Chapter 4
IS/IT Governance in Health Care: An Integrative Model

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4.1 Introduction

Driven in large by success stories in other industries, digitizing healthcare processes is a relatively common practice today (Haddad and Wickramasinghe 2014; Nguyen et al. 2015), and hence more healthcare providers are moving to IT-enabled solutions. This move requires both up-front and ongoing investments for outcomes that no one can precisely predict (Weill and Ross 2004). This trend provides researchers with the possibility to study the impacts of different information systems/information technology (IS/IT) solutions in various healthcare contexts. Although there is a plethora of such studies, most of these studies have two key limitations. First, there is lack of a comprehensive framework that looks at these systems in their respective contexts. Second, the scope of these studies is mostly limited to the impact of one system on limited measurements regarding outputs. This chapter represents part of a larger research project to comprehensively assess the business value of IT in health care. Business value can only be accurately assessed when the metrics for success are set in advance on project initiation and the metrics are satisfactory and

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acceptable to all stakeholders from administration to clinical services to the corporate oversight structure. Specifically, this model builds an integrative model for IS/IT governance in health care, features both the needs and requirements of various stakeholders in the context of health care, and examines the control measures required to strengthen IS/IT governance practices.

The remainder of this chapter is arranged as follows. First, insights from the literature on the basic definitions and principles of IT governance and how it differs from IT management in contemporary organizations are presented. The need for an integrative model for IT governance in health care is then discussed. Next, a brief summary of the literature on the terms "value" and "business value" is given. The methods and materials used in this research are then presented, followed by the results and their interpretations, as well as implications for both theory and practice.

4.2 Literature Review

The two key areas for this study concern IS/IT governance and the business value of IT and are presented in turn.

4.2.1 IS/IT Governance

Given the increasing need for higher levels of accountability and responsibility in managing IS/IT projects, the term IS/IT governance has emerged (Wim Van and Steven De 2012). A focus on IS/IT governance became important especially as a direct result of the many failures in managing IS/IT projects and generating business value from IT investments (Weill and Ross 2004). This also includes a calculation for the clinical value that is embedded in the business value as these projects should reflect improving the clinical processes and thus increase business value.

The term IT governance has evolved from a need to have a mechanism to manage IT implementation to extend beyond IT contexts and cover the business domain (Weill and Ross 2004). It was defined in the context of the 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 and DeHaes 2008). The standardization organization ISO also issued ISO/IEC 38500 in 2008 as a worldwide new standard called "Corporate Governance of IT." Further, Weill and Ross (2004) have defined IT governance as "Specifying the decision rights and accountability framework to encourage desirable behavior in the use of IT" and identified six key assets that enable achieving the strategies of an organization and generating business value – human assets, financial assets, physical assets, intellectual properties (IP) assets, information and IT assets, and relationship assets.

More recently, IS/IT governance practices have been seen as a subset of corporate governance, where IS/IT governance focuses on the relationships required to manage IS/IT assets and resources in a way that achieve the organizational objectives and strategic goals (Korac-Kakabadse and Kakabadse 2001). Given that corporate governance practices focus on board-related issues such as roles, responsibilities compositions, own characteristics, and organizational structures that help achieve corporate strategies, this makes both logical and practical sense (Korac-Kakabadse and Kakabadse 2001).

The scope of IS/IT governance in today's organizations is expanding. Weill and Ross (2005) classify IS/IT governance into five major domains: IT principles, IT architecture, IT infrastructure, business application needs, and prioritization and investment decisions. Each of these decisions is handled, ideally, by different management levels from the top management level down to technical levels. Similarly, Korac-Kakabadse and Kakabadse (2001) scope the coverage of IS/IT governance to cover decisions in three stages—IS/IT projects initiation, IS/IT projects implementation, and realizing the benefits of IS/IT projects (Korac-Kakabadse and Kakabadse 2001).

The leadership in IT governance is controversial (Schyve 2009); IT people argue they know how to manage IT implementations and even reinventing business processes to utilize 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 and Steven De 2012). Weill (2004) agrees on this, but states the accurate scope of IT governance as

> IT governance is not about making specific IT decisions. That is management. Rather, governance is about systematically determining who makes each type of decision (a decision right), who has input to a decision (an input right) and how these people (or groups) are held accountable for their role.

The literature is rich with studies that attempt to conceptualize IS/IT governance. Alreemy et al. (2016) conducted a literature review to identify the critical success factors (CSF) for IT governance and concluded that these factors can be categorized into ten groups: stakeholders' involvement, management support, financial support, organizational effects (internal), the strategic alignment between IT and business, IT staffing management, IT structure, environment effect (external), managing the implementation, and preparation. Assessing the transparency of IT governance practices and the way firms communicate their IT governance activities have also attracted the interest of both academics and practitioners (see, for example, Chikhale and Mansouri 2015; Joshi et al. 2013). Another notable research direction in the IS literature is integrating IS/IT governance tools and approaches into the traditionally existing organizational processes (see, for example, Heier and Borgman 2012; Peterson 2004). The alignment between IS/IT governance and business strategies has also been studied by numerous studies (see, for example, Boynton et al. 1992; De Haes and Van Grembergen 2009; Haes and Grembergen 2015; Luftman et al. 2012; Orozco et al. 2015; Wu et al. 2015). Although there exists a plethora of studies

on IS/IT governance in different industries such as banking (Joshi et al. 2013), technology (Chikhale and Mansouri 2015), manufacturing (Mirbaha 2008), and e-government (Allen et al. 2001), the literature of IT governance in health care lags way behind other industries (Haddad and Wickramasinghe 2014). This may reflect the uniqueness and complexity of health care (Chen et al. 2013), as it has a third key player (the clinicians) beside IT and business players in other industries, and/or that health care has been slower than other industries to embrace IS/IT (Wickramasinghe and Schaffer 2010).

This chapter serves to examine the IS/IT governance structures and approaches in health care, aiming at exploring the best practices of effective IT governance; identifying the main barriers and enablers for such a governance in the three stages of IS/IT projects; initiation, implementation, and potential benefit realization (Korac-Kakabadse and Kakabadse 2001); and then providing a number of recommendations in this regard to enhance the realization of the business value of IS/IT in health care. In order to do so, IS/IT governance practices and structures in a large Australian not-for-profit healthcare organization are closely examined.

4.2.2 Value and Business Value

Healthcare commentary often revolves around universal availability and cost control, i.e., access and cost (Wickramasinghe and Schaffer 2010). Further, value is often defined in terms of the expenditure outcome benefits, divided by the cost expenditure (Porter and 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 and Cortese 2010; Wickramasinghe and 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 et al. 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 et al. 2014).

4.3 Research Objective and Research Questions

This study aims to build an integrative model for IS/IT governance in health care. In order to build this model, the impacts of different contextual conditions need to be investigated. Thus, this study attempts to answer the following questions:

1. How can robust IS/IT governance structures help generate the business value of IS/IT in health care?
2. What are the factors that affect IS/IT governance structures for healthcare contexts in the three phases of IS/IT projects—initiation, implementation, and realizing business value?

4.4 Research Design and Methodology

This section presents in turn the research methods, research strategy, and issues around data collection and data analysis.

4.4.1 Research Methodology

This study is predominately qualitative as this approach enables conducting in-depth studies about a broad range of topics with greater latitude in selecting topics of interest (Yin 2014). It also is deemed appropriate to adopt a qualitative approach as it enables examining a relatively new phenomenon, namely, IS/IT governance in health care (Yin 2011). Given the studies on IS/IT governance in health care are scarce, this study is also exploratory in nature, as it is planned to be a "broad-ranging, purposive, systematic, and prearranged undertaking designed to maximize the discovery of generalizations leading to description and understanding of the area of research" (Stebbins 2001).

4.4.2 Research Strategy: Case Study

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 (Yin 2014) as is the case in the current study. The choice of this strategy for this study is justified by the nature of the examined problem, i.e., IS/IT governance in health care, as this strategy is designed for "sticky, practice-based problems where the experiences of the actors are important and the context of action is critical" (Bonoma and Wong 1983). In addition, case study research represents a viable alternative among the other methodological choices to address the complexity of contextual conditions (Posavac 2015; Stufflebeam and Shinkfield 2007; Yin 2013).

The selected case is an Australian not-for-profit tertiary healthcare group that comprises a number of locations and sites in the state of Victoria in the southeast of Australia. The choice of this case is justified by its own characteristics in terms of IS/IT adoption and investments, having multiple business units under the corporate umbrella, and its nature as a not-for-profit hospital, thereby providing an ideal

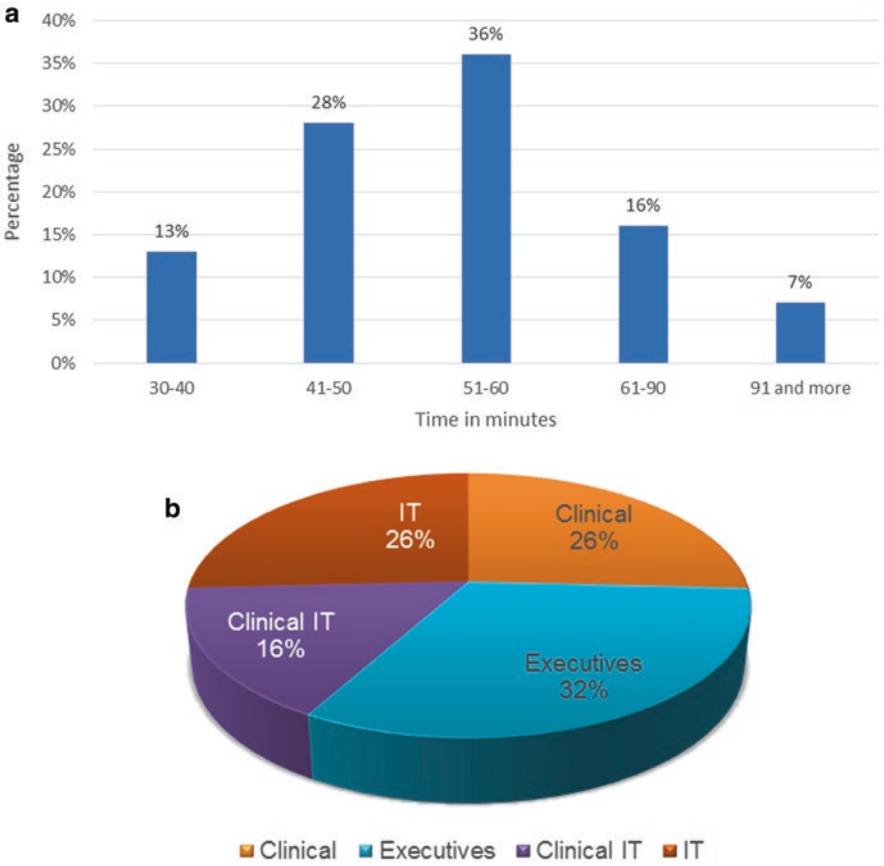

Fig. 4.1 (**a**) The percentage frequency of the duration of conducted interviews. (**b**) The distribution of the interviewees based on their area of expertise/positions

complex environment funding structures, particularly in regard to IS/IT projects, ideally suited for the examination of IS/IT governance issues.

4.4.3 Data Collection and Analysis

To build the IS/IT governance in healthcare model, data were collected by conducting 31 semi-structured interviews in the selected case—Rosetta Healthcare[1] upon the completion of all necessary ethical requirements. The shortest interview was 34 min, and the longest was 102 min. Figure 4.1a depicts the percentage frequency

[1] For ethical reasons, Rosetta Healthcare is used as a pseudonym. The case study is named after Rosetta stone, which was created about 196 BC and discovered in 1799 and led to understanding the ancient Egyptian hieroglyphs.

of the duration of conducted interviews. The interviews enabled gathering insights from four groups of knowledge workers with different levels of influence on IS/IT investments, namely, clinicians, executive and management, and IT personnel (Davenport 2013; Wong et al. 2003), and the group of clinical IT, whose members are clinicians with sound IS/IT knowledge and expertise. The distribution of the interviewees based on area of expertise/positions is shown in Fig. 4.1b.

In addition to the semi-structured interviews, the annual reports for the selected case as well as various archival documents were used to align with recommended practices to enhance the validity of qualitative studies (Johnson 1997). This also helps challenge existing theories and build new theories through data triangulation (Eisenhardt 1989; Eisenhardt 1991), as well as support data and method triangulation, thus enhance the rigor and reliability of the obtained results (Flick 2009).

Iterative thematic analyses were performed on the collected data. These involved the three stages as described by Boyatzis—(1) articulating sampling and other design issues, (2) developing codes and themes accordingly, and (3) testing the validity of the codes and using them to further capture themes (Boyatzis 1998). QSR Nvivo Version 10.2.2 (1380) for Mac was used as a helpful tool to conduct this analysis.

4.5 Findings

The key findings are presented in turn, focusing on the governance structure in place in the selected case, the impact of adopting this structure, and the factors that affect such a structure for IS/IT governance.

4.5.1 The IS/IT Governance Structure in Place

Investing in IS/IT at Rosetta Healthcare goes through a rigorous formal process. Adopting this governance approach started informally in 2009 during a project to change the payroll systems, and over the last few years, it has become more formal, structured, and documented.

This starts with a business initiative, which is handled by a division within the IT department called the project management office (PMO). This initiative undergoes a high-level assessment against the organizational agreed norms. From this point, a project manager will be assigned to the initiative if it is deemed appropriate for the group. The project management approach from this point is Projects in Controlled Environment, version 2 (PRINCE2) (Bentley 2010; Haddad and Wickramasinghe 2014; Hedeman 2006). The resulting document then goes up to the IT Steering Committee, which is the main IT committee at Rosetta Healthcare and whose responsibilities are centered on making the “the right investments in IT,” as a senior IT officer describes. Under the central IT steering committee, there exist a number

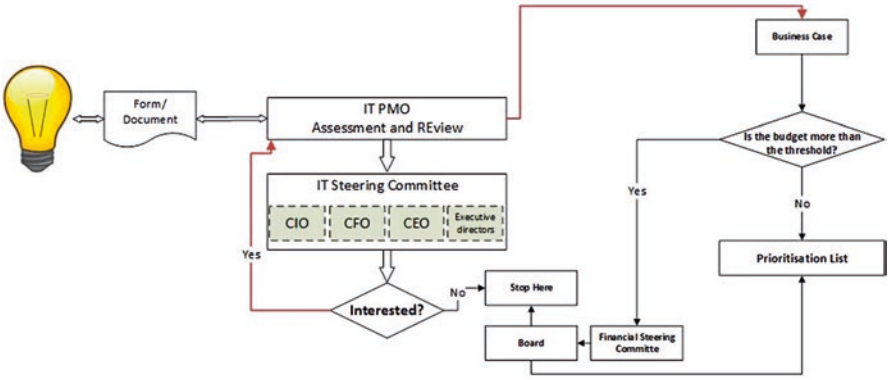

Fig. 4.2 The process of IT governance at the case study, Adapted from Haddad and Wickramasinghe (2014)

of sub-steering committees in different business units (different hospitals) (Haddad and Wickramasinghe 2014). These committees are responsible for managing IT projects based on the approval from the corporate's steering committee. This IT Steering Committee is chaired by the CIO and most of the executive directors and the CEO. It generally discusses whether the group is interested in such a project. This, ideally, depends on its expected benefits and fit with the business strategy and IT architecture of the group. If fit is not apparent, then, 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, then the business case is put in the so-called Prioritization 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 escalated to the Finance Steering Committee and then to the Board, who will decide whether or not this business case will be sent to the Prioritization List (Haddad and Wickramasinghe 2014). Figure 4.2 depicts this process.

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 the context of the selected case would be a senior employee whose tasks are functionally aligned with the nature of the proposed IT system. Generally, there have been two criteria 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 the financial aspects of the business, then the sponsor would ideally be the Chief Finance Officer (CFO) or the executive director of procurement and facilities 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 authorization within the dedicated budgets for their assigned projects. If they need additional resources beyond 5% of the allocated budget, they still can ask for it, but they have to go through another cycle of governance to demonstrate the reasons and the commitments to the Board. At the same time, they are fully accountable, and the failure or success of their assigned IS/IT project is their sole responsibility.

4.5.2 The Impact of Adopting This IS/IT Governance Approach

Adopting this IS/IT governance approach has shown an impact on the success of IS/IT projects and generating business value from such IS/IT projects for the hospital. Apart from very few isolated cases, the participants in this research found it difficult to identify a failed IT project since this governance approach was introduced.

All stakeholders at the selected case recognize the importance of a good IT governance for successful IS/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. [IT 4]

Besides 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 the budget. It is really transparent. It's very obvious if something is going to go off track. [EXE 2]

Adopting robust IT governance and project management methodologies that align with the business objectives have another role to play. This is about filtering potential projects and proactively dealing with potential failures for IT projects as one interviewee emphasizes:

> If you've got good IT governance and project management, there's no reason why you should ever have a disaster because you should have certain gates that you go through before you ever hit go on a project. If you don't pass through those gates, then you never hit go. [EXE 6]

Although strong IT governance and project management combined have this important role in this regard, attaining the business value of IT is not a direct result of these practices. Rather, they enable the best opportunity to succeed in delivering IS/IT services as many of the interviewees agreed, especially from the executives and IT groups:

> 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. [EXE 3]

The role of the IT department in this practice is more as an advisor and supportive than leading, as the key decision makers at Rosetta Healthcare agreed:

> We don't want IT to say, "Here's your new Internet," and everyone is going, "Well, this is a pile of junk." [EXE 2]

4.5.3 The Factors That Affect IS/IT Governance in Health Care

Currently, there seems to exist a number of contextual factors that affect the IS/IT governance structure in place at Rosetta Healthcare, which have reportedly diluted the impact of IS/IT governance during the three stages of IS/IT projects. We examine these in terms of people, process, and technology issues.

4.5.3.1 People Factors

The internal political influences of different stakeholders within healthcare providers seem to limit the efficiency of the current IS/IT governance in place. A number of interviewees noted that internal politics within healthcare organizations is an apparent phenomenon, as noted by this interviewee, who had recently come to the healthcare industry from the defense industry:

> In the medical domain, there are so many political games going on between campuses, divisions within a division; it makes it extremely difficult to talk about IT without politics. [IT 6]

One of the clear aspects of these internal politics relates to the political influence of the visiting medical officers (VMOs). As a not-for-profit private hospital, Rosetta Healthcare does not have many junior doctors employed. Rather, it has a high number of VMOs who are more senior, more experienced, very busy, and tend to have streamlined independent workflows. The Australian Institute of Health and Welfare (2005) defines the VMO as: "A medical practitioner appointed by the hospital board to provide medical services for hospital patients on an honorary, seasonally paid, or fee for service basis" (p. i). In the case of Rosetta Healthcare, VMOs are paid on a fee-for-service basis. Given the VMOs have their own clinics, they run their own IS/IT for managing their patients. As powerful players, the VMOs have impacts on the actual decisions of purchasing IS/IT systems by Rosetta Healthcare. This is due to the fact that they work for/at different healthcare providers and ask for a specific system to be brought based on their experience using this system at a different healthcare provider. In addition, VMOs tend to be reluctant to use the hospital's IS/IT platforms in favor of their own systems. This latter behavior has reportedly

limited the business value of IS/IT as it limited the uptake of new IS/IT systems, especially in the clinical space.

The other people aspect is the satisfaction of in-house users (including nurses, allied health, admin and management personnel, etc.). The collected data showed that this group of users lacks the power to have their voice heard and taken into consideration during the purchase process of new IS/IT solutions. It was evident that feedback and inputs from different prospect users of IS/IT were collected, but not taken on board when actually making the decision of investing in IS/IT, which limited their motivation to use these systems and benefit from them. This applies on both business IT and clinical IT. As a result of this behavior, the intention of the internal users to use IS/IT systems when they first know about them dwindles when they realize their inputs were not taken into consideration.

4.5.3.2 Process Factors

From a process perspective, the PMO team at the selected case is assigned a key role during the project start-up and initiation, project delivery, project closure, and analysis and approval. The problem that had been facing this team as the collected data shown is that this team is not dedicated to these projects. Rather, its members are always involved in the day-to-day business, which in many cases caused delays and issues with delivering these projects on time. Similar conditions also apply on the sponsors of these projects, but the pressure on the PMO team is higher as they are specialized in the technical details of starting up and implementing IS/IT projects.

Another aspect of process factors is concerned with the fact that the current IS/IT governance does not consider change management as an integrative part of IS/IT governance processes. This interviewee explains the situation in the selected case: "Some people have been doing some things the same way for 20 years. It's very hard for them to change, but it goes back to making sure that those changes happen in a process. We are trying to say that it's great to put new technology in but you have to change your processes to meet the technology" [IT 3]. Thus, lacking an integrative change management plan in the current IS/IT structure is playing negative roles on the efficiency of IS/IT governance and attaining business value of these IS/IT systems. This is primarily due to the fact that various human resources are not well prepared for the change caused by introducing new technology platforms to their day-to-day processes.

4.5.3.3 Technology Factors

Technology factors that affect the IS/IT governance in place at the selected case included the process of selecting the "right" product, noting the requirements for systems integration, and taking governance issues around the product of IS/IT, namely, data, into consideration.

Selecting the right product is crucial for healthcare organizations as in other industries:

> … Because it is going to affect everyone in the organization in different ways. It's going to affect the doctors in the sense that if it's done properly, it should make it easier for them to get the information. If it's done badly, it's going to obviously undermine them, but it will affect the nursing workflows. It will affect the allied health workflows. It will affect the administrative staff workflows. It will affect HIS [Health Information Systems] workflows. It will affect billing and coding. It will affect business development managers [EXE 4].

From a technological perspective, the healthcare industry seems to be more solution-focused than problem-focused as this interviewee explains:

> Healthcare industry is being solution focused not problem focused: When I look externally, we don't choose a system necessarily based on what solves the problem we have. It was very solution focused, not problem focused so they come in solutions and then look for the problem that it's solving as opposed to what problem I need, what actual things do I need to resolve. [IT 4]

Thus, the principal approach of the current IS/IT governance is to look at different vendors and their systems. Unintentionally adopting this approach has resulted several IS/IT solutions that are not compatible or easy to interface with each other as explained by this interviewee: "You got systems that don't talk to each other; there's already been a lot of investment in one system, and then they don't want to then have to modify" *[IT 3]*.

Each of the newly implemented systems using this approach may have their own dataset that may be used for both clinical and business purposes with almost no data dictionary used universally by all of these datasets. Not only does this limit the benefit of these investments, but it also affects the organization by having to deal with various unstandardized and structurally different dataset, which negatively affects the well-being of the organization itself as the result of this study shown.

4.6 How to Build Robust IS/IT Governance Practices

When asked about the key to creating prudent IS/IT governance practices in health care, the requirements were centered on allocating enough resources, establishing collaborative atmospheres within the healthcare context, ensuring a deeper understanding of the business processes and organizational structure, the existence of adequate upfront planning for IT projects, and carefully assigning leadership to the potential sponsors (Table 4.1).

4.7 Discussion

The results of this exploratory study show that robust IS/IT are increasingly needed to manage the growing IS/IT portfolios in health care as in other industries. The findings also support the work of Korac-Kakabadse et al. that IS/IT governance

Table 4.1 The requirements for a robust IT governance in the healthcare sector, as confirmed by selected quotes from interviewees

Requirements	Selected quotes
Allocating enough resources: IT governance is demanding in terms of human assets, and it 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" [IT 6]
Establishing a collaborative atmosphere within the healthcare context: Successful IT governance needs to be nurtured within a collaborative atmosphere continuously	"We expect that it's going to be a collaborative approach, so it's not someone just running off and doing what they want to do for their site. There needs to be a collaborative approach" [EXE 8]
Deeper understanding of business processes and organizational structures: This understanding is key to all stakeholders, especially to clinicians	"It needs to be at the front end in the sense that they need to basically have a line of sight as to the processes" [IT 7]
Upfront planning for IS/IT projects: IS/IT projects need to be well planned up front. This will lead to a transparent project management and easy to track progress, as well as clarity about expectations	"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're no checkpoints along that whole journey" [EXE 4]
Carefully assigning leadership to the potential sponsors (leaders): Although there have been increasing levels of concentration on matching the requirements of specific IS/IT projects and the unique requirements for prospective sponsors, selecting the right sponsor needs to go beyond that, to cover the organizational loyalty. For example, during one IS/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 had not been 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 [Rosetta] executive and someone who's employed and has accountability back to our board for delivering that outcome" [EXE 5]

structures should cover IS/IT projects from initiation through implementation to gaining benefits out these projects (Korac-Kakabadse and Kakabadse 2001).

Successful IS/IT governance structure is a must in order to generate business value from IT investments, but it is not enough on its own. Different factors were found to affect the IS/IT governance.

The chosen IS/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 results show that the business people should practice the leadership role in IS/IT governance, not IT, whose role should be advising and supporting the front-end role of business. This finding agrees with Weill and Broadbent (1998) who state that

decisions around IS/IT investments need to be managed by the top management level rather than the technical level. Nonetheless, IT department still needs to deliver support and practice a mediating role between technology and business, but they should not drive IS/IT governance. This is a priori theme in the literature (see, for example, Van Grembergen and DeHaes 2008; Weill and Ross 2004). Now, we know that this also applies on the healthcare context.

The collected data revealed a number of requirements for a good IT governance structure for health care. Most of these requirements are human and organizational and relate to the maturity of healthcare organizations in dealing with IS/IT assets. From a human perspective, a good IS/IT governance requires to be well equipped with enough dedicated human resources, whose organizational loyalty should be to their organizations and not their own business objectives. That is, 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 organizational 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 organizational processes. Thus, IS/IT governance can play a role as an enabler for organizational development and should benefit from it in return.

The results from this study also showed that the current IS/IT structure needs to principally change to focus on the problems faced by the selected case rather than the available IS/IT solutions in the market. Most importantly, IS/IT governance practices need to take systems integration as a must requirement for new IS/IT projects. Further, IS/IT governance structures need to stretch to cover not only IS/IT solutions but also their product, i.e., clinical and nonclinical data. In this regard, the current IS/IT governance structure covers both the initiation and implementation phases of IS/IT projects and neglects the third stage around attaining the business value of IS/IT due to poor quality of produced data through these systems.

In addition, the political influence of different stakeholders needs to be neutralized in order to enhance the alignment with the organizational interest and business objectives. In-house users need also to have their voice actively heard and taken into consideration to enhance the contribution of IS/IT governance to the success of IS/IT projects. Table 4.2 summarizes the factors affect the existing IS/IT governance structure at the selected case for this study and which phases of IS/IT projects are affected by each of these factors.

The results also indicate that when considering IS/IT governance in health care, it is prudent to take a sociotechnical perspective and hence consider various contemporary issues around people, process, and technology.

Based on the results of this study, it is possible to conceptualize IS/IT governance practices in health care from initiation to attaining the business value of these investments as Fig. 4.3 depicts. It is understood that the level to which the business value of existing IS/IT projects is realized affects the initiation of new IS/IT products based on the results of this study.

Based on the discussion above, this study has answered the two research questions by showing the impact of adopting IS/IT structures on attaining the business

Table 4.2 Factors affect IS/IT governance in the selected case

Factor		Initiation	Implementation	Attaining business value
People	VMOs	✓		✓
	In-house users	✓		✓
Process	Leadership	✓	✓	✓
	Project management	✓	✓	✓
	Change management	✓	✓	✓
	aligning to business objectives	✓		✓
Technology	Selecting appropriate IS product	✓	✓	✓
	Taking systems integration into consideration	✓	✓	✓
	Data governance	✓	✓	✓

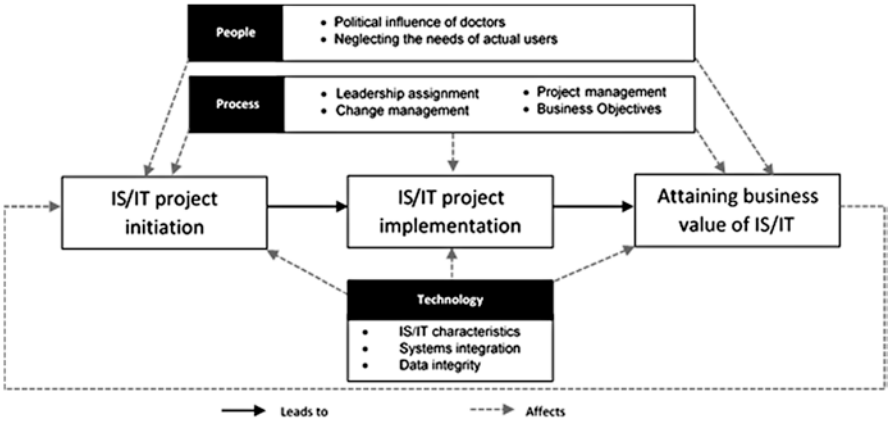

Fig. 4.3 IS/IT governance in healthcare model

value of IS/IT in health care and identifying three primary streams of factors that affect IS/IT governance structures in the healthcare contexts, namely, people, processes, and technology.

This study has two limitations. First the data were collected from a single case study. Even though the selected case comprises a number of hospitals, they all follow the same governance structures. Thus, conducting deeper examinations for different IS/IT governance structures adopted by other healthcare providers may help compare the results and further assess the validity of the integrative model developed in this study. In addition, the interviewees were not comfortable to share information on the cost and bottom line of their organization. Most of the findings on impacts of IS/IT governance on the business value of IS/IT are limited to intangible benefits. Monetized benefits were not easy to be captured in this study. Future directions for this research will benefit from its current limitations. Extending this research to quantitatively investigate this model in multiple case studies is one of the directions

for future research. In addition, comparing public and private healthcare settings and their adopted IS/IT governance structure is an option for future research.

The implications of this study extend beyond the theory to cover practices in the area of IS/IT governance in health care. This model helps conceptualize different IS/IT governance structures in health care. The theoretical implications of this chapter is building an integrative model for IS/IT governance in health care. This model is integrative as it has both control and stakeholders functionalities as recommended by Korac-Kakabadse and Kakabadse (2001), who stated that the former is about featuring the necessary control of various stakeholders, while the latter is about meeting their needs and requirements. The model of this research addresses both of these arms by featuring the requirements and the needs of different stakeholders in the context of health care, as well as the control measures required to strengthen IS/IT governance structures and maximize their impacts on IS/IT projects during the start-up, implementation, and post-implementation phases.

Practically, this model helps decision-makers and policy makers to enhance their IS/IT governance by further understanding the needs and requirements of various stakeholders and the impact of different contextual conditions on these practices. This is particularly important given the importance of robust IS/IT governance structures to attain the business value of IT in health care. In addition, this study extends the coverage of IS/IT governance practices to cover systems integration and data integrity issues. These are key aspects of enhancing the organizational performance of healthcare providers (Conrad and Shortell 1996; He and Da Xu 2014; Hiatt et al. 2015). It also shows that assigning the leadership to the top management level is one of the best practices to maximize the success rates for S/IT projects and their perceived business value. The study also shows what roles can be played by the IT department and which inputs to be taken from different stakeholders (clinicians, users, IT personnel) to build robust IS/IT governance structures.

Our future research will focus on applying the proposed framework in other healthcare contexts.

4.8 Conclusion

Based on the discussion above, the need for a systematic, integrative conceptual model for IS/IT governance in health care was established. To address this need, a suitably robust model was developed based on data collected from a large not-for-profit tertiary private hospital in Victoria, Australia.

In closing, to ensure sound IS/IT governance strategies, we have provided a suitable integrative model to assist these practices by both identifying the needs and requirements for different stakeholders and the control measures required to strengthen IS/IT governance practices and maximize their impact on the success of IS/IT projects.

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