are complex because they not only involve implementation of a technical IT solution, but also demanding changes to the way business operates. Even though the aim of these projects is to change business behaviour through changes in business processes, policies, and procedures, they are funded, implemented, and evaluated as IT projects, often putting ownership to the IT function rather than the business function. Although the conversation in recent years has moved from project management to benefits management, the ability to manage complex projects successfully can still be seen as a factor in delivering value from IT projects (Nah, 2001; Nah and Delgado, 2006).

2.2.3 Benefits Management

A number of authors have suggested the use of formal benefits management processes to manage value throughout the lifecycle of the IT value proposition (Ward and Daniel, 2006; Peppard et al., 2007; Ashurst et al. (2008). Although we are starting to see a meaningful shift in thinking, many enterprise endeavours are still being run as “short-term” projects, rather than “longer-term” business investments. The real benefits of such investments are typically not realized at the implementation phase of such investments (IT conversion), but may take years after that completion to materialize (IT adoption, use and exploitation). Therefore, these initiatives should be treated as long-term business investments, and should be administered, managed, and governed throughout the lifecycle of such investments.

During the interviews with the various participants, it became apparent that while some organizations, and especially the ones in the Banking sector, had begun adopting partial benefits management processes, none had implemented a comprehensive benefits management program.

2.2.4 Organisational Learning

Organisational learning is concerned with the development of insights, knowledge and associations between past actions, the effectiveness of those actions, and future actions (Huber 1991). There is a large body of literature on organizational learning, but it appears (Bapuji and Crossan, 2004; Gupta et al. 2006) that exploration and exploitation have emerged as twin pillars of organizational learning research. Exploration refers to learning gained through processes of concerted variation, organizational experimentation with new

alternatives, and quests for knowledge about unknown market opportunities. Exploitation refers to learning gained via local search, experiential refinement, and the use of existing knowledge, competencies, and technologies. Scholars engaged in organizational learning research recognize that “the long-term survival of an organization depends on its ability to engage in enough exploitation to ensure the organization’s current viability and engage in enough exploration to ensure its future viability” (Levinthal and March 1993, p. 105). The Framework suggests that organizations must not only develop competencies to derive business value from IT, but must work continually to maintain share relevant knowledge.

2.2.5 IT Governance

Another factor that impacts the value of IT and which has generated a significant amount of research is IT Governance. Complexity in IT architectures and infrastructures, and an increasing need for executives to verify and secure value generation processes call for an increasing awareness and understanding of Corporate Governance in general and IT Governance in particular. The IT Governance Institute (ITGI) defines IT governance as “the leadership, organizational structures, and processes that ensure that the enterprise’s IT sustains and extends the enterprise’s strategies and objectives”. Additionally, they state that “While governance developments have primarily been driven by the need for the transparency of enterprise risks and the protection of shareholder value, the pervasive use of technology has created a critical dependency on IT that calls for a specific focus on IT governance” (ITGI 2003:1). IT Governance reflects broader corporate governance principles. Corporate Governance and IT Governance both pursue an ongoing questioning of the organization’s governance model’s sufficiency in minimizing risks and maximizing returns (Hamaker and Hutton 2004). IT governance may also be defined as specifying the decision rights and accountability frameworks to encourage desirable behaviour in using IT (Weill & Ross 2004).

According to the ITGI (2003), ITG is composed of the following major focus areas:

- a) Business Alignment (to stay focused and to keep the end game in mind)
- b) IT Value Delivery
- c) Risk Management (including security, IT asset protection and assessment of risk of business failures)
- d) IT Resource Management (organizational structures, optimal investment, use, and allocation of IT resources)
- e) Performance Measurement (tracking project delivery and monitoring IT services)

2.2.6 Resource Management

Interviews with the CIOs of the sample organisations revealed Resource Management to be an important factor. This includes in particular the ability to manage, lead, guide, and motivate people working within the organization effectively.

2.3 Inter-Organisational Competencies

The Inter-organizational competencies of all the external stakeholders involved in the IS investment, including software vendors, implementation partners, organizational partners, customer, and other external stakeholders can also be an important factor in deriving value from IT. This clearly adds to the complexity of efforts to secure value from investment. There is little existing research attempting to investigate the IS competencies of external stakeholders or their impact upon value delivery. More specifically, there is scarcity of research that assesses the skills needed by the external stakeholders of the IT value proposition. Feeny and Willcocks (1998) identify the need to build strong relations with IT vendors, but the authors do not explore the competencies of such vendors. Melville et al. (2004) found that the extent and dimensions of value delivery are dependent upon both internal and external factors, including complementary organizational resources of the firm and its trading partners, as well as the competitive and macro environment. However, the authors did not explore the attributes of these resources. Research has shown that when IT spans firm boundaries, the business processes, IT and non-IT resources of trading partners play a role in the IT business value generation of the focal firm (Chatfield and Yetton 2000; Mukhopadhyay and Kekre 2002; Williams and Frolick 2001). However, none of these authors explore the specific IS resource competencies of such trading partners. The competence of IT vendors was questioned by the majority of CIOs in Lebanon, and the CIOs recommended a number of competencies that IT vendors should improve, and these will be covered in more detail in

subsequent chapters. Clearly, this relates back to the competences of CIO and CxO stakeholders in their ability to choose appropriate and reliable partners.

3. Conclusion

Enterprise IS/IT investments, and more appropriately, business transformation investments that involve IS/IT, are complex, long-term, and multi-stakeholder initiatives that have the potential to add (or remove) significant value to/from an organization. IT value is manifested in different ways, defined by key stakeholders in unique organizational settings. It may be manifested as interim organizational outcomes, such as improved business processes, improved organizational IT capabilities, or improved managerial decision-making; or value may be seen to directly impact the financial well-being and competitiveness of the organization. It follows, therefore, that the search for independent variables impacting upon delivery of value will also be specific to the context, activities and conditions of each unique business undertaking.

This paper has drawn together research from a wide range of authors and from our own research with CIOs in a range of organisations in Lebanon. This represents a novel contribution to understanding of value creation and realisation in that country. It has set out a proposed framework to help senior managers to identify and categorise the range of independent variables that may be impacting upon their own, unique situations. The framework demonstrates that achieving value from IS depends on a wealth of complex, independent yet inter-related factors, some of which are within the boundary of an organisation and some of which originate on the outside. It is hoped that this framework can provide a vehicle that organizations can use to visualize and enhance their understanding of the importance that the independent variables contribute to delivering value from IT.

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