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Investigating IT Governance Implementation: Insights from an Australian Retailer of Home Improvement Products

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Abstract: This study discusses the implementation of IT Governance (ITG) at an Australian retailer of home improvement products, namely Company B using Actor Network Theory as its theoretical lens. The focus is on how Company B assimilates its IT governing processes with IT infrastructure to produce a stable ITG implementation. By investigating the historical background of how IT is governed, this study explores how ITG structures, processes and relational mechanism's arrangements and IT infrastructure are implemented and how their interests become dynamically aligned. This study concludes that understanding the interests of all ITG actors and the use of appropriate strategies are crucial for a successful ITG implementation.

Key words: IT Governance (ITG), IT infrastructure, Actor Network theory, aligned, interests, implemented

INTRODUCTION

As Information Technology (IT) becomes critical to organisations there is intense pressure to ensure that they have invested in the right technology and are doing the right thing to minimise its associated risks. IT Governance (ITG) in the context of this papers focuses on the decision right's (i.e., through ITG structures) ability to ensure IT could sustain and drive the business (i.e., through ITG processes) and the ability to empower business and IT people to ensure IT strategy is aligned with business strategy (i.e., through ITG relational mechanisms). Implementing ITG means an organisation would direct its internal control towards IT. However, the holistic approach that could blend both the governance structures, processes and relational mechanisms with the IT infrastructure investment decision is still questionable. Is recognising ITG as only a relational framework of structures, processes and relational mechanisms sufficient? Does technology have an impact on the governing process of IT infrastructure's investment?

Driven by the above questions, the researchers carried out an analysis of how IT is governed in an organisation using Actor Network Theory. The aim is to ensure that ITG is not only viewed as an organisational strategy but that it has an ability to support the evolution of IT infrastructure to enable and deliver business value.

The relationship of IT governance structures, processes and relational mechanisms with IT infrastructure: Literature on ITG argues that it is often viewed as an organisational strategy to address the social aspects of governance development (Haes and Grembergen, 2008). On the other hand, literature on IT infrastructure focuses on its capability (Wang *et al*., 2013; Lu and Ramamurth, 2011) and flexibility (Ngai *et al*., 2011) for the achievement of competitive advantage. Infrastructure is also viewed as a socio-technical network that emerges from the interplay of the technological and the social.Viewing these two domains separately overlooks the complex relationships between people, structures, technology and processes involved in the developmentof ITG in organisations. Therefore, the researcher's model combined (Van Grembergen and de Haes, 2009) ITG framework of structures, processes and relational mechanisms with IT infrastructure. Hence, ITG will no longer be considered as a one-dimensional approach that only focuses on what organisations possess in regards to their ITG (Fig. 1).

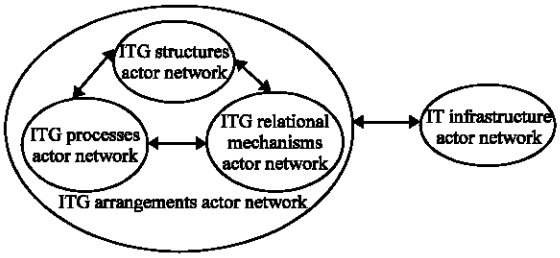

Fig. 1: The relationship of IT arrangements and IT

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In this study, ITG structures focus on the roles and responsibilities of the IT/business committee while ITG processes refer to the IT decision-making process and monitoring procedures. ITG relational mechanisms emphasise the active participation and collaboration of corporate executives, IT management and business management to facilitate the coordination of ITG structures and processes.

Meanwhile, IT infrastructure is referred as "the entirety of devices, tools, technologies, standards, conventions and protocols on which the individual worker or the collective rely to carry out the tasks and achieve the goals assigned to them" (Pipek and Wulf, 2009). Definition addresses infrastructure as heterogeneous in the sense that it is not limited to the physical technological infrastructure but also acknowledges the role of people who depend on it.

To inform the analysis reported here, the researchers use Actor Network Theory (ANT) as a theoretical lens to investigate the relationship of ITG structures, processes and relational mechanisms with IT infrastructure at an Australian incorporated company, named in this study as Company B. Company B is a leading retailer of home improvement products and a major supplier to builders in both the commercial and housing industries.

Theoretical lens: As a means to further explore the relationship between ITG structures, processes and relational mechanisms with IT infrastructure, the researchers conceptually based their analysis in the language of ANT. ANT is useful for understanding the interwoven relationship of the ITG structures, processes, relational mechanisms and IT infrastructure because it treats them all as actors. In this context, the governance arrangements of IT are considered as processes for making appropriate IT decisions for producing practices related to the selection, implementation and usage of IT infrastructure. Such processes involve various participation and interaction from and between, human and nonhuman actors that are continuously emerging to establish a network of relationships. The use of ANT as a theoretical lens helped to trace and explain the process of how a stable ITG network with aligned interests is to be created and maintained.

Extrapolating from ANT, the research model is illustrated in Fig. 1. In this model, ITG is viewed as a texture of relations or a network. In this context, ITG structures, processes and relational mechanisms are the elements of an ITG arrangements network which interacts (i.e., has a relationship) with IT infrastructure. An Actor Network is a collection of actors with aligned interests. Actors can be human or nonhuman or they may be hybrid (Callon, 1991). Each actor, despite his/her/its means, roles, human or nonhuman is equally important in shaping and influencing ITG implementation network formation. However, the actors have their personal interests (Callon, 1986; Hanseth and Monteiro, 1998; Walsham and Sahay,1999). In order for the network formation to be successful, the interests of the actors need to be aligned. Therefore, for the ITG implementation to be stable, all of its actor's interests need to be aligned. Examples of the interests of the actors that will be used in the case study are as follows: ITG structures-to provide a guideline on IT accountability and responsibility of Company B; ITG processes, to construct Company B's IT strategic decision making process and IT monitoring procedures; ITG relational mechanisms, to provide two-way communication, active participation and collaboration with stakeholders; IT infrastructure to support and maintain all systems used by Company B. These examples of the actor's interests are based on the punctualisation concept where the researchers treat a heterogeneous network as an individual actor to reduce network complexity (Law, 1992). The heterogeneous networks of ITG structures, processes, relational mechanisms and IT infrastructure are punctualised into black boxes and become an individual actor.

The researchers demonstrate the case by using the four moments of the translation process (Callon, 1986) to study the ITG implementation at Company B. The four moments of translation comprise of problematisation (how to become indispensable), interessement (how the allies are locked into place), enrolment (how to define and coordinate the role) and mobilisation (how actors can have legitimate speakers to avoid betrayal). A focal actor is the key actor, who drives the translation process by identifying the other relevant actors and their interests, establishing the Obligatory Passage Point (OPP), negotiating with other actors to accept the OPP using the device of interessement (strategies to win the negotiation process) and enrolling and mobilising actors in the new established network. The OPP refers to "a situation or process that is specified by the focal actor such that all the relevant actors can achieve a shared focus in successfully pursuing the interests attributed to them" (Sarker *et al*., 2006). Table 1 summarises the ANT concepts and the corresponding descriptions that are used in this study.

Table 1: Summary of key concepts used

Concepts	Description
Translation	A process of creating a body of allies between human and nonhuman actors by aligning their interests with the focal actor
Problematisation	The first moment of translation process where the actors and their interests are identified and the establishment of the obligatory passage point
Interessement	The second moment of translation that focuses on the negotiation process to lock the actors into passing through the obligatory passage point
Enrolment	The third moment of translation that occurs when the actors accept the interests defined for them
Mobilisation	The last moment of translation where a spokesperson is appointed to represent the enrolled actors
Obligatory Passage Point (OPP)	A situation that has to occur in order for all the actors to satisfy their interests that have been attributed to them by the focal actor (Callon, 1986). It is a process of where the focal actor tries to convince all actors to accept the proposal of
network	establishment
Inscription	The inscription is a process of artefact creation that ensures the protection of some interests (Law, 1992)
Punctualisation/black box	Treating a heterogeneous network as an individual actor to reduce network complexity (Law, 1992)
Primummoven	A primary cause or "mover" who initiates the network initiative development
Focal actor	The key actor who drives the translation process
Devices of interessement	The strategies used to win the negotiation process

MATERIALS AND METHODS

Founded on the basic tenet that a stable ITG implementation is based on the alignment of ITG actor's interests, the researchers illustrate the process through an interpretive case study. The case study strategy was chosen because of its ability to garner a detailed contextual analysis of the actor's natural settings. It also offers richer information related to the social, technological, cultural and political influences on ITG implementation at Company B. Document analysis and in-depth interview were the approaches used to collect data to enable interpretation. Various contexts of the elements of ITG structures, processes, relational mechanisms and IT infrastructure and their association to one another were traced and explored.

Document analysis included annual reports and internal documentation. The in-depth Interviews were conducted with key respondents who were directly involved in the ITG implementation at Company B. Techniques used during the interview included probing and follow-up new questions based on the answers given. The researcher's understanding gained from the erstwhile document analysis became part of the process that enhanced the social interaction with the interviewees. Overall, the interview sessions lasted 40-90 min and were digitally recorded. Transcripts of the interviews were subsequently created.

Given that ANT has an inherently interpretive nature, this study incorporated the fundamental principle of the hermeneutic circle proposed by Klein and Myers (1999) as a means to improve the quality of the analysis. In this context, the analysis of the information is iterated between the macro context of the participating organisations and the micro context which is based on the activities associated with the ITG implementation from the individual actor's perspectives. The act of implementing ITG and the context in which its activities take place are analysed within the social, political and historical context of the ITG implementation in Company B. Following the principle of contextualisation (Klein and Myers, 1999), the use of ANT as a theoretical lens enabled the researchers to trace the historical background of ITG implementation and its relations with the latest improvements made. The manoeuvres in the process of aligning the interests of ITG actors could be explored to understand how the implementation of ITG and infrastructure shapes and is shaped by the interactions of its actors.

Case overview and history: The case study under analysis is Company B, a subsidiary of Group XY, an Australian incorporated company comprising business operations which include supermarket and department stores and home improvement and office supplies. Company B is autonomous, operated independently and has its own teams to support business operations. Company B is a leading retailer of home improvement products and a major supplier to builders in both the commercial and the housing sectors. The historical development of ITG structures, processes, relational mechanisms and IT infrastructure at Company B is described below in three phases over a ten year period.

Phase 1 (2001-2005); Foundation of IT governance: In 2001, Group XY successfully acquired Hardware Store Chains (HSC), a rival to Company B. As a consequence, HSC's business operations were merged with Company B's. Prior to the merger, all of the IT systems at Company B were centrally managed by the IT Service (ITS) team in Western Australia. The ITS team is responsible for the end-to-end technology requirements necessary to support the business-specific outcomes. At a higher level, there was an IT leadership team that comprised of all senior IT Managers (i.e., the IT heads of units) which was chaired by the General Manager of ITS. Each unit had the autonomy to decide what was best for their unit (i.e., trust value). The role of the IT leadership team was to basically discuss the strategic agenda for the ITS.

The IT infrastructure (e.g., application systems) was developed in-house by the ITS team using COBOL. IT support was provided to the business through an internal IT call centre for general IT problems. The management of Company B (also known as the leadership committee) established an Integration Governance Committee to facilitate the integration of the HSC's IT infrastructure with Company B. The Managing Director of Company B led the Integration Governance Committee with membership including all key IT players and business representatives. The committee defined the integration strategy and decided to apply minimum intervention in bringing HSC's business operations into Company B. The aim was to enable synergies from the acquisition as quickly as possible and ensure both business operations were running smoothly during the integration exercise. The integration process was regarded as an in-house integration program and a project manager was appointed to lead the IT integration.

Phase 2 (2005-2008); Upgrade of IT infrastructure: In Phase 2, the Board of Directors of Group XY approved funding of $55 million to support the upgrade project proposal prepared at the end of the Phase 1. Named the Launchpad project, its aim was to support the growth of the business by providing the foundation for its expansion and the maintenance of competitive advantage. Stage 1 of the Launchpad project commenced in 2005. The business process upgrade aimed to improve Company B's inventory management. Meanwhile, the information system upgrade focused on the implementation of the Oracle e-Business Suite (Oracle ERP) to replace the COBOL system. It is important to highlight that Company B did not have a formal IT steering committee to oversee its overall ITG. All of the IT decisions, including those related to IT investment and IT infrastructure development were determined by Company B's leadership committee, led by the Managing Director. In order to support the strategies to provide "the widest range, the lowest prices and the best service", Company B promoted flexibility in their governance approach. As a result, formal IT strategies and governance processes did not exist as they could disrupt their ability to fulfil the business strategies.

Phase 3 (2008-2010); Implementation of new technology: After Stage 1 of the Launchpad project was successfully completed, the IT leadership team re-evaluated the content of its Stage 2. A new plan was prepared to extend the duration of Stage 2 but without additional cost. A longer period was critical for the ITS team to prepare sound control mechanisms in Company B's IT infrastructure. Once the approval for the extension was granted, the ITS team concentrated on upgrading the overall network across the stores from its legacy COBOL system to Oracle ERP, together with the development of a new POS system.

RESULTS AND DISCUSSION

Network analysis of IT governance implementation: Figure 2 shows the interaction of the ITG actors during the ITG implementation using the research model. The focus in both phases is on how the ITG arrangements interact with IT infrastructure for interest's alignment. An explanation on the interactions of the ITG actors in Company B (Fig. 2):

Phase 1 (2001-2005); Foundation of ITG: The leadership Committee was the primummoven who established an Integration Governance Committee to facilitate the integration of HSC and Company B. The primummoven set out to integrate the HSC's business operations into

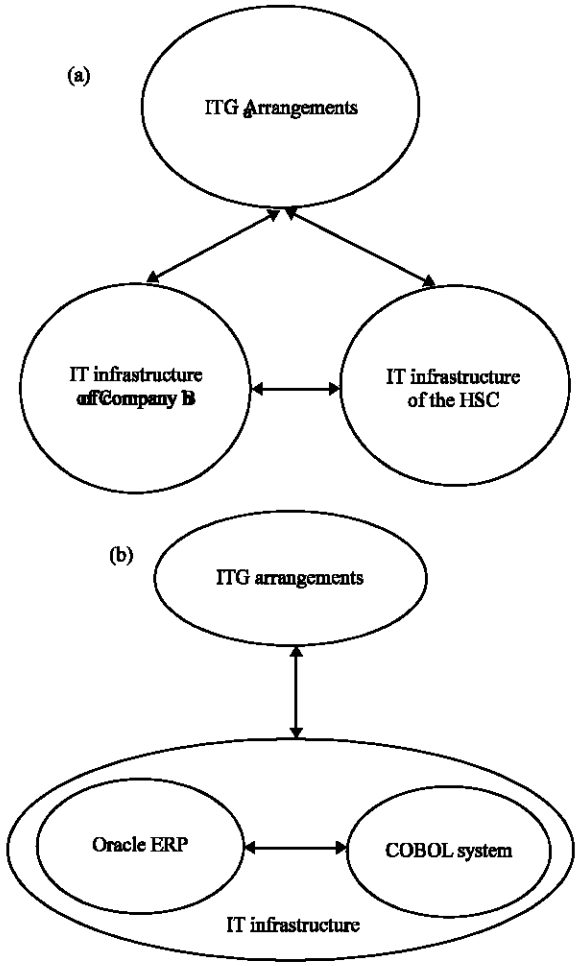

Fig. 2: Interaction of actors during ITG implementation: a) Phase 1; b) Phase 2 and 3

Company B for enabling acquisition synergy as an OPP. A Project Manager was appointed and he became the focal actor leading this in-house integration project. The focal actor carefully considered the actors residing in the HSC's punctualised IT infrastructure because it was not compatible with Company B. Two devices of interessement were employed, firstly, to leave the HSC's POS system in place to continue operations and secondly, to create an interface application system to link HSC's POS system with Company B. The HSC's IT infrastructure was enrolled and the commitment of HSC was inscribed through its parallel operation with Company B's POS system. An IT Manager and former Launchpad Project Manager stated that "the HSC had a totally different system. We decided to leave the store systems as they were in both organisations (the HSC and Company B). But, we created an interface to the HSC's store systems into our COBOL systems. These efforts were seen as having lower risk and impact. If we replace the store system across the whole HSC using our COBOL system that was about the same size as Company B at that time which is about 150 stores. If we changed the HSC system, the disruption would have been huge, so we made it seamless from the HSC's point of view.

The newly appointed General Manager used a leadership model as an inscription to define the role of actors in achieving the new business strategy which later became the culture of Company B. The General Manager of IT said that "we offer a leadership model around having the right people in the right roles with the right values as well as understanding the overall vision and what it takes to get there. It's very much part of the culture of the organisation".

Phase 2 (2005-2008); Upgrade of IT infrastructure: To continue on from the translation process in Phase 1, the interests of all actors were re-defined (i.e., problematisation). The pre-requisite assessment of IT infrastructure became an inscription for the Board in approving a Launchpad project for upgrading the business process and information system (i.e., OPP). An IT Manager and former Launchpad Project Manager explained that "in order to do the Phase 1 of the Launchpad project, we had to do a prerequisites assessment where we mapped all of our business processes, so we knew what the functions were that, we wanted in regards to the new system".

The role of focal actor shifted to the Project Manager for Stage 1 of the Launchpad project. It was found that the aim of the focal actor was not to make himself indispensable which is in contrast to Callon (1986)'s view but rather his aim was for Stage 1 of the Launchpad project to be indispensable. The Governance Committee was enrolled as a spokesperson for the leadership committee. Its membership which included all Company B's general managers was used as a tactic to entice them to accept the OPP. In addition, the focal actor used communication as a tactic to report the progress of Stage 1 of the Launchpad project to the Governance Committee. The Governance Committee was a subset of the whole management team (leadership committee) because everybody had directly been impacted by the implementation of the Launchpad project.

The elements inside the punctualised IT infrastructure were re-considered. Two devices of interessement were used to enrol them into the ITG network:) improving Company B's business process and upgrading the information systems. The tactic employed to enhance the business process was achieved through the implementation of a new inventory management system. For the system upgrade, the strategy used was to develop and upgrade IT infrastructure in-house and a pilot trial was conducted prior to implementation. In this context, the Oracle ERP was a new actor to be enrolled into the ITG network to replace the COBOL system. The tactics to support this strategy were firstly, the appointment of two Project Managers to lead the upgrading project; one was from the ITS and another was Oracle's representative. Secondly, after considering the installed base of the existing IT infrastructure, a staged approach of upgrading the COBOL system to Oracle ERP was implemented.

Phase 3 (2008-2010); Implementation of new technology: A new translation process occurred when the ITS leadership team decided to conduct a review to re-evaluate the proposed contents of Stage 2 of the Launchpad. The review report was used as an inscription by the leadership committee to convince the board to approve an extension for the duration of Stage 2.

The Project Manager for Stage 2 was enrolled as the focal actor. He became a spokesperson to represent Stage 2 of the Launchpad in the Governance Committee. At this stage, the upgrade of the overall network at the stores from its legacy COBOL system to Oracle ERP and a new POS system development were used as devices of interessement. The Governance Committee played an active role in monitoring the progress of Stage 2 of the Launchpad (i.e., tactic). The ITG arrangements actor network was maintained, hence it was directly enrolled into the ITG network.

The interests of new actors of Oracle ERP, a new POS system and existing COBOL system were reconsidered to be aligned with the OPP to make a successful translation. The tactics used to enrol these actors were through a careful network upgrade across stores (staged approach) and installation of new data storage.

The analysis of the case study shows the interactions of actors within the network of the relationship of ITG structures, processes and relational mechanisms with IT infrastructure for maintaining ITG at Company B. Through the lens of ANT, the analysis focused on the process of interest's alignment among the ITG actors.

The focal actor understood that all actors could not be simply enrolled into the ITG network. Hence, he negotiated with the other actors of ITG structures (e.g., Governance Committee), processes (e.g., integration strategy), relational mechanisms (e.g., communication) and IT infrastructure (e.g., the HSC's infrastructure) for making sure that all interests could be aligned. The installed base of IT infrastructure for Company B, namely the COBOL system was considered as an important actor to be enrolled. However, its enrolment was complex due to its incompatibility with the new system (i.e., Oracle ERP). Therefore, the negotiation that took place between the focal actors and the other actors such as the Governance Committee (e.g., ITG structures), integration strategy (e.g., ITG processes) and leadership (e.g., ITG relational mechanisms) was shaped by the IT infrastructure. The focal actor became the spokesperson for the IT infrastructure in order for their interests to be aligned. For example, in Phase 2, the decision in regards to the IT infrastructure was carefully made, considering both the interests of the COBOL system and Oracle ERP. In this context, the replacement of the COBOL system with Oracle ERP was done in a staged approach. The COBOL system was terminated once the data were successfully migrated and Oracle ERP was able to replace the previous system.

This case study shows how the key actor (focal actor) gained his power through ITG structures (i.e., appointed by management). This key actor needed to consider how to drive and sustain new change in Company B. Hence, various strategies were used to support the enrolment of all actors into the ITG network. The strategies used are summarised as follows: well defined OPP that can be accepted by all actors. In this context, having a similar vision is crucial for the OPP to be accepted by all actors, leading to the success of ITG implementation. The use of appropriate devices of interessement. These include for Phase 1: establishment of the Integration Governance Committee (i.e., ITG structures) and developing application interface (i.e., IT infrastructure) and Phase 2: a pilot trial for business process upgrade, pre-requisite assessment (i.e., ITG processes), the Launchpad project (i.e., IT infrastructure) and appointment of two project managers (i.e., ITG structures). ITG relational mechanisms were used to support both ITG structures and processes. These include top management support (e.g., Board of Director Group XY), understanding of organisational culture through a leadership model (i.e., culture) and engagement with business people and direct communication to the Managing Director (ITG relational mechanisms). Re-consideration of the installed base of the existing IT infrastructure (from COBOL to Oracle ERP. These include upgrading the overall network in a careful manner in-house development of a POS system (i.e., compatible with Company B's culture) and developing interface application.

CONCLUSION

This study explains ITG implementation as a result of interest's alignment between ITG structures, processes, relational mechanisms and IT infrastructure. The proposed model is developed from an ANT perspective and offers a unique approach to extend the understanding of ITG practices. The use of the proposed model was demonstrated in the ITG implementation at Company B. This case study, particularly captures how the IT infrastructure influences the decisions made by the actors in ITG structures. It also highlights the ITG processes and relational mechanisms related to decisions made by the actors within the ITG structures. Hence, the findings of this study shows that ITG is not only an IT organisational strategy but has an important role to play in supporting the evolution of IT infrastructure.

IMPLEMENTATIONS

This study thus, contributes to the ITG literature by providing support for the view that the relationship between ITG structures, processes, relational mechanisms and IT infrastructure is not static. In particular, this case study demonstrates this through the negotiation process and strategies used by the focal actor to support enrolment of all ITG actors and IT infrastructure into the ITG network.

To reiterate, this study offers new insight on how ITG can be studied. It can be concluded that similar to the human actors who have personal attributes, technological artefacts (i.e., nonhuman actors such as IT infrastructure) also have their own characteristics and history that contribute to the understanding of how ITG implementation can be effectively implemented.

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