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The role of IT governance in generating business value from IT investments in healthcare: *Lessons from an Australian experience*

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Abstract

Digitizing the core processes of healthcare delivery is looked at as a solution to control the escalating costs without compromising quality or patient outcomes. However, to date the business value of such IT solutions remains elusive, especially in view of the high failure rate of many solutions coupled with the high user resistance. The uniqueness of the healthcare industry makes measuring the business value of IT a complex missions, yet it is the thesis of this research that such an activity is an essential first step if we are to realise the full potential of IT in healthcare. The role IT governance can play is of high importance to generate business value from IT investments in healthcare. This is investigated using an integrative model that is proffered to conceptualise the business value of IT in healthcare. This conceptual model is then used to guide an exploratory case study based at a leading private healthcare provider in Melbourne-Australia.

Keywords: Well-being, Business Value, Value, Information Technology, IT Governance

1 Introduction

Today, digitizing healthcare processes is a relatively common practice, and we see more healthcare providers aggressively moving to IT-enabled solutions, which need both up-front and ongoing investments for outcomes that no one can precisely predict (Weill & Ross, 2004). This trend has found a good appetite for researchers to study the impacts of different IT solutions. Although there are plethora of such studies, most of them share the same two types of limitations. First, the lack of a comprehensive framework

that looks at these systems in their contexts. Second, the scope of these studies is mostly limited on the impact of one system on limited measurements in the output. This paper represents a part of a larger research project to comprehensively assess business value of IT. It particularly investigates the role of IT governance in generating business value of IT in the context of healthcare.

This paper is arranged as follows. First, it gives a brief summary of the terms ‘value’ and ‘business value’, and then some insights from the literature on the basic definitions and principles of IT governance, and how does it differ from IT management in the contemporary organisations. Then the conceptual model to assess business value of IT in healthcare along with the underpinning theories will be presented, followed by the case study and the findings and discussion.

1.1 Value and Business Value

Healthcare commentary often revolves around universal availability and cost control, i.e. access and cost (Wickramasinghe & Schaffer, 2010). Further, value is often defined in terms of the expenditure outcome benefits, divided by the cost expenditure (Porter & Teisberg, 2006). The healthcare benefits, from a patient’s perspective, include the quality of healthcare outcomes, the safety of the delivery process, and the services associated with the delivery process (Rouse & Cortese, 2010; Wickramasinghe & Schaffer, 2010)

The term 'business value of IT' is commonly used to refer to the organizational performance impacts of IT i.e. the impact of enterprise architecture (digitizing the operations in a firm) including cost reduction, profitability improvement, productivity enhancement, competitive advantage, inventory reduction, and other measures of performance (Melville, Kraemer, & Gurbaxani, 2004).

It is important to emphasize that business value of IT is not a value by itself; rather, it is a model that suggests how value might be generated by implementing different IT solutions (Haddad, Gregory, & Wickramasinghe, 2014).

1.2 IT Governance

The term IT governance is relatively new in the academic and professional contexts (Wim Van & Steven De, 2012). One of the main reasons it has emerged was the increasing need for higher level of accountability and responsibility. This, in turn, was a direct result of many failures in generating business value from IT investments (Weill & Ross, 2004).

The Term IT governance has evolved from a mere mechanism to manage IT implementation to extend beyond IT contexts and cover the business domain. It was defined in the context of Hawaii International Conference on Systems Sciences (HICSS) as “organizational capacity exercised by the board, executive management and IT management to control the formulation and implementation of IT strategy and in this way ensure the fusion of business and IT” (Van Grembergen & DeHaes, 2008). The standardization organization ISO also issued ISO/IEC 38500 in 2008 as a worldwide new standard called “Corporate Governance of IT”. Weill and Ross (2004) earlier defined IT governance as “Specifying the decision rights and accountability framework

to encourage desirable behaviour in the use of IT”, identifying six key assets that enable achieving the strategies of an organization and generating business value: human assets, financial assets, physical assets, IP assets, information and IT assets, relationship assets.

The leadership in IT governance is controversial; IT people argue they know how to manage IT implementations and even reinventing business processes to utilise IT systems and solutions. At the same time, business people and many researchers argue that the leadership of IT governance is the core responsibility of business people, differentiating between effective IT management (the effective delivery of IT services internally) and IT governance, whose aim is to better fit IT implementations into the business strategy (Wim Van & Steven De, 2012).

The literature of IT governance in healthcare lags way behind compared with other industries. This may reflect the complexity of healthcare, as it has a third powerful player (the clinicians) beside IT and business players in other industries.

This paper would serve as one of the few attempts to study IT governance in healthcare, aiming at exploring the best practices of an effective IT governance, identifying the main barriers and enablers for such a governance, and issuing a number of recommendations in this regard.

2 Research Design and Methodology

This section presents the conceptual model and the methodology, along with justifying the selection of the case study.

2.1 The Conceptual Model

In order to develop an integrative model (See Figure 1) that will assess the business value of IT in healthcare, all perspectives of healthcare value from the respective points of view of all key stakeholders must be considered (Haddad et al., 2014). To operationalize the IT resource, from a technical perspective, the conceptual model is based on the IT portfolio suggested by (Weill & Broadbent, 1998) who classify IT investments based on their business objectives into infrastructure IT, transactional IT, informational IT, and strategic IT. Table 1 summarizes the differences between these investments.

Table 1: IT Portfolio [Adopted from (Weill & Broadbent, 1998)]

| Objectives | Description |
|-----------------------|---|
| Infrastructure | <ul style="list-style-type: none">• The foundation of IT capacity, which is delivered as reliable services, shared throughout the firm and coordinated centrally, usually by the IT group.• Include both the technical and the managerial expertise required to provide reliable services.• Having the required infrastructure services in place significantly increases the speed with which new applications can be implemented to meet new strategies, thus increasing the firm’s strategic agility and flexibility. |

| | |
|----------------------|--|
| Transactional | <ul style="list-style-type: none"> • Process and automate the basic, repetitive transactions of the firm. These include systems that support order processing, inventory control, bank cash withdrawal, statement production, account receivable, accounts payable, and other transactional processing. • Transactional systems aim to cut costs by substituting capital for labor or to handle higher volumes of transactions with greater speed and less unit cost. These systems build on and depend on a reliable infrastructure capacity. |
| Informational | <ul style="list-style-type: none"> • Provide information for managing and controlling the firm. • Systems in this category typically support management control, decision making, communication and accounting. These systems can summarize and report this firm's product and process performance across a wide range of areas. • Two examples of these systems come from Ford Australia (Electronic Corporate Memory), and from the consulting firm Bain & Company which developed Bain Resources Access for Value Addition (BRAVA). |
| Strategic | <ul style="list-style-type: none"> • The objective of strategic technology investment is quite different from those of the other parts of the portfolio. • Strategic investments are made to gain competitive advantage or to position the firm in the marketplace, most often by increasing market share or sales. • Firms with successful strategic IT initiatives have usually found a new use of IT for an industry at a particular point an time. • Two good examples of theses strategic initiatives are inventing automatic teller machines (ATMs), and designing a system that provides immediate 24-hour, seven-day-a-week loan approvals in car dealerships using expert systems technology. Both of these innovative systems have changed their industries forever. |

Finally, it is necessary to recognize the socio-technical perspective of these systems at four interrelated levels: (i) Clinical practices (people); (ii) Delivery operations (processes); (iii) System structure (organizations); and (iv) Healthcare ecosystem (society) (Rouse & Cortese, 2010) which all work together to provide a better patient experience.

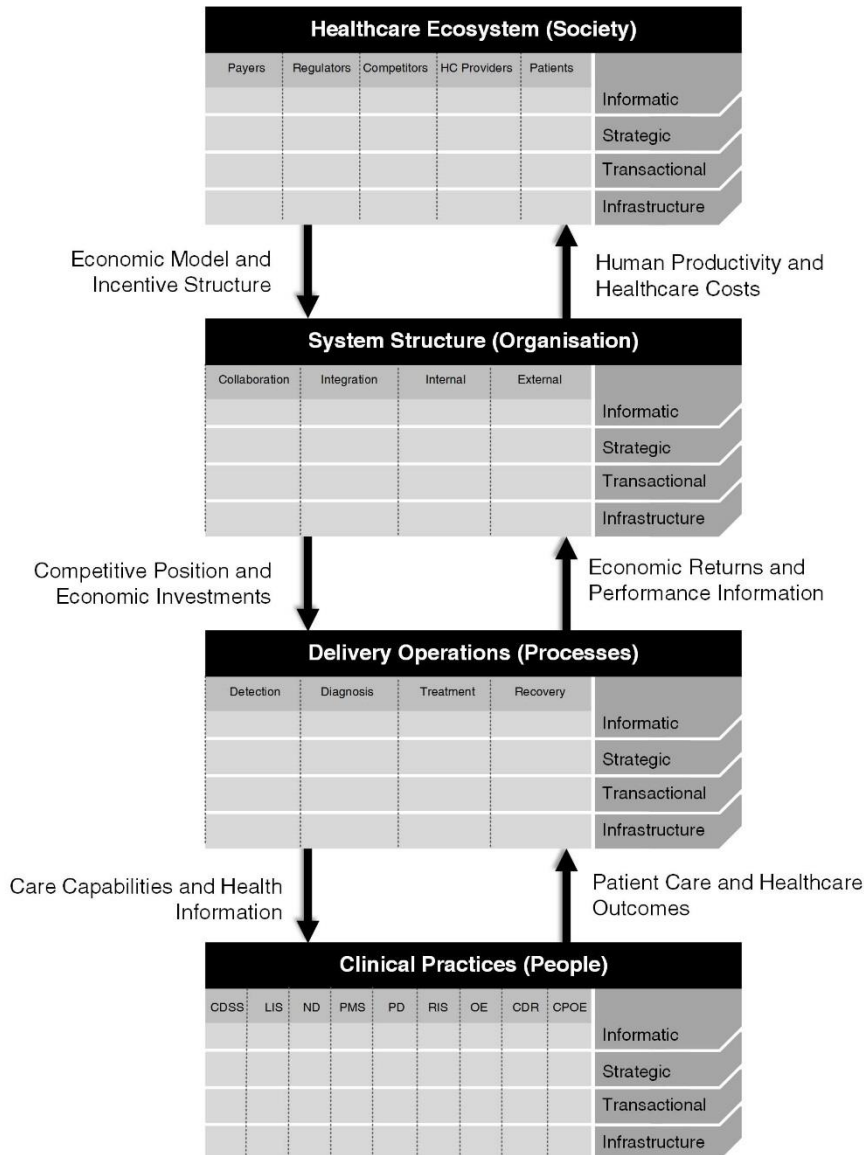


Figure 1: The Proposed Conceptual Model

2.2 Case Study

To test the validity of the proposed model, a case study method is adopted. As noted by (Yin, 2014), a case study method is appropriate when conducting an exploratory research study especially when the research question is how or why, as is the case in the current study. The case study was chosen based on the size of the hospital and the extent to which IT is utilized in terms of reach and range.

The case study is one of the largest not-for-profit private health care groups in Victoria-Australia, renowned for excellence in diagnosis, treatment, care and rehabilitation. This hospital is well-known as an innovator in Australia’s health system, embracing the latest in evidence-based medicine to pioneer treatments and services for patients. During the last few years, more investment have been set for IS/IT solutions. According the Chief Financial Executive (CFO), these investments have exceeded 30% of the capital budget for the last financial year, and more is dedicated for IT investments during the

upcoming five years. The increasing amount of IT investments in this hospital makes it ideal as a case study to represent the healthcare sector, which started few years ago to follow this trend.

Inputs were taken from three groups of participants: business, IT, and clinical personnel via both semi-structured interviews and an online survey. All interviews were professionally transcribed and qualitatively analysed using Nvivo qualitative analysis software package. Annual reports and other archival data were also used for data triangulation. All necessary ethics clearances were received before data collection commenced.

3. Findings

About 3 years ago, and due to recognizing the growing importance of IT for healthcare delivery, the hospital in the case study commenced a large-scale initiative to digitize its core processes by having an increasing amount of the operational and capital budgets dedicated to IT.

Investing in IT in this case study goes through a tough and sophisticated governance process. This starts with a business initiative, which needs to be submitted to the Project Management Office (PMO) within the IT department. A high-level assessment and a review are to be done on this initiative, to make sure it has all needed information. The idea then is explored. As needed, a project manager from the PMO would meet with the person that's actually put up the proposal and just flesh it out a little bit. After having this done, the initiative would go up to the IT Steering Committee, which is chaired by the CIO and most of the executive directors and the CEO. The IT Steering Committee is to discuss whether the hospital is interested in such a project. This depends on its expected benefits and fitness within the business strategy and IT architecture of the hospital. In that case, more work needs to be done. This starts by deeper discussions between the PMO and the initiator of the project. Upon this, a business case is created. The path from this point depends on the budget required for this project; if it is less than a threshold (One million Australian dollar as of the time of data collection), then the business case is put in the Prioritisation List, on which all planned projects are listed based on their importance to the business. If the required budget is more than this threshold, then the business case is forwarded to the Finance Steering Committee and then to the Board, who will decide whether or not this business case will be sent to the Prioritisation List. Figure 2 depicts this process.

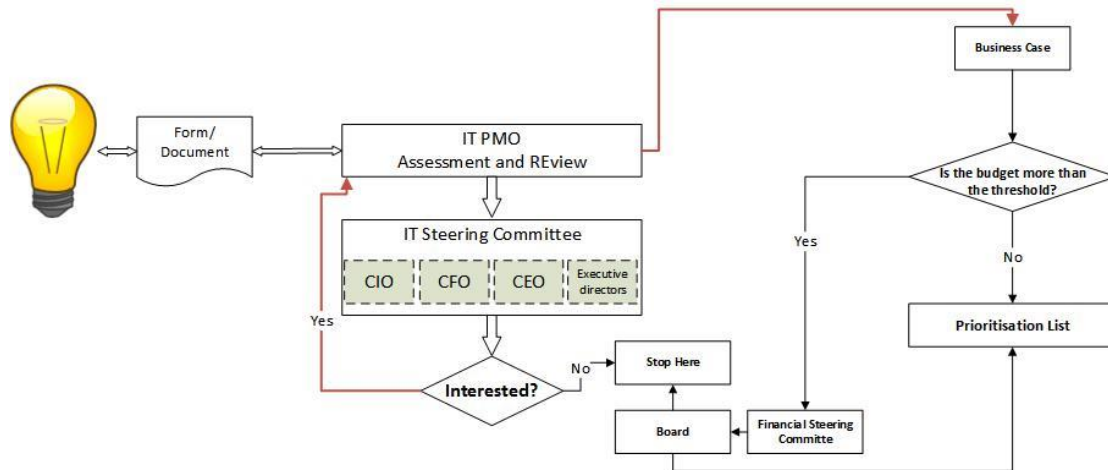


Figure 2: The Process of IT Governance at the Case Study

If the business case is deemed appropriate and the suggested IT system passes this scrutiny then a ‘sponsor’ is assigned to the project. A sponsor in our case context would be a senior employee whose tasks are functionally aligned with the nature of the proposed IT system. Thus, to the best of our understanding, there have been two criterion to appoint a sponsor for an IT project:

1. The nature of the IT project (financial, clinical, administrative, IT, etc.)
2. The experience/ expertise required to sponsor each IT project.

For example, if the suggested system addresses aspects of cancer care, the sponsor ideally will be an oncologist with a deep understanding of IT-based oncology management systems. If the system is meant to deal with the financial aspects of the business, then the sponsor would be the CFO, or the executive director of procurement and facilities, just depending on the nature of the project. These people would have had enough expertise dealing with similar investments. The sponsor has a relatively high level of authorisation within the dedicated budgets for their assigned projects. If they need additional resources more than 5% of the budget, they still can ask for it, but they have to go through another cycle of governance to demonstrate the reasons and the promises to the board. At the same time, they are fully accountable and the failure or success of their assigned IT project is their sole responsibility.

Adopting this approach started informally in 2009 during a project to change the payroll systems, and over the last five years, it has become more formal and documented. This practice has shown an impact on the success of IT projects and generating business value of IT for this hospital. Apart from very few cases, people who have been interviewed found it difficult to identify a failed IT project since this approach was introduced. Besides the matching the nature of IT projects with experienced sponsors, the strong governance process gives the business the ability to predict possible failures and prevent it:

“if something was going to fail, you’d see it coming a mile off. Each major project, each month, there is a one-page or a two-page update that goes to the Finance Committee. It says what the status of the project is, what are the key milestones, what are the upcoming activities the next month. There is a track, what we spent today against the

budget, what has been committed against budget. It is really transparent. It's very obvious if something is going to go off track." (FPM#1).

All stakeholders at the case study recognise the importance of a good IT governance for successful IT investments in clinical and business domains:

"Good governance structure has been something we've worked on in the last couple of years and I feel it absolutely necessary to actually work in this environment" (Exec#1).

Although IT governance has this important role, generating business value of IT is not a direct result of a good IT governance. IT only enables the best opportunity to succeed in delivering IT services:

"What we certainly know is without that [governance] structure, it becomes very hard to deliver that initial benefit of actually getting that new system in and transitioned over in a way those benefits or that accommodates the business and the business as usual work." (Exec#2).

The real business value of IT requires a strong governance process, but it ultimately is subject to the *"decision of the chosen solution and program of work to begin with. It's those two factors apply."* (Exec#3)

The role of IT department in this practice is more advisor and supportive than leading:

"we don't want IT to say, "Here's your new Internet," and everyone is going, "Well, this is a pile of junk."" (CFO).

One of the most important roles IT department is expected to practice is change management, as well as technical support.

The Requirements of a Successful IT Governance

Successful IT governance has a number of requirements:

1. It is demanding in terms of human assets, and needs to be well resourced. This would mean enough personnel equipped with a diverse range of skills and expertise:

"We resource it out properly so that we have people not doing it as part of their day jobs. We actually have a dedicated project manager, business analyst, and project team. That has been a real key". (PMO#5).

2. It needs to continuously be nurtured within a collaborative atmosphere:

"we expect that it's going to be collaborative approach, so it's not someone just running off and doing what they want to do for their site. There needs to be collaborative approach." (CFO).

3. It needs a deep knowledge of business processes and organisational structure:

"It needs to be at the front end in the sense that they need to basically have line of sight as to the processes" (PMO Program Manager).

4. It needs to be very well planned for up front. This will lead to a transparent project management and easy to track progress:

"The fundamental failure up front leads to massive rework, inefficiencies and costs down the back-end and usually leads to immense frustration because it's based on "I

thought I asked for this" and there's no checkpoints along that whole journey" (PMO#3).

5. The right sponsor to the right project: Although there has been increasing concentration on matching the requirements of specific IT projects and the unique requirements for prospective sponsors, selecting the right sponsor needs to go beyond that, to cover the organisational loyalty. During one IT project, a number of cases of lack of planning and delays happened, even though the same strong IT governance was applied. Asking about the reason, we were advised that the sponsor was not an employee at the case study:

"The role of the sponsor really in my view, it wouldn't have mattered who that person was. It needs to come back to an Epworth executive and someone who's employed and has accountability back to our board for delivering that outcome" (Exec#6).

4. Discussion

The main finding we could extract from our case study is that a successful IT governance structure is a must in order to generate business value from IT investments, but it is not enough on its own. The chosen system IT system and its fit within the business strategy is the main factor in this regard. This is facilitated by a good IT governance structure though.

The business people should practice the leadership role in IT governance, not IT, whose role should be advising and supporting the front-end role of business. IT department still need to deliver support and practice a mediating role between technology and business, but they should not drive IT governance. This is a priori theme in the literature. See for example (Van Grembergen & DeHaes, 2008; Weill & Ross, 2004). Now, we know that this also applies on the healthcare context.

The collected data revealed a number of requirements a good IT governance structure would need in healthcare. Most of the requirements are human and organisational. From human perspective, a good IT governance requires to be well equipped with enough dedicated human resources, whose organisational loyalty should be to their organisations and not their own business objectives. i.e. they will have to be salaried employees for their hospitals and have accountability back to the board of their hospital (legal employer) to deliver the expected outcomes. From the organisational point of view, hospitals need to encourage collaborative atmospheres between three different groups of knowledge workers: clinicians, business, and IT personnel, and also they need to nurture upfront planning and reengineering of the organisational processes. Thus, IT governance can play a role as an enabler for organisational development, and should benefit from it in return.

Future directions for this research will benefit from its current limitations. We have used a single case study to qualitatively investigate the role of IT governance in generating business value of IT in healthcare. Extending this research to quantitatively investigate this in multiple case studies is one of the main directions for future research.

5. Conclusion

There is a critical need for a systematic integrative conceptual model to assist the assessment of the business value of IT in healthcare, and to aid the understanding of the business value of the underlying enterprise architecture. To address this need, a suitably robust model was developed from various bodies of IS and business literature. The proffered model was then tested using case study methods in Victoria-Australia. For the purpose of this paper, IT governance and its role in generating business value from IT investments is tested.

As a summary, a good IT governance structure is 1) demanding, 2) a must, and 3) promising to generate business value from IT investment in healthcare. In closing, we note that today wellbeing consists of financial wellbeing and wellbeing in terms of healthcare - when we take both together in healthcare we need to ensure that IT systems which are now being used to enable better healthcare delivery and consequently wellbeing ensue are well designed and sustainable and this in turn necessitates prudent IT governance strategies. To ensure sound IT governance strategies we have provided a suitable model to assist with the assessment of the business value of IT. In using this model it is possible for healthcare organisations to design and implement robust IT solutions that are both sustainable and support superior healthcare delivery. Future research will elaborate upon these findings further.

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