Critical Organizational Challenges in Delivering Business Value from IT: In Search of Hybrid IT Value Models

Nazareth Nicolian[1], Christine Welch[2], Martin Read[2] and Martyn Roberts[2]
[1]Faculty of Business and Economics, Department of MIS, American University of Science and Technology, Beirut, Lebanon
[2]Portsmouth Business School, Operations and Systems Management Group, University of Portsmouth, UK
nnicolian@aust.edu.lb
Christine.Welch@port.ac.uk
Martin.Read@port.ac.uk
Martyn.Roberts@port.ac.uk

Abstract: This study forms part of a larger research project to explore and analyze the perceived value of IT and the organizational competencies needed to deliver that value. By identifying and evaluating the challenges faced by Lebanese organizations, this paper provides empirical evidence in support of hybrid models of IT value. While process-based IT value models provide an explanation for "how" IT value is created, and what steps occur to create that outcome, they lack the contingency theory found in variance models, which explain "why" IT value is realized, and what variable moderate that outcome. On the other hand, variance models alone are also ill-equipped to explain the greater scope and impacts of IT investments. Hybrid models combine both process and variance perspectives to provide a more comprehensive theory of IT value realization. Structured interviews are conducted with the Chief Information Officers (CIO) of 36 medium and large size Lebanese organizations to discover the challenges faced in delivering value from IT investments. Of the 14 challenges discovered, seven point to the need for process orientated competencies and these include "Change Management", "Organizational Readiness", "Relationship Management", "Benefits Management", "IT Governance", "IT Architecture Management", and "IT Talent Management". The other seven challenges are variance oriented and point to the factors that inhibit or enable deriving IT value, and these include internal factors, such as: "Family Business Ownership", and "Budgetary Constraints", and other external factors, such as: "Political/Social/Economic Instability", "Telecommunications/Bandwidth Issues", "Lack of Governmental IT Laws", "Local Cultural Issues", and "Immature Local Suppliers/Vendors".

Rather than continuing an already-saturated research conversation about the dependent variable, "IT Value" and whether IT creates business value, this study contributes to the independent variable research stream - the investigation of "how to derive value from IT, and "when and under which conditions" value is realized, and for conceiving a Hybrid model explaining the IT value proposition.

Keywords: IT value Models; Organizational IT competencies and IT challenges; ERP CSFs; CIO

1. Introduction

While the predominant source of Information Systems (IS) research comes from the West, there is emerging IS research in developing countries and in the Middle East region. Although the IS literature coming out of Europe and the USA is relevant to the global community of academics and practitioners, valuable insights could be gained from the experiences of companies in other countries and continents. This paper reports the first part of a larger research project to explore and develop theories explaining how organizations derive business value from their investments in IS, and what competencies are critical to sustain that value, within the context of Lebanon. The aim of this paper is to develop a general baseline of the IS landscape in Lebanon, and to explore and assess the key challenges Lebanese organizations face in delivering business value from Information Technology (IT) and to suggest how these challenges point to the need for conceptualizing "hybrid" models of IT value which better inform the IT value proposition. It is important to note that the terms IT and IS are not necessarily synonymous. The former is commonly regarded as a wider term, encompassing human and procedural, as well as technical elements. However, these terms are used interchangeably throughout the literature of value creation, and that is how they are used in this paper also.

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2. Literature review

2.1 The dependent variable "IT Value"

Although the focus of this paper is to identify and assess the key factors, and the "independent variables" that affect an organization's ability to derive business value from IT, it is imperative to begin that quest with a brief review of the "dependent variable" literature. To understand the factors that enable or inhibit getting business value from IT investments, one must understand the value being sought. Although well over 1000 journal articles, conference papers, books, technical notes have been written on the subject of IT evaluation (Bannister and Remenyi 2000), only a relatively small subset of this literature has been concerned with the core issues of what precisely is meant by the term "value". Bannister and Remeny, (2000) argued that a weakness in much of the current research is the fact that the definition of value is usually unclear, frequently inadequate, often partisan and sometimes completely absent from the discussion.

In answering Keen's (1980) call for defining the IS dependent variable, and in seeing so much diversity and inconsistency in the definition of that variable, Delone and McLean (1992) (DandM) developed a comprehensive model of that dependent variable, which they called, *"IS success"*. The authors evaluated over 180 references to one or more aspect of IS success to develop a taxonomy which involved the following categories of IS success – System Quality, Information Quality, Use, User Satisfaction, Individual Impact, and Organizational Impact. The significance of the DandM model is twofold: by abstracting the various attributes of IS success, the model confirms the complexity and elusiveness of IS success; and by grouping the various attributes of success, the model facilitates definition, measurement, and ultimate attainment of IS success. The model also implies that IS success is a multi-dimensional construct and that it should be measured as such.

In their updated paper, DandM (2003) evaluated over 300 IS success research efforts that applied, validated, challenged, and proposed enhancements to their original model. One of their key findings is that IS researchers are confused between the independent and dependent variables. They used as examples, "User Involvement" and "Top Management Support" as independent variables affecting the outcome of the dependent variable, *"IS success"*. Based on their evaluation of those contributions, they proposed a minor refinement to the original model, adding the concept of service quality and net benefits. Service quality was added to measure the quality of the service provided by the IT function, or the IT provider. Individual and Organizational Impact were replaced by the concept of net benefits which reflected the positive or negative impact of IS on customers, suppliers, employees, organizations, markets, industries, economies or even society.

Additionally, the term IT business value has been commonly used to refer to the organizational performance impacts of IT, including productivity enhancement, profitability improvement, cost reduction, competitive advantage, inventory reduction, and other measures of performance (Devaraj and Kohli, 2003; Hitt and Brynjolfsson, 1996). General expectations are that IT provides services with better quality at a low cost and low business risk with increased agility (Govekar and Adams, 2010). Kohli and Grover (2008) have defined value as the ability to improve access to information, and the ability to generate value from information, and improving the quality and abundance of information.

The extant "dependent variable" literature alludes to the fact that there isn't a single agreed upon measure of the impact and value of IT, and there are many stakeholders involved in the IT value proposition, each having different and often competing needs. The business executive's view of IT value may be different than the view of the corporate IT function, and this in turn, may be different than the view of the actual users of IT, and the view of the other organizational stakeholders, such as customers, partners, and suppliers. While there's general agreement on the overall expectations, benefits, and resulting business value from IT, there continues to be challenges in delivering that value.

2.2 The Independent Variables

The difficulty in defining the business value of IT, and the multiplicity of meanings associated with the concept of IT value are not the only challenges in the IT value proposition. Agreement on the various factors that impact deriving that value is just as problematic. In order to understand and improve IT value derivation, many authors have developed theoretical models that trace the path from IT investments to business value (Lucas

1993; Sambamurthy and Zmud 1999; Markus and Soh, 1995; Peppard and Ward 2004; Melville *et al.*, 2004; Marshall *et al.*, 2007; Ashurst *et al.*, 2008; Ward and Daniel, 2012). These models provide an explanation of the IT value proposition, in terms of how IT value is created, and what factors contribute to maximizing that value.

The majority of such theories fall under one of three possible categories:

2.2.1 Process theories

These theories provide an explanation for 'how' something happens, and what steps occur to create that outcome. In a seminal research paper, Markus and Soh (1995) developed a pure process theory of how IT creates business value. The authors move away from earlier research focused on whether IT creates business value, to the question of how, when and why benefits in IT investments occur or fail to do so. The authors conduct a comprehensive literature review of IT value, and synthesize five previously-developed process models to derive at their own process model. The authors claim that IT value, the dependent variable, is delivered in increments, and that each phase of the IT value proposition creates an intermediate outcome. As depicted in Figure 1, the IT value journey is comprised of 3 major processes, and it begins with the *"IT Conversion process"*, converting "IT Expenditures" to "IT Assets", and is followed by the "*IT Use Process*", where "IT Assets" are turned into "IT Impacts", and finally to "*Competitive Forces Process*", where "IT Impacts" result in "Organizational Performance".

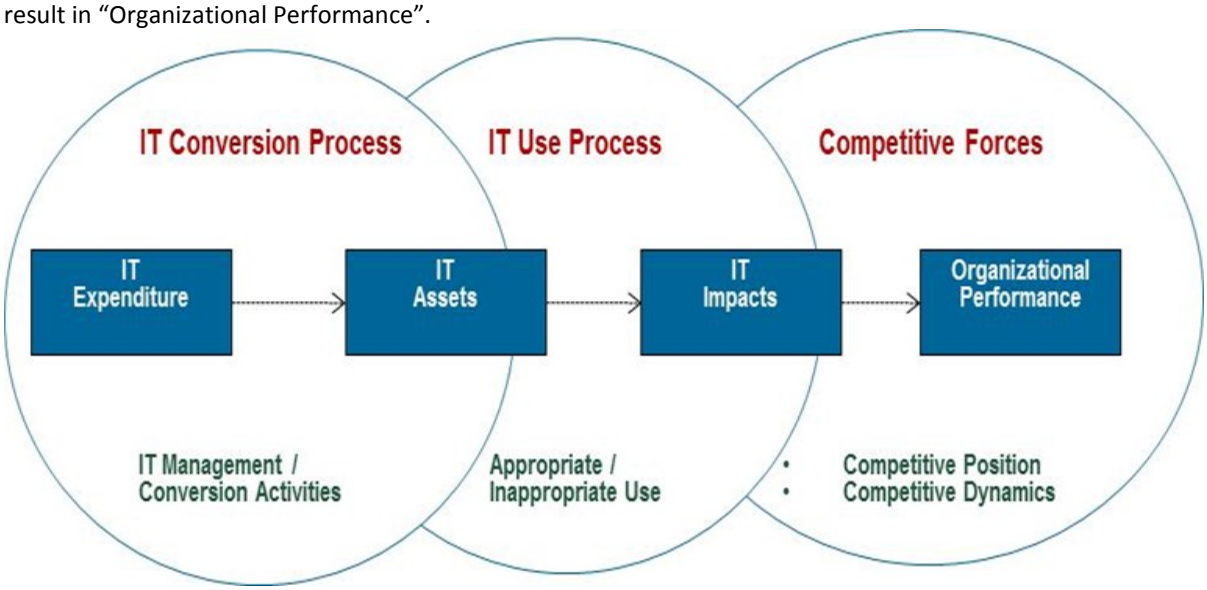

Figure 1: Markus and Soh (1995) – IT Value Model

Marshall *et al.,* (2007) analyzed the process model developed by Markus and Soh (1995) and proposed revisions to make the model more comprehensive. The authors added a key process in the beginning of the lifecycle which they called "*IT Alignment Process*", arguing that "*IT expenditure"* alone cannot give rise to business benefits, and that expenditures need to be linked back to business strategy and business requirements. Therefore, to ensure that the business focus of IT expenditures is both explicitly-recognized and featured in the model, they add the "Alignment Process". The new model is depicted in Figure 2.

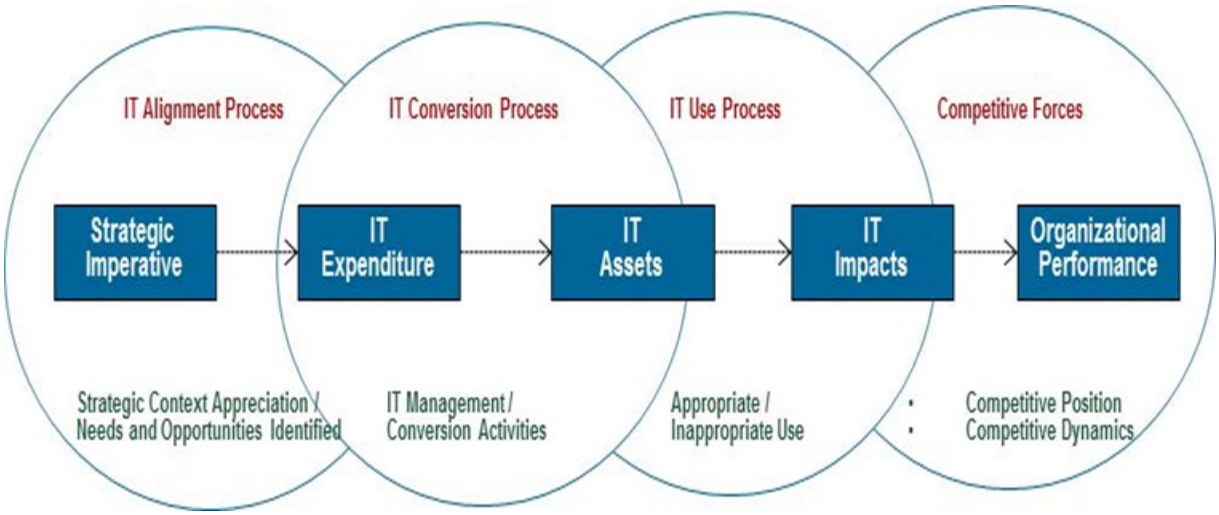

Figure 2: Marshall et al., (2007) – IT Value Model

In search for competencies that explicitly contribute to the realization of benefits from IT projects, and heeding the call to develop benefits management practices from Peppard and Ward, (2000), Ashurst *et al.* (2008) developed a benefits realization competence framework that conceptualizes the lifecycle of IT projects as comprising the following key phases: "Benefits planning", where the planned outcomes of an IT project are identified, and the means of means by which they will be achieved are stipulated; benefits delivery, where the actual design and execution of what they called the "*program of organizational change necessary to realize all of the benefits specified in the benefits realization plan"* takes place. "Benefits review", where the assessment of the success of an IT project takes place, and where the identification of the ways and means by which further benefits might be realized takes place. "Benefits exploitation", where what they called '*the adoption of the portfolio of practices required to realize the potential benefits from information, applications and IT services, over their operational life*' take place. Their model is depicted in Figure 3.

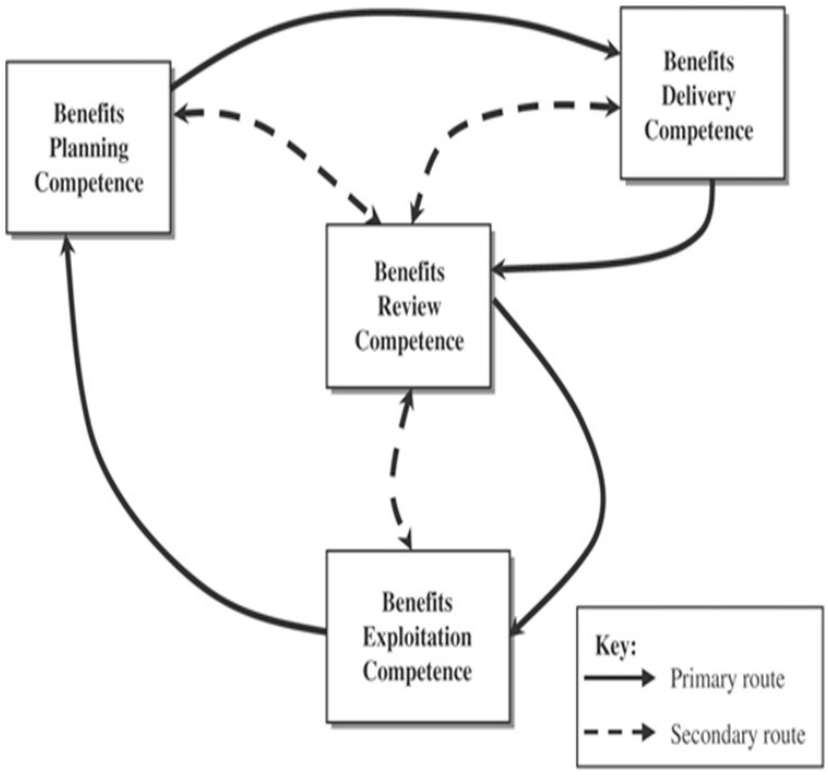

Figure 3: Benefits Realization Capability model - Ashurst et al., (2008)

As illustrated in Figure 4, Markus and Tanis (2000) identified four phases in the lifecycle of one of the most complex and potentially the most value-adding IS investment, ERP. The authors define the first phase as the *"chartering phase"*, comprising decisions leading to funding of the ERP project. They define the second phase of their lifecycle as the *"project phase"* comprising system configuration and rollout. The third phase in their lifecycle is called the *"shakedown phase"*, and they define it as the period of time from "going live" until "normal operation'' or "routine use" has been achieved. They define the final phase of *"onward and upward phase"* as the on-going maintenance and enhancement of the ERP system and relevant business processes to fit the evolving business needs of the organization.

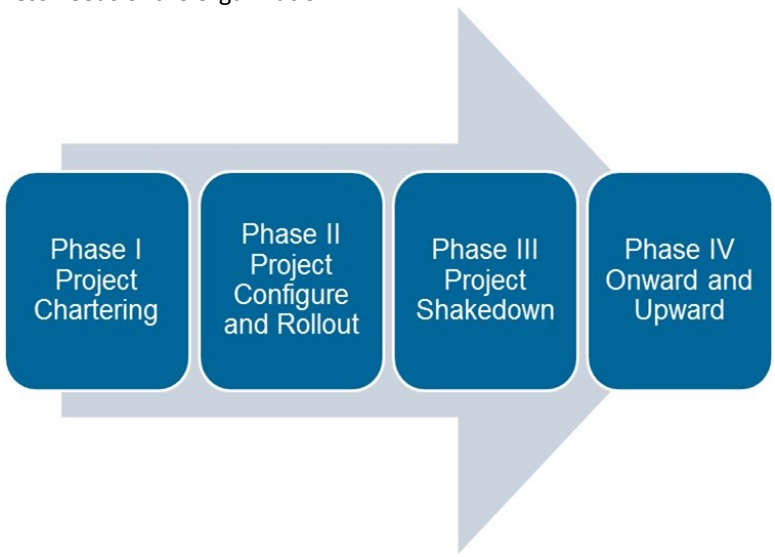

Figure 4: Markus and Tanis (2000) IT Value Model

Ward and Daniel (2012) incorporating their earlier research (2006), developed a process-driven model consisting of 5 major iterative steps: 1. Identify and structure the benefits, which results in developing a business case identifying the objectives for the investment and all potential benefits that could be obtained; 2. Plan the benefits realization containing a full benefits plan and a business case for the investment; 3. Execute the benefits plan, which includes the actual conversion and implementation of business process changes and information system implementation; 4. Review and evaluate the results, which takes place after the implementation is completed, as a post implementation review step, to assess performance and adjust accordingly; and 5. Establish the potential for further benefits. Their model is depicted in Figure 5.

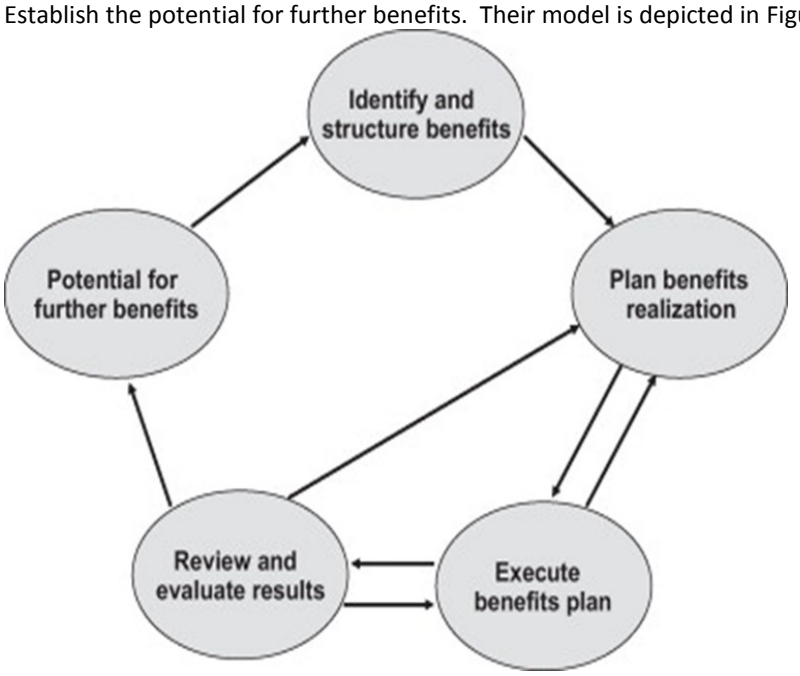

Figure 5: The Benefits Management Process Model - Ward and Daniel (2006 2012)

2.2.2 Variance theories

Variance theories explain 'why' something happens, and what variables moderate that outcome. A major reason businesses fail to realize business value from their IS investments is their lack of appropriate individual and organizational competencies, and not exploiting certain contextual factors. Mohr (1982) coined the term "variance" to describe the way that researchers view the world when they see it comprised of independent and dependent variables. In terms of theoretical concepts, the variance approach focuses on properties of entities, often called variables or factors. It is assumed that these properties can have different values even though the property itself has a fixed meaning. For example, an IT system might have the property "system quality." The meaning of system quality remains fixed over time even though the values for any given system could change over time (e.g., from high to low) and different systems could have different values at any point in time.

In 2000, Marchand *et al.,* surveyed over a thousand senior managers from 169 senior management teams in 98 companies operating in 22 countries and 25 industries to discover how the interaction of people, information and technology affect business performance. The authors proposed their model as a new instrument to measure the effectiveness of organizational information use, comprising the following three elements:

Information technology practices (ITP), which describes the capabilities of a company to effectively manage IT applications and infrastructure to support their business operations, business processes, managerial decision making, and innovation.

Information management practices (IMP), which describes the capabilities of a company to manage information effectively over the lifecycle of information use, this lifecycle includes sensing information, collecting information, organizing information, processing information, and maintaining information.

Information behaviors and values (IBV), which describes the capabilities that promote behaviors and values (information culture) in its people for the effective use of information.

The Marchand *et. al* (2000) model is adjusted in Figure 6 to conceptualize the theoretical constructs of the model. The model is a variance theory linking certain organizational competencies - Hard IT Management (ITP), Hard Information Management (IMP), and Other Soft Behaviors and Values (IVB) - to organizational performance. In order to improve organizational performance (dependent variable), organizations must develop these organizational competencies.

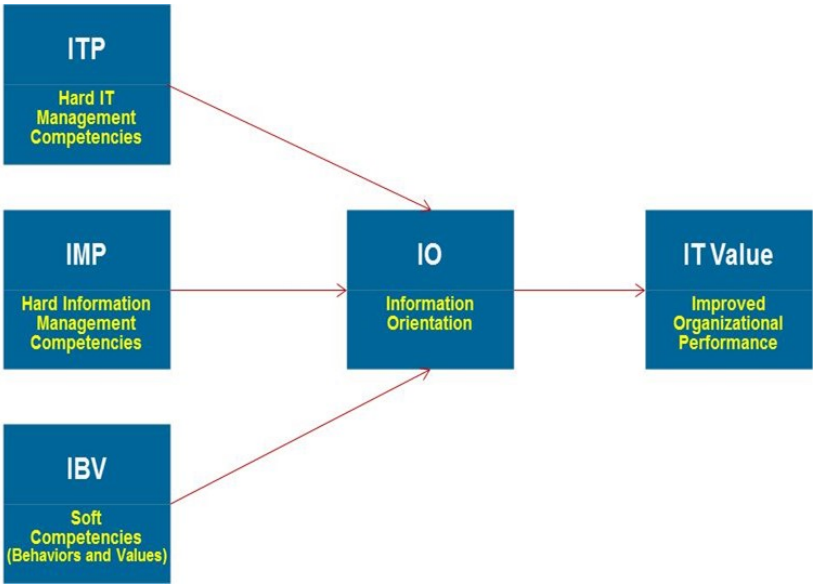

Figure 6: The Marchand et al., (2000) Adjusted Information Orientation Model

As Figure 7 illustrates, in the Sambamurthy and Zmud, (1999) model, raw materials (technology, knowledge, data), as well as resource competencies (knowledge of how to apply IT, and knowledge of business activities) enable the creation of intermediate "IT impacts" (new/improved products and services, transformed business processes, enriched organizational intelligence, and dynamic organizational structures. This implies a necessary and sufficient relationship between IT management competencies and "IT impacts": the greater the competencies, the greater the impact. According to the authors, "IT impacts" eventually lead to business value and improved organizational products and services, but the authors do not elaborate on how "IT impacts" create ultimate business value, and what processes or conditions are necessary to create that final outcome. Although the authors mention the need for IT management processes as a condition to create "IT impacts", they do not elaborate on such processes, and therefore, the model appears to be a variance theory of IT management competencies and "IT impacts".

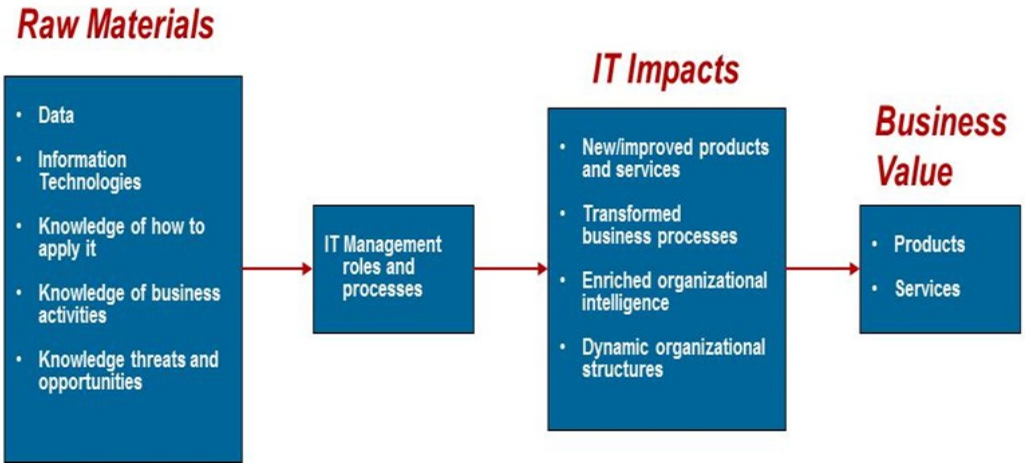

Figure 7: Sambamurthy and Zmud (1999) model of IT Impacts

Peppard and Ward (2004) used the Resource-Based-View (RBV) theory of the firm and grounding their research with the prior work done by Peppard *et al.* (2000) developed a model representing the components of what they called "The IT Capability". The model has three levels: the resource level, the organizing level and the enterprise level (see Figure 8). The resource level denotes the resource components that are the key ingredients of the IS competencies. In managing IS, these resources are the skills, knowledge and behavioral attributes of both employees and external providers. The organizing level is concerned with how these resources are mobilized and marshaled via structures, processes and roles to create IS competencies. It is, however, only at the enterprise level the authors contend that the capability actually manifests itself and is ultimately recognized in the performance of the organization.

Compared to the earlier model of IS competencies developed by Peppard *et al.* (2000), this model presents a notable improvement. The "IS capability" in their model is the dependent variable, and all the other factors listed are the independent variables. Organizations mobilize resources and arm these with the proper organizational processes and structures to create an intermediate outcome - IS capability - which in turn may be used by firms to improve their performance.

At first glance, the model appears to be a hybrid model, combining both process and variance orientation. However, a closer look reveals that the process component does not really address how IT value is created, and does not offer a recipe-like sequential process of how value is created. Although the authors allude to a process construct, they use that more as a factor or variable, and therefore, their model appears to be more of a variance theory, linking various factors, such as individual resource competencies, organizational competencies, and organizational structures as key variables affecting IT value generation (in their case leading to an IT capability).

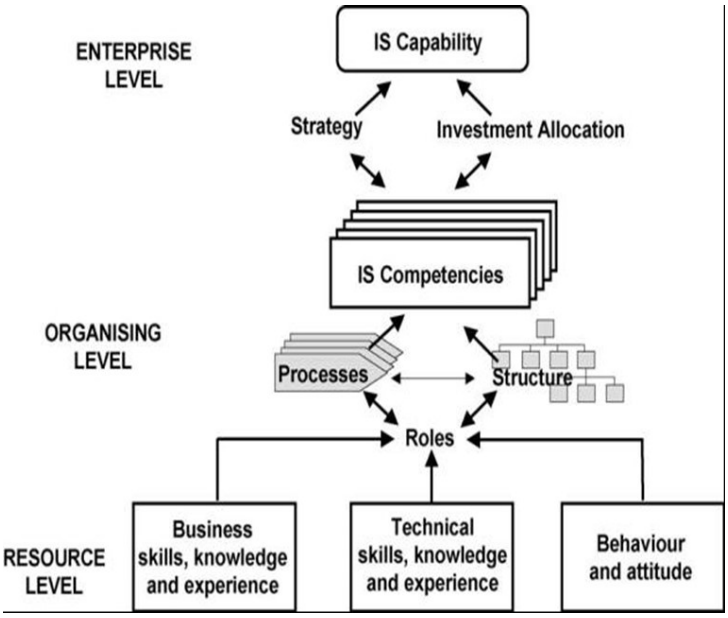

Figure 8: A model of the IS capability adapted from Peppard and Ward (2004)

2.2.3 Hybrid theories

In order to provide a more comprehensive explanation of the IT value proposition, in terms of the processes, as well as the factors that enable and maximize business value, a few authors have developed hybrid IT value models (Lucas, 1993; Melville *et al.,* 2004). Burton-Jones *et al.,* (2011) elaborate the many benefits that hybrid approaches provide to theory-building in IS research, and these include: improving understanding of concepts (whether the state of an entity is affected by events or processes), and improving understanding of relationships (the process by which a relationship among properties occurs).

As Figure 9 illustrates, Lucas (1993) is concerned with how (process) IT increases firm performance. He proposes two conditions, occurring in sequence, leading to the performance outcome. The first, necessary but not sufficient, condition is that IT be designed in such a way that it fits the firm's task effectively. An effective IT design is not, however, sufficient for organizational performance improvement, because technology cannot improve organizational performance unless the technology is used. Therefore, appropriate use of an effectively designed technology is also a necessary condition for improved organizational performance in Lucas' model. Lucas acknowledges that factors other than appropriate use of an effectively designed technology may influence firm performance (e.g., competitor's reactions).

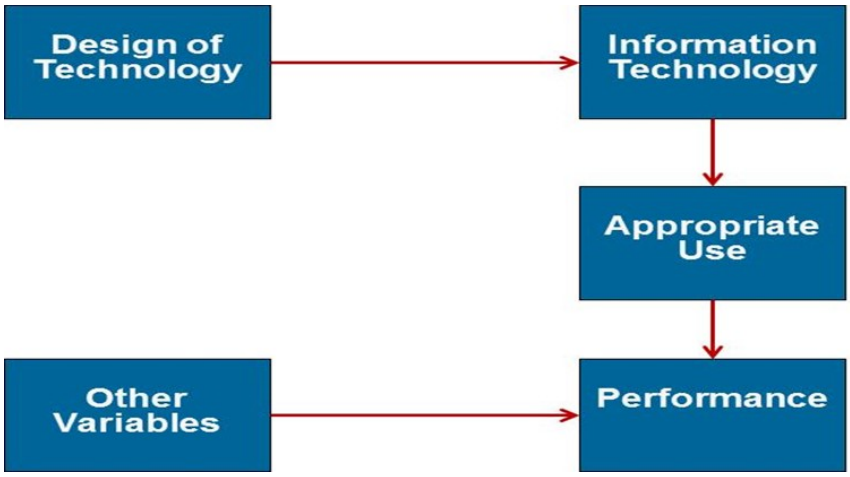

Figure 9: IT Value Model – Adapted from Lucas (1993)

In one of the most-cited IT value research papers, Melville *et al.*, (2004) use the RBV of the firm to develop a descriptive model of the IT business value generating process integrating the previous strands of research into a single framework. One of their principal findings is that IT is valuable, but the extent and dimensions are dependent upon internal and external factors, including complementary organizational resources of the firm and its trading partners, as well as the competitive and macro environment. The authors suggest that if the right IT is applied within the right business process, improved processes and organizational performance result, conditional upon appropriate complementary investments in workplace practices and organizational structure and shaped by the competitive environment. The authors'IT Value model comprises three domains. The first of these is the "focal firm", which is the organization acquiring and deploying the IT resource firm. Within the focal firm, IT business value is generated by the deployment of IT and complementary organizational resources such as policies and rules, organizational structure, workplace practices, organizational culture, non-IT physical capital resources, non-IT human capital resources, and what they call organizational capital, e.g., formal reporting structures and informal relationships within and among firms. The authors separate the second domain, "competitive environment" into two components: industry characteristics and trading partners. In industry characteristics, they include competitiveness, regulation, technological change, and other related factors. The authors suggest that when IT spans firm boundaries, the business processes, IT resources, and non-IT resources of trading partners play a role in the IT business value generation of the focal firm. According to the authors, the third domain, "macro environment", denotes country- and meta-country- specific factors, which include government promotion and regulation of technology development and information industries, IT talent, information infrastructure, as well as prevailing information and IT cultures. The model is depicted in Figure 10.

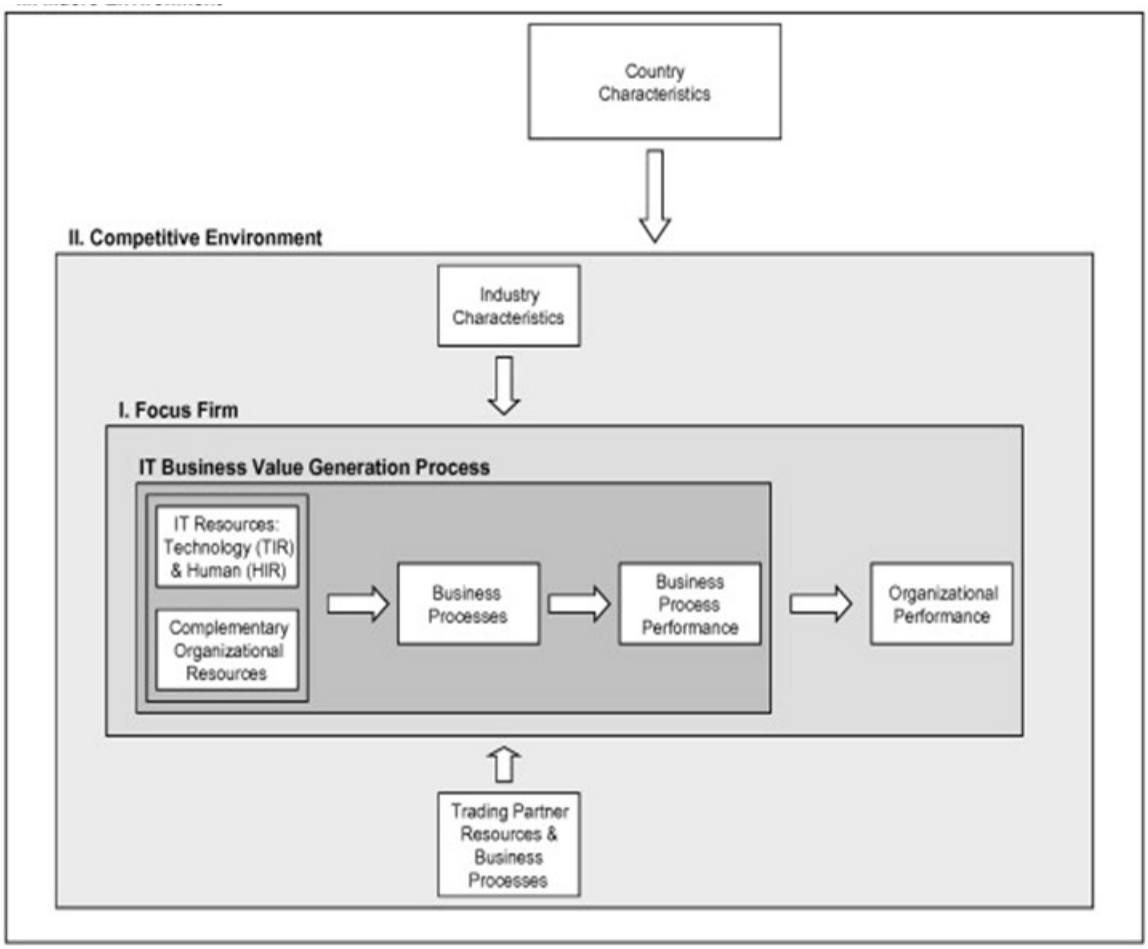

Figure 10: IT Business Value Model (Melville et. al 2004)

Schryen (2013) conducted a comprehensive review of the IS Value literature and found that the value creation process remain unclear in terms of how, why and when IS assets and organizational capabilities are transformed into business value. The author indicated that IS business value theory building and testing as one

of the key challenges of future research, and argued that the best theories of IS Value are "hybrids", combining the best qualities of "Variance" and "Process" orientation.

2.3 Additional factors affecting IT Value Derivation

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 advocated the use of IT Governance (Marshall et al, 2007; Sambamurthy and Zmud, 1999; Peterson, 2004; Avison et al (2006); Weill and Ross, 2004). Others have suggested the use of formal benefits management processes to manage value throughout the lifecycle of the IT value proposition (Peppard, 2007; Ward and Daniel, 2008).

There is also a large body of research evaluating individual competencies needed by the Corporate IT function and the CIO. Periasamy and Seow (1998) identified five critical success factors for the CIO to deploy IT to deliver optimal value to his organisation promptly and successfully. 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. Polansky et al. (2004) presented a 10 Point Leadership Agenda for CIOs, which comprised IT strategy; IT governance; IT organisation and staffing; technology and architecture; technology awareness; corporate governance; business intelligence; business transformation; customer care; and Internet and e-business. CSC (1997) defined six leadership roles for the CIO (e.g. Chief Operating Strategist) and Remenyi *et al.* (2005) used the analogy of the Chameleon to describe the key characteristics of CIOs (e.g. the ability to change). Chun and Mooney (2009) found that much of CIO role has evolved to the executive-level management and is centered on working with other business executives inside and outside of the firm to change the firm's strategy and processes.

A stream of research has looked beyond the individual competencies needed by CIOs and the corporate IT function, and stressed the importance of user-related and other contextual attributes as contributing factors to IS success. Sabherwal et al. (2006) developed and tested a comprehensive theoretical model linking IS success with four user constructs (user experience with IS, user attitude towards IS, user training in IS, and user participation in the development of IS), and two constructs representing the context (top-management support for ISs and facilitating conditions for ISs). Several authors (Armstrong and Sambamurthy, 1999; Feeney and Willcocks 1998; Sharma and Yetton, 2003; Salvage and Dhanda, 2007) emphasized the importance of non-CIO executives taking an active role in the planning of IS. Peppard and Ward (2004) argued that competence is an organizational concept that reflects a bundle of skills and technologies while capabilities are related to the strategic application of competencies in order to achieve business objectives.

Furthermore, a number of researchers have highlighted the impact of human/social factors within business organizations. Nissen (2002) points out that the concept of 'user' may not be a helpful one in the context of an IS value proposition, since it serves to insulate system developers from the needs of real business professionals. Few people, he suggests, would define themselves as users of IT, but as accountants, sales personnel, storemen, etc. Furthermore, they are not simply 'consumers' of information systems, but co-creators. As Ward and Peppard (2002) point out:

> *As the benefits management process proceeds, it may cause revision to the specification, and it is assumed that effective change control processes can deal with this. The other related set of activities are organizational changes of many types that have to be made to deliver the benefits. The benefits management process should be the driving mechanism for these change activities. How to bring them about in detail is addressed in the wealth of change management and organizational development literature (2002, p.441).*

While most researchers have concentrated on rational choices involved in IT/IS deployment, this does not always reflect the whole picture. The affective zone can also have an impact on benefit realization, but this factor is often swept up into consideration of 'change management practice'. Argyris (2004) describes how 'defensive routines' can arise in organizational behavior. When faced with the need to address uncomfortable choices or deliver 'bad news', people may wish to avoid awkwardness or confrontation, and thus become quite skilled in what Argyris calls 'skilled incompetence'. In a magazine article, Williams (2007) reported on research commissioned by the IT Governance Institute. 52% of the projects sampled were expected to lead to negative returns, while 31% actually destroyed value for the companies concerned, yet only 3% of projects were

abandoned before completion. This suggests that managers were continuing to preside over projects knowing that they would destroy, rather than create business value. Williams reflects that this cannot be accounted for through rational management decision-making, but suggests reluctance by managers to cancel when this might be seen as a sign of weakness and failure.

2.4 The country-specific CIO experience

A number of other authors have explored the challenges faced and competencies needed by CIOs within the context of a particular county. For example, to understand the individual competencies required of CIOs in Brazil, Vreuls and Joai (2011) evaluated seven competency models found in literature and used a pure quantitative approach to identify CIO competencies from the perspective of Brazilian CIOs. They concluded that CIOs should possess/develop knowledge of the business; understanding of the organizational context; the ability to influence the organization; technical expertise; external networking; management of the information technology operation and the capacity to innovate using new information technologies. Reviewing 3 large Australian IS projects and their failures, Avison et al (2006) found that managerial IS unconsciousness and failure in IS governance, defined as patterns of authority for key IS activities in firms, including IS infrastructure, IS use and project management can even lead to the bankruptcy of private companies and the waste of millions of dollars of taxpayers' money. The authors also argued that the importance of IS governance is largely ignored in the failure literature (Avison and Wilson, 2002).

Zuo and Maou (2005), carried out the first academic study in China with regard to CIO state and impact. The Chief Executive Officer's (CEO) perspective in that study was that CIOs need to be more business-oriented, requiring soft skills and relationship management skills. Using a different approach, Gottschalk (2000) looked at CIO roles in Norway, which lead to the identification of required competencies. Oracle conducted a study in 2011 and included information from a number of regional CIOs/organizations (e.g. Saudi Arabia, Emirates, Jordan, Dubai, India and other emerging markets). They found that the IT knowledge and competency of non-IT people (general Management and the users) is weak and that CIOs are surrounded by executives who have an inadequate awareness of IT capacity.

3. Data collection

The data in this paper has been collected from interviews with the CIOs of the participating organisations. Two interviews with each of the participating CIOs were conducted, followed by an offline collaboration process, using email as the platform to confirm and to prioritize the challenges raised during the interviews. Next, a one day forum was organized allowing the CIOs to meet each other and to collaborate real-time on the key challenges. The forum was also used as an opportunity to plant the seeds for a more permanent platform for CIO collaboration and for future research, which ultimately resulted in the formation of the *"CIO Lebanon Association"* officially approved by the Lebanese Ministry of Interior.

Data from Kompas (2009) was initially used to identify the total population of industries and organizations. Subsequently, a sample was selected to include organizations that represented the four key industries in Lebanon: Banking, Healthcare, Higher Education, and Retail (77% of the sample included such companies). It was also important to choose organizations that had significant experience in IT/IS, and with no prior IS studies to reveal that population, organization size (no. of employees) was used as a substitute to select the participants (35% of large organizations and 8% of medium size organizations in Lebanon were included in the sample), (See Tables 1 & 2):

Table 1: Lebanese organizations and sample used

	Total for Lebanon	Sample
No of Organisations > 500 employees	78	26
No of Organisations 250 - 500 employees	122	10

Table 2: Participating organizations

Sector	Sample
Banking	11
Healthcare/Hospitals	6
Higher Education	6
Airline carrier	1
Post office	1
Retail	5
Telecommunications	1
Printing	1
Logistics	1
Pharmaceuticals	1
Food & Beverage	1

4. Results

A total of 14 key challenges were identified and categorized as either "process-related", i.e. ways and means of deriving value from IT investments, or "variance-related", i.e. factors that affect getting maximum value from IT. Process-oriented challenges included:

4.1 Change resistance and the need to manage change

The majority of CIOs indicated that it was very difficult, costly and time consuming to implement business process changes and related behavioral changes in their organizations. This was by far one the most important challenge raised. The CIOs attributed this challenge to a number of factors, including: ownership of IT projects resting upon the IT function; not adopting formal change management processes; lack of IT literacy of users and management; having powerful users with self-serving and hidden agendas; lack of having change champions, and the lack of CIO empowerment.

4.2 IT illiteracy of management and users and the need for organizational readiness

While this was generally less of an issue in some sectors (e.g Higher Education), this was a major issue preventing the majority of participating organizations in getting maximum value from IT. The CIOs of organizations that had this issue attributed it to a *"generational gap"* claiming IT illiteracy among their older employees who were still in charge of key management positions. Other CIOs blamed the Higher Education sector in Lebanon for not preparing future managers adequately in the use and exploitation of IT. While most of the participating organizations had developed employee training programs, the training was more oriented to developing general IT literacy competencies, rather than developing IT planning, exploitation, and value extraction competencies.

4.3 Inadequate CIO to CxO relations and the need for better relationship management processes

The title of CIO was only given to four of the participants, while others held a number of other titles, including Director of IT, Head of IT, and IT Manager. Three of the CIO positions were in the Banking sector, and one in Higher Education. More than half of the participants reported directly to the top executive. 80% of the CIOs in the Banking sector reported to the Chief Operations Officer (COO), and only one of the CIOs in the Higher Education industry reported directly to the President, the rest reporting to the VP of administration position. In other sectors, it was a mixed bag, with some CIOs having direct access and strong relationships with their CEOs, and others reporting to lower level executives and therefore lesser potential impact on their organizations. Where the relationship was direct, the CIOs enjoyed a strong and productive relationship, resulting in an equal seat at the executive table and a direct involvement and impact to their organization's strategy. Many of the CIOs who did not hold that title, or did not report directly to their CEOs expressed a deep concern and attributed this issue to the lack of appreciation of the strategic value of IT within their organizations.

4.4 Lack of formal and comprehensive benefits management processes

None of the participants had implemented a comprehensive benefits management program. While some (25%) had developed formal processes at the early stage of planning IS investments (by using business cases),

and others (50%) had formal project management practices during the implementation stage of IS projects, none had any meaningful management practices at the post implementation stage. It also seemed that the majority of companies and their management were not interested or capable of accurately measuring the value of their IS investments. Of those companies that were measuring, the focus was either on project efficiency measures (in-flight, or during IT project implementation metrics) such as: delivery of projects on time, on budget, and according to customer scope and requirements; or the focus was more on IT operational measures (availability, throughput, and response time).

The majority of CIOs were also struggling to convince their users to own or at least co-own the responsibility of deploying information systems and more importantly the responsibility of reaping the benefits from such investments. In addition, the business value of IT was poorly defined and vaguely understood and not common to all stakeholders within the organization. More than 40% of organizations viewed IT as a cost center, rather than as a partner in generating value.

4.5 Lack of formal IT governance

While a number of organizations, especially the ones in the Banking sector have instituted structural forms of governance, in the forms of organization-wide IT steering committees to approve and manage enterprise IT projects, IT decision rights were, in the majority of organizations, owned and exercised by the Corporate IT function. Many of the CIOs attributed this to the lack of technology literacy of their Management and users. There was also an emergence of enterprise-wide Project Management Office (PMO) structures in a few organizations, but these were in their very early stages. The PMO function either did not exist (75% of cases), or was just being implemented.

4.6 Complex IT applications architectures and the need for IT Architecture Management

The applications architecture (AA) construct is a conceptual model representing departmental and enterprise information systems in support of operational business processes and analytical decision-making. The challenge as described by the CIOs was that their AA was very complex, difficult to support, did not fully support their business strategy, and was not flexible. The most significant issues include:

- Legacy information systems built with antiquated ICT technologies.
- ERP systems that have been heavily customized and no-longer supported by ERP vendors. Almost every CIO indicated at one time or another having difficulty and/or failing to implement enterprise applications. Two of the major retail organizations had customized their ERPs to the point where it was impossible for them to upgrade to a new version of the ERP.
- The majority of CIOs did not have a clear AA roadmap or strategy, and even if such a roadmap existed, it was not a formal planning process linked with their overall business planning process.

4.7 IT talent management issues and the need to have better IT Management

This was mentioned as a key issue by more than 70% of the participants, and it was a more acute issue when it came to finding senior level people. A number of the CIOs felt that this was a much bigger issue 5 years ago when talent was being lost to higher-paying markets outside of Lebanon. However, due to the economic problems in the Gulf, and the relative stability in Lebanon, CIOs felt that this issue was more under control.

The list of other “variance-related” challenges included:

4.8 Family business ownership

With the exception of organizations that were owned by religious entities (three Hospitals and three Universities), or public organizations (two were involved in this study), or organizations that weren’t family owned (two Universities, and two other organizations), all remaining 26 organizations were family-owned, which constituted 72% of the participating organizations.

The predominance of family business ownership is one of the characteristics of the Lebanese economy. In family firms, property and control are so firmly entwined that family members are involved in both strategic and day-to-day decision making, and the firm is shaped by dynastic motive. As evidenced by this research, the

family impact extends to large organizations, and many organizations in the thriving banking industry, for example, were closely held by extended families. Five of the family-owned organization felt that family-ownership was a positive situation because it involved leaders who were also owners that cared about the longevity and long-term viability of their firms, as opposed to leaders that were only in these positions to establish short term gains. All remaining family-owned organization CIOs indicated serious disadvantages arising from family ownership, such as unfair and inconsistent human resource policies in the recruitment, selection, and promotion of employees.

4.9 Budgetary constraints

This was more of a challenge in the Healthcare sector, as most of the organizations in this sector had cash flow issues due to significant delays in receiving remittances from the Government. The CIOs in the Healthcare sector indicated that the biggest share of their revenues came from government-insured patients (75%), and only 25% of their patients had private insurance. This was also a challenge in smaller organizations.

4.10 Political, economic, and social instability

Lebanon has witnessed many devastating wars before and after its independence from France in 1943. The most devastating recent war lasted for over fifteen years beginning in 1975. Another recent war in 2006 resulted in the destruction of the majority of the country's infrastructure. Since 2006, the country continued to experience many additional conflicts inside the country and throughout its surrounding neighboring countries. Many of the CIOs expressed total frustration and lack of control over these issues and found this to be the most serious challenge they faced.

4.11 Telecommunications issues

During the initial interviewing process, this challenge clearly emerged as the top challenge among most CIOs. Issues related to the reliability, availability, and cost of Internet bandwidth was a key concern. This even resulted in three of the organizations having to compromise the architecture of their core ERP system. The affected organizations had several branches in the region, and have deployed an ERP product in a totally de-centralized architecture/approach. Had they had more reliable and affordable Internet access, they would have chosen to deploy these ERPs using a centralized architecture/approach.

4.12 Lack of Governmental IT laws

One of the key issues raised by the majority of CIOs is the lack of any governmental ICT legislation regulating and protecting the electronic rights of organizations and consumers.

4.13 Local culture issues

This was mentioned by the majority of CIOs as a key and possibly detrimental factor in not only getting business value from IT, but in getting any value from the business. Three of the CIOs that are currently engaged in re-engineering their entire organization spend the majority of their time (one CIO indicated that it is as high as 70% of their time) dealing with and managing cultural transformation. The issue of "entitlement" was dominant in larger organizations, and in organizations that were family-owned.

4.14 Immaturity of local suppliers, vendors, and partners

All CIOs indicated their dissatisfaction with local professional services organizations, and expressed a need and commitment to help improve these vendors' service levels. Also of deep concern in the Hospital sector was the lack of ICT competence in doctors, which created a key challenge in rolling out IT applications and services. In the Higher Education sector, there were similar issues with Faculty members who did not want to be involved in the planning, implementation or roll-out of applications, and when it came to using such applications, they abdicated that responsibility to their assistants.

5. Conclusions and future steps

The challenges in deriving business value from IT suggest the necessity to develop certain organizational competencies. While these reflect the Lebanese CIO experience, many of these challenges and related competencies have also been found in the extant literature. As Figure 11 illustrates, some of these

competencies may be classified as process-oriented ("*how to derive value from IT*"), and others are competencies that require organizations to mind, mitigate, and exploit certain internal and external organizational factors ("*when, how, and under what conditions IT value is derived"*). Process-oriented competencies are critical; however, they are not enough, and should be complemented by variance-oriented competencies. The need for both types of competencies justifies the use of *"Hybrid"* models of IT value. The conceptual model that emerges from this study is preliminary and is grounded in the data gathered from key Lebanese CIOs. Future studies should engage with other CIOs, in and out of Lebanon, and with all the other stakeholders involved in the IT value proposition, be it Management, users, vendors, and other key stakeholders, to refine and adjust the model.

The arrows in Figure 11 refer to the various strands of future research that should be conducted. Arrow 1 suggests identifying the inputs driving the entire value proposition, and investigating the relationships between such inputs and the rest of the model. Arrow 2 calls for investigating three aspects of the process part of the model: identifying the sequence (if any) of activities; identifying additional possible missing activities; and investigating the relationships between these activities. Arrow 3 suggests investigating the relationships between the process and variance components of the model. Arrow 4 calls for investigating the relationships between the various internal factors, and also the need to identify additional such factors that impact the value proposition. Arrow 5 calls for investigating the relationships between the various external factors, and also the need to identify additional such factors that impact the value proposition. Finally Arrow 7 suggests investigating the relationships between the independent variables (process and various components) and the dependent variable, *"IT Value"*. While there is an abundance of literature about the dependent variable itself, additional valuable insights may be gained by continuing the benefits management research agenda developed by Peppard and Ward (2007), and Wards and Daniel (2006, 2012). Finally, future research should also compare and contrast the emerging IT value model with the extant IT value models.

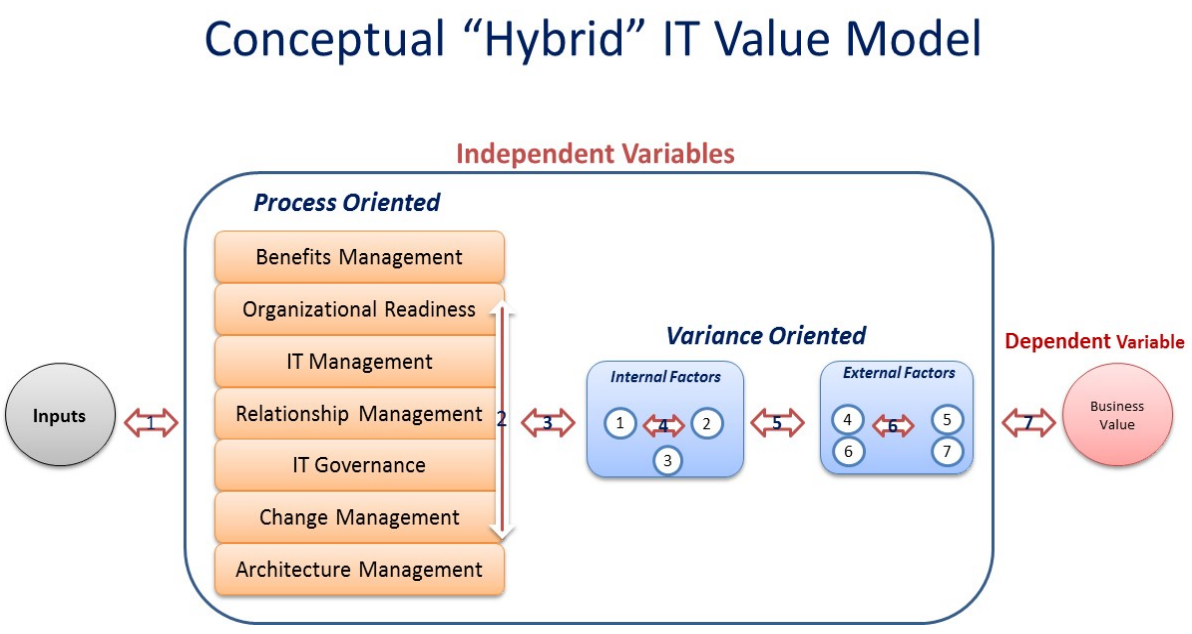

Figure 11: A Hybrid IT Value Model

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