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Health Information Technology Governance: A Perspective on Investment Decision Processes

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Abstract

Realizing value from IT investments continues to be a challenge for most healthcare organizations. IT governance (ITG) is envisaged to solve many of these challenges. ITG is the practice that establishes accountability framework for IT investments by allocating decision rights among major participants involved in IT decision processes. As ITG is relatively new in healthcare industry, it is expected that knowledge about how healthcare organizations govern their IT decisions is limited. This research aims to extend this knowledge and to assist both researchers and professionals by providing insights on how IT decisions are made and governed in healthcare organizations (HOs). This research adopts case-study methodology to investigate IT governance in two distinctly different HOs. The research findings indicate that HOs implement ITG to achieve alignment between business objectives and IT. Both HOs set up a five-stage IT decision process to identify, evaluate and prioritize IT investment ideas. They also established generic committee-structures that clearly defined roles and decision authorities to govern such process. It is suggested here that ITG in HOs is heavily influenced by strategic priorities, organizational structure, governance experience and governmental initiatives. Effective ITG in HOs is challenged by IT alignment, policy government, involvement of healthcare executives, and lack of business metrics to justify and evaluate decisions. The research proposes recommendations to address these challenges.

Keywords

IT governance, IT investment in healthcare, IT decision process

INTRODUCTION

Healthcare industry is amongst the top investors in Information Technology (IT) (Hoffman, 2003). The benefits associated with IT use in healthcare are well established (Medicare, 2004) leading to better quality of services and cost cutting (Bahensky, Jaana, & Ward, 2008; Tsiknakis & Kouroubali, 2009). PwC (2012) asserted that higher investment in IT leads to improved hospital business-performance.

However, most of IT projects in healthcare industry are either struggling or fail to survive (Larsen, 2008). Heeks (2006) estimated that 20-25 percent of IT projects in healthcare are total failures and 33-60 percent are partially successful. This is attributed to poor IT investment decision making (DM) and to the increasing complexity of IT implementations in recent years (The Lewin Group, 2005; Trudel, Paré & Laflamme, 2012). Healthcare organizations (HOs) are often accused of purchasing technologies too rapidly and haphazardly (Rothenberg & Korn, 2005). When this happens, IT investment can become a competitive disadvantage due to the needless increase in cost; waste resources and lower employees' moral. Koye and Kel (2006) confirmed the same and reported that poor DM is amongst the top barriers to effective technology planning. They concluded that in order to help hospitals make better technology investments decisions, "A framework that brings stakeholders together to identify the best use of capital and the most beneficial applications of technology, with accountability for its appropriate use and commitment to equitable access, is urgently needed." This is the essence of IT governance (ITG). Thus, HOs can realize the business value of their IT investments if they replace their traditional IT DM approaches with effective ITG frameworks.

ITG describes how IT decisions will be made and identifies who will make them. It also establishes the accountability framework for IT DM that is needed to encourage sound IT usage behaviour amongst adopters (Weill & Ross, 2005). Given the complexity of IT decisions and the significant amount of organizational resources needed in IT projects, an effective ITG structure is important to ensure that IT performance meets organizational objectives and delivers anticipated value (ITGI, 2012; Marshall & McKay,2003). Weill and Ross (2005) found that organizations with effective ITG yield a return on IT investments that could surpass 40 percent. They argue that "effective IT governance is the single most important predictor of the value an organization generates from IT".

According to our literature review, research that investigates ITG in IT investment decision processes in healthcare is scant (Xue, Liang & Boulton , 2008).

THEORY

The most adopted definition of ITG is the one presented by Weill (2004) that states "IT governance represents the framework for decision rights and accountabilities to encourage desirable behavior in the use of IT". While there are numerous ITG definitions in the literature, the underlying principles behind such definitions are to enable organizations accomplish IT alignment and hence, fulfill their strategic goals.

ITG can be implemented using a combination of principals, structures, processes, and relational mechanisms; all of which are described by the term "ITG framework" (De Haes, & Van Grembergen, 2009).

IT investment DM process

The IT investment DM process begins with an identification of an IT related problem or an opportunity and ends up with a specific commitment to an IT project (Boonstra, 2003). There are different stage-models for the decision process. The initial models were influenced by Simon's (1965) model (intelligence-design-choice) which focus on strategic planning and resources allocation (Ackerman, 1970). Martian (2001) introduced a four-stage model consisting of initiate, develop, market and approve IT investment proposals. Marshall and McKay (2003) provided a five-stage model with a new direction to focus on IT alignment. In the first three stages (initiation, alignment and prioritization, evaluation), proposed IT opportunities are carefully analyzed and prioritized on the basis of the extent to which they are related to key business strategies and according to their perceived ability to deliver value to the business. Only proposals with demonstrable support for business goals are approved and implemented. Schniederjans, Hamaker and Schniederjans (2010) built their model on the general IT planning framework (Adler, 2000; Laudon & Laudon, 2010) to reproduce a three-stage model with nine sub-stages for IT decision process. Such processes describe in detail strategic, tactical and operational steps to get the system into an operational mode.

ITG structure in IT DM process

Research on ITG structure focuses on the organizational placement of the DM authority; and the structuring of IT activities (Brown & Grant, 2005). This line of research can be traced back to the 19670s which highlights three common governance structures: centralized (top-down), decentralized (bottom-up), and hybrid (federated) (Brown & Magill, 1994; Olson & Chervany, 1980; Sambamurthy & Zmud, 1999). Weill (2004) extended these classifications into six ITG archetypes: Business Monarchy (decisions are made by top management), IT Monarchy (groups of IT executives make the decision), Feudal (decisions are made by business unit leaders), Federal (Hybrid decision making), IT Duopoly (IT executives and one business group), and Anarchy (individual user or small group makes decision). Obviously, the Business Monarchy and IT Monarchy archetypes represent a centralized structure; Feudal archetype represents a decentralized structure while the Federal archetype mirrors the hybrid structure. Xue et al. (2008) investigated ITG in IT investment decisions in six HOs and found seven ITG archetypes to govern three stages to initiate, develop and approve IT proposals. They argued that even when top management has the final DM right, different actors from IT, administration and healthcare can participate to initiate and/or develop IT proposals. The distribution of this decisions input authority among main actors is influenced by the IT investment characteristics, external influences, organization centralization and IT function power.

The major advantages of centralized ITG are greater control over IT standards that result in operational efficiency, IT synergies and economies of scale. Whereas the primary advantages of decentralized ITG is the local control that enables high flexibility and responsiveness to business needs and competitive requirements (Brown, 1997; Lewis,2004). A hybrid ITG provides the best of the two-worlds by centralizing certain decisions and decentralizing others (Zmud, Boynton & Jacobs, 1986).

The key to success in achieving the ITG structure lies in the structure's ownership by stakeholders involved (Weill, 2004; Wilkin & Riddett, 2009). ITGI (2012) states that: "IT governance and the effective application of an IT governance framework are the responsibilities of the board of directors and executive management" Accordingly, the major stakeholders involved in ITG structure are: the executive team (CEO, COO and CFO); IT management team (IT Director or the CIO); senior operating management team (business unit managers). The size and quality of involvement and communication between these teams appear to influence IT alignment and, eventually, the effectiveness of ITG (Segars &Grover, 1998; Weill & Ross,2005). Feldman (1981) noted that the connection between senior managers in an organization results in adjusting the IT related strategies and tactics to meet the needs of individual unit, and ultimately maximizing the IT value. Kuruzovich, Bassellier and Sambamurthy (2012) found that the involvement of executive teams in ITG is associated with higher IT alignment; and that communication processes involving the CIO and executive teams positively influence the resulting level of alignment.

For such involvement and communication to occur, it is desirable that the roles and responsibilities of these key actors are clearly defined through well-established DM structures (DMSs). DMSs clarify the DM responsibilities and accountability according to the adopted organizational structure or ITG archetype. The most common example of these structures is the IT steering committees (IT SC). IT SC is a formally recognized group of senior executives, IT executives and representatives from multiple function areas and business units who act as a "board of directors" to manage IT activities and ensure to link IT strategy with the business strategy (Nolan & McFarlan, 2005). IT SC meets in regular basis to discuss IT direction, set IT policies, approve and rank projects, determine resources allocation, review performance and monitor progress of IT projects (Earl, 1993). Prasad, Heales and Green (2010) emphasizes the significant role of IT SC in attaining business value from IT investment. The project management office (PMO) is another emerging example of DMSs (Hill, 2004). Similar to IT SC, PMO assumes the responsibility for IT alignment and IT projects management.

ITG Influencing Factors

Prior ITG research tried to determine and analyze the multiple contingent factors that influence the ITG adoption within an organization and that affect its success (Brown & Magill, 1994; Weill & Ross, 2005). For the purpose of this research, potential ITG influencing factors that may impact the strategic IT investment decisions in healthcare are classified into internal and external factors (Table 1).

Table1. Summary of potential influencing factors of ITG in healthcare

Influencing Factors		Impact on IT Governance
External Factors	Access to external resources	Organizational actors who are able to obtain funds or free-less expensive IT services tend to be heavily involved in decision process
	Policy government	Healthcare networks are forced to ensure interoperability through implementing organizational ITG practices is necessary to ensure interoperability and that IT alignment with priorities and goals by governmental leadership
	Industry and regional differences	The type of industry and its operational regions create unique pressures on organizations which are reflected in their ITG. In addition, DM cultures vary significantly across the world.
Internal Factors	Strategic and performance goals	The main goal of ITG is to ensure the delivery of business value of IT to achieve the organization's strategic and performance goals
	Organizational structure	Organizations depend on organizational structure to make IT decisions
	Size and diversity	ITG reflects the changes emerged by organizations' growth and new competing objectives.
	Governance experience	Organizations change their ITG as their learning and experience with ITG best practices increase.

Challenges

It is important to understand the challenges that may hinder IT projects realization in order to address them earlier on. IT management challenges have been thoroughly examined by the IT literature but these challenges

keep changing as the practice is transforming from IT management to ITG. ITG challenges stem from the involvement of various actors in a matrix of structures and processes and from strong lateral relational mechanisms that required direct interactions at the strategic, tactical and operational levels. The challenge here is to maintain a balance between such matrix and interactions and organizational goals. Hence, IT strategic planning and alignment have been reported as a major issues in IT in healthcare (Luftman & Ben-Zvi, 2010). Recognizing the role of IT stakeholders and clinical leadership in major IT decisions is another important issue in HOs (Jaana et al., 2011).

RESEARCH FRAMEWORK

The research's ITG framework is shown in Figure 1. IT alignment (Align) is the main driver for IT decision processes. As illustrated in the figure, IT alignment is perceived as the starting point of the IT investment decision making process that occurs at high level planning of the organizational strategy, building on research that has emphasized IT alignment as important drivers of overall ITG practice (Dahlberg & Kivijarvi, 2006; Marshall & Mackay, 2003).
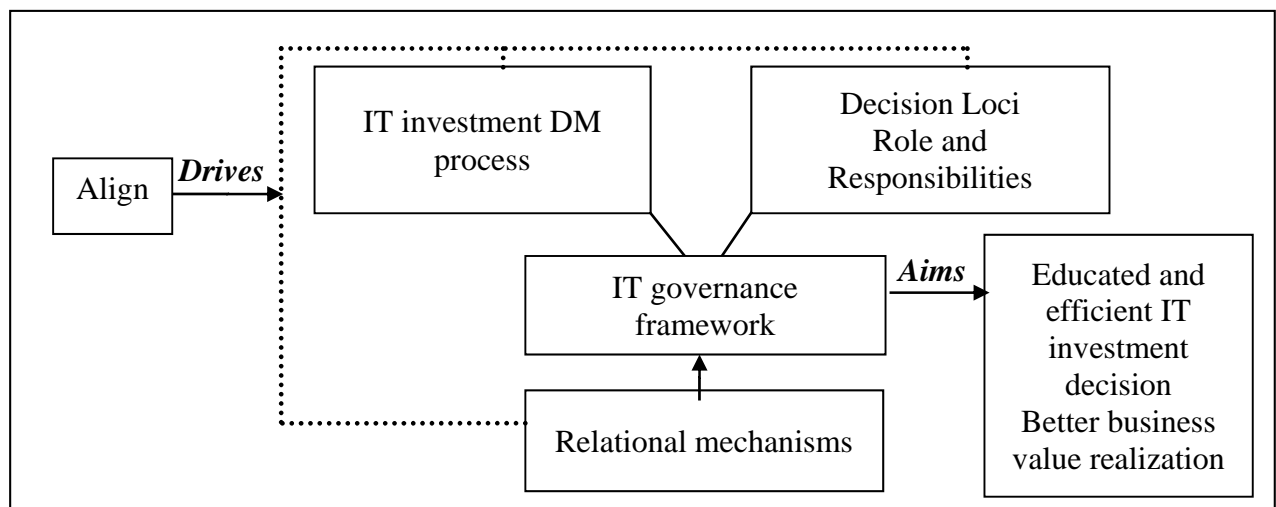

Figure 1. IT governance research framework

While in respect to IT investment decision processes, this research proposes a five-stage model (PJPPI) (Figure 2). For each stage in PJPPI model, sub-stages were identified prior to making the final decision at that stage. By this structure, the model includes those who have input right to the decision in addition to the ones who have the final approval authority (Weill & Ross,2005). In addition, this model assumes that the major stakeholders may differ at each stage of the IT decision process. The proposed decision loci and role and responsibilities of involved stakeholders at each stage are presented in Table 2.
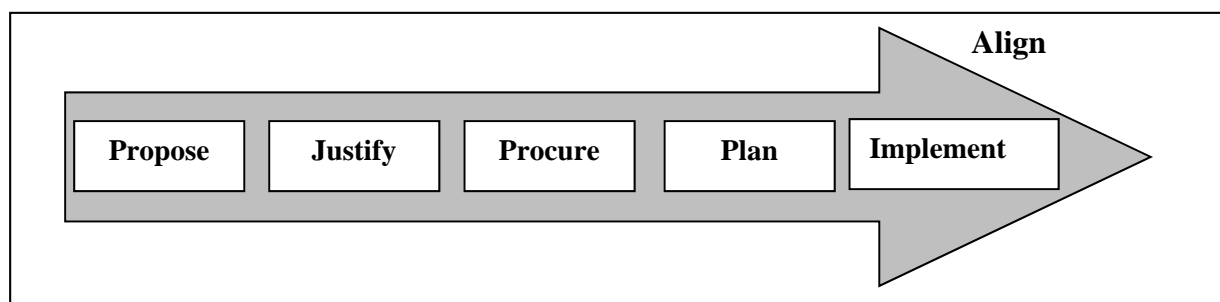

Figure 2. Proposed IT DM process

Table 2. Summary of proposed five-stage model and associated decision loci of IT DM

DM stage	Description	Sub-stage	Decision loci Role & responsibilities
Propose	Initiate an idea for IT investment to support business opportunities	Develop	Any individual/ unit in the organization
		Review/ Approve	PMO; IT SC
Justify	Define the investment drivers/objectives; Identify benefits and measures; Analyze cost-benefits-risks; Set priorities for funds and resources	Develop	Initiator with support of CIO & CFO office
		Review	PMO; IT SC
		Approve/ Prioritize	IT SC/Executive team
Procure	Purchase the technology/solution (& related equipment, material, service and other resources needed to carry out the project)	Plan	CIO office; CFO office
		Approve	Budget Management Committee (BMC); PMO; IT SC; executive team
Plan	Develop a ISP that provides detailed plans for all aspects of IT projects	Develop	Project manager(s)
		Review/ Approve	PMO; IT SC
Implement	Start on-going operations to put the system in use		Project management team

METHOD

This research used a qualitative multiple case design which follows theoretical replication and literal replication logic (Yin, 2003). The unit of analysis is the Hospital Information System's (HIS) investment decision, represented here in the case of CIOs. One hospital was selected from Egypt (Beta) and the other from UAE (Alpha). Both hospitals differ in terms of size, sector, maturity, range of services and patients' volume. Following the literature review and research prepositions and frameworks, the researcher identified five potentially important constructs: strategic drivers for ITG, ITG mode, decision making process, healthcare professionals' involvement in IT decisions, influencing ITG factors and challenges to ITG in IT investment decision. Data was collected and measured according to a specific operationalization scheme for each of these constructs. The data collection was done primarily through semi-structured interviews targeting the CIOs in the two hospitals. Secondary resources were used to extract data from documents provided by both hospitals.

FINDINGS AND DISCUSSION

Despite the apparent differences between the two hospitals, analysis of the research findings (summarized in Table 3) revealed considerable similarities between ITG drivers and practices in both hospitals. Moreover, similarities in ITG practices were found between not-for-profit hospitals examined in this research and for-profit hospitals as reported by the literature (Smaltz, Carpenter & Saltz, 2007). Both HOs in this research have chosen to implement ITG to attain IT alignment, and to achieve similar strategic goals revolving around patient safety and quality of patient care. Other important driver for ITG in both HOs is the pressure to comply with the government's policy and IT healthcare standards. Governmental bodies require all hospital in their networks to be able to interoperate in order to support public safety goals.

Table 3. Summary of findings with respect to the important constructs

Construct	Alpha Hospital	Beta Hospital
Strategic drivers for ITG	IT alignment Governmental Compliance	IT Alignment
ITG Structure	Centralized	Centralized
ITG mode		
Decision rights	Business Monarchy	IT Monarchy
Input right	Administration Monarchy and Professional Monarch	Administration –IT Duopoly and Professional –IT Duopoly
IT investment DM process		
Number of stages	Five stages	Five stages
Stages	Idea generation and concept Business case development Discussion Approval and Funding Execution and management	IT opportunity identification Evaluation and Prioritization Approval and funding Procurement Implementation management
DM structure	A-team; executive committee; SC	SC; PMO; IT leadership committee; IT management committee
Healthcare executives involvement in IT decisions	Formal involvement	Informal involvement
Influencing ITG factors		
Internal	Organization structure Strategic performance and goals Governance experience	Organization structure Strategic performance and goals Trust of our stakeholders History of successful IT implementations
External	Governmental initiatives	Access to fund/external resources
Challenges to ITG	Governmental overlap ; prerequisite IT alignment	Justifying IT investments; securing funds; IT alignment; involvement of end users; project failure

Further, while both HOs attempted to attain IT alignment through their strategic dimensions, the structural dimension was more clearly apparent. Structural dimension of alignment is concerned with the location of IT DM rights and reporting relationship (Chan & Reich, 2007). On other hand, strategic dimension intersects with the social aspect of IT alignment by requiring business and IT executives to understand and commit to business and IT objectives and plans (Reich, & Benbasat, 2000).This is an important prerequisite for a successful IT alignment in HOs. Yet and as confirmed by this research findings, attaining strategic IT alignment is still a big challenge for both HOs. It is still hindered by many issues that are unique to the healthcare industry such as shared domains of knowledge, attitudes of members towards IT, and communication barriers (Campbell & Avison, 2005). Reich and Benabast (2000) demonstrated that high levels of shared domain knowledge between business and IT lead to more strategic and frequent communications and ultimately, leading to better alignment. Bassellier and Benbasat (2004) showed that an effective partnership between IT and business professionals is a primary determinant of success in gaining business value from IT. This entails that IT professionals should understand for example nursing and physicians practices first to be able to provide value for hospital's performance. At the same time, different business elements of hospital (administration and clinician units) need to understand how IT works and how it could be beneficial to them. It is reported that many administrative staff and clinical expect IT to solve existing problems regardless of the needed process and resources to solve the task (Jaana, et al., 2011). Thus, it is important for HOs to understand how to develop this mutual understanding and partnership between IT, business, and clinicians.

Both organizations implement a five-stage model with different decision loci at each stage to make IT decisions. It was suggested here that DM stages found in the literature mirror the DM process (PIPPI) followed

by both HOs in this research: propose, justify, procure, plan and implement. However, three main gaps were identified in the model adopted by both HOs: development of robust business case, well-informed system procurement and comprehensive planning. The PIPPI model focuses on business case development as a primary stage in IT decisions in order to lower the risks of project's failure (Nolan, McFarlan, 2005). Moreover, it's the business case which strengthens the management's commitment to IT investment leading to a higher success rate. Developing a robust business case at the Justify stage of PJPPI aims at identifying how IT will deliver each of the business benefits; and to set priorities for funds and resource allocation across the different investments. When doing a business case, there will be hard returns (i.e., film savings using PACS) and soft returns (i.e., projected inpatient admissions and the cost reduction from better diagnostics). Both returns have to be carefully researched and documented in order to avoid having over-inflated figures concerning accrued benefits. This is one of the reasons behind having low success rate in IT projects (Ward, Daniel & Peppard, 2008). Strassmann (1997) states that, "The approval of a proposed investment is only the starting point for a continually widening gap between the stated objectives and the capacity to deliver results." This is where business case development practices fall short in both HOs in this research. IT SC in Beta required a one page business-case which is developed by IT and the requesting units whereas the business case is developed by the proposal initiator and the CIO in Alpha.

IT and healthcare professionals should cooperate to develop business cases for strategic decisions because if each team works individually one will be biased to technology (IT) and the other to clinical aspects and often miss out on the big picture which involves understanding the inner workings of patient care, revenue, expenditure, insurance, etc. This supports the findings of (Xue et sl., 2008) who confirmed that only proposals for low level investments are developed by administration, healthcare professionals or by both with IT assistance. Therefore, HOs are encouraged to establish such partnership to make a strong case and assure gaining the expected benefits. Otherwise, HOs should seek the help of professionals (expert business case developers) to build strong business case for IT strategic decisions.

System procurement is another area of weakness identified in healthcare organizations in this research. It is imperative to procure IT systems that best meet the requirements of business. In the case of clinical systems, these requirements are related to the clinical contents and clinical functionality. While clinicians are the best to evaluate IT clinical systems (Dorodny, 2003) they are absolutely not involved in this step in both cases. Alpha hospital doesn't have a procurement stage at the DM process leaving its responsibility to IT and finance departments as part of the project planning and implementation. System procurement at Beta is done only through central IT in cooperation with the finance department. This is in addition to the scant involvement of healthcare executives and clinicians in IT decision processes which appeared to contribute to the late adoption and low usage as experienced during HIS implementations in both HOs. Almost three years post to the HIS implementation, Alpha and Beta are still facing issues with physicians' adoption and usage of IT health systems. For example, the percentage of non-use of HIS by physicians in Alpha and Beta in 2011 was close to 13.4% and 19.5%, respectively. Whereas only 65.5% and 39% of total physicians used HIS in clinical documentations in 2011. These figures are disappointing considering the large investments on HIS and the expected business value.

Planning for IT investment implementations was noted as a weak area by both Alpha and Beta. Initially, planning for IT investments was not included in IT decision process in both organizations. Secondly, planning for IT projects in the implementation stage in both organizations focused mainly on three aspects: resources, time and cost. Although these elements are important to the success of IT projects; more value comes from selecting and training a project team of interested and dedicated individuals that communicate well with end users in order to develop the necessary appreciation for IT implementations. This research proposes planning as a primary stage of IT decision process within which a comprehensive implementation research (ISP) should be developed. ISP is developed collaboratively by the project manager from IT and project team members with a wide range of expertise especially in the areas of communication/engagement, change management and education. The focus on these areas stems from the fact that resistance to change is one of the major challenges to ITG in HOs (Wilkin & Riddett, 2009). HOs makes an enormous financial commitment to improve healthcare through implementation of IT solutions, so every intervention targeted at increasing user acceptance creates a better return on the made investments. On the other hand, the success of IT projects is ultimately tied directly to how well the end-users accept the new system and how well they can function within this new working environment. Both end-user acceptance and their ability to function efficiently within the system are directly related to engagement, change management and educational efforts.

With respect to governing IT investment decisions, the findings indicated that both organizations in this research implemented a mix of decision structures and relational mechanisms to govern their IT decisions. Each Alpha and Beta has hierarchical IT decision committee structures with representation in this structure from across the organization. Additionally, both hospitals chose to implement IT SC and/or PMO capablities to govern IT decisions and IT alignment. However, each hospital had different decision loci and roles and responsibilities.

PMO representation in alpha was limited to project management department in order to support with case development. In Beta PMO was an IT department unit that is explicitly in charge of IT project planning and management. IT SC in Alpha had representatives from major divisions – operations, clinical support services, nursing, physicians, and finance. IT SC in Beta consisted of the CEO, CIO and CFO. Despite the CMO's representation in Alpah's IT SC, the CIOs of both organizations admitted the limited involvement of healthcare executives or leadership in IT decision process. Therefore, while the best ITG practices imply that federated ITG mode is the closet to healthcare, the findings of this research indicated that HOs tend to centralize their IT investment decision: Business Monarchy at Alpha; and IT Monarchy at Beta. However, the results reveal different ITG patterns with respect to decision rights including: Administration Monarchy and Professional Monarchy at Alpha; and Administration –IT Duopoly and Professional –IT Duopoly at Beta. According to Xue et al., (2008) the Business Monarchy at Alpha can be justified by the high centralization and pressure of policy government. In contrast, Beta experiences less external influences and higher IT function power resulting in IT Monarchy. Moreover, the presence of Administration Monarchy and Professional Monarchy at Alpha is attributed to the fact that IT investment process can be triggered in any level of the organizations; and that the proposal's initiator participates in business case development. On the other hand, the presence of Administration –IT Duopoly and Professional –IT Duopoly at Beta is due to the fact while IT ideas can be proposed by business units, IT has the responsibility to develop and submit the final proposal to IT SC. Again, this can be attributed to the lower external influences and the higher IT function power that impact ITG at Beta in compare to Alpha.

The chosen mix of ITG structures and relational mechanisms in HOs is influenced by multiple internal and external factors. This research identified the main internal factors to influence ITG in IT decisions to be strategic and performance goals; organizational structure; governance experience. Interestingly, the organization size in this research did not appear to influence ITG practices in IT investment. In contrast, while Beta is a small organization, the structural placement of IT was clearly defined since its establishment in 2007 with a position for a CIO. It took Alpha a considerable time to realize the importance of organizational structure that supports IT. As a result, Alpha has changed its organizational structure to create the CIO position with a direct reporting line to the CIO. This is part of learning process pointed out by Weill (2004) who explained that organizations change their ITG as their learning and experience with ITG's best practices increases. ITG experience was referred to as "history" by Beta's CIO. Good history in delivering business values from previous IT projects has contributed to increased involvement of top management and end users in ITG and to justify IT investment funds.

Finally, the findings in this research supported the proposition that effective ITG in IT investment decisions in healthcare organizations is challenged by IT alignment, government policy and the lack of business metrics to justify and evaluate decisions.

IMPLICATIONS

This research provides important insights about how HOs make and govern IT decisions. It provides excellent examples of critical strategic enablers and key practices to implement effective ITG in IT decisions in hospitals. It also points out the main ITG influencing factors and discusses main challenges to effective ITG in healthcare industry. Most importantly, the research proposes an IT decision model and associated ITG structures, decision loci and mechanisms to address these challenges. By focusing on two different HOs with respect to their practice in making and governing IT decisions, this research poses the following recommendations:

- Implement structured DM process with healthcare executive' involvement; HIMSS Analytics (2005) confirmed the positive impact of CMIO' involvement on the effectiveness of IT SC.

- Include IT system procurement as a stage of IT decision process with clearly identification of intersection between IT and clinical practice; and accurate evaluation of clinical requirements in IT systems that may best carried out by clinicians or their representative, the CMIO.

- Facilitate IT-business partnerships and governance practice via two-ways education.

- Develop a robust business case with realistic, attained and measurable benefits.

- Develop a comprehensive implementation planning research (IPS) with a focus on end user's engagement; change management and education.

- Invest in internal marketing plan: show that the process works

CONCLUSION AND FUTURE WORK

The literature suggests that IT investments may result in demonstrable quality improvement and cost cutting in healthcare industry (Bahensky et al., 2008; Tsiknakis & Kouroubali, 2009). The literature also suggests that organizations with effective ITG generate greater returns from their IT investments (Procaccino, Verner & Lorenzet, 2006). IT investment decision processes and related lead actors in such processes can contribute to the success of IT investment (Weill, 2004). Accordingly, ITG is becoming a strategic priority in many HOs. Leadership in HOs need to make better IT investment decisions and to better align their IT investments with the business objectives in order to gain the desired business value. However, implementing effective ITG in healthcare industry remains a mystery for many HOs. This is due to their very specialized nature.

This research recognizes IT alignment and government compliance as the main driver for ITG in healthcare organizations. It is important to note that the first organization (Alpha) efforts to establish its ITG were driven more by a mandate to achieve governmental compliance than the desire to maximize value from IT investments as was the case in Beta. Yet, the two organizations show similarities regarding the IT decision process and ITG practices. While the two cases studies reflect sector, maturity, services and demographic variations, the common IT practices in IT investment decision include:

- A five-stage IT decision process to identify, evaluate and prioritize IT investment ideas.

- Committee structures consist of various organizational representatives with clearly defined roles and decision authorities to govern IT decision process.

- Communication mechanisms to ensure understanding and collaboration between major stakeholders and cross-functional business units.

This research identifies organization structure, strategic performance, governance experience, and governmental initiatives as the main factors influence ITG's adoption in HOs. It also recognizes the role of clinical leadership and IT-clinical partnership as critical keys for effective ITG in HOs.

As the importance of ITG continues to grow up within the healthcare industry, as well as the challenges to implement effective governance, this paper suggests several ideas for future research. First, research is needed to evaluate how HOs align IT with their business strategies. Second, while it is important to understand how IT decisions are made in HOs, it is also important to understand how to evaluate these decisions and their outcomes; and what practices are most significant in driving effective IT decisions. Finally, particular attention should be paid to examine the emerging role of CMIO and to analyze the relationship between CMIO' involvement in IT decisions and outcomes of these decisions.

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