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The Role of IT Governance and IT Infrastructure in the Process of Strategic Alignment

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Abstract

Drawing upon Actor Network Theory (ANT), this paper presents a discussion on how ITG arrangements and IT infrastructure actor-networks achieve strategic alignment (i.e., alignment of interests). This is achieved by exploring how ITG arrangements and IT infrastructure are implemented, and how their interests become dynamically aligned. Considering both ITG arrangements and IT infrastructure as emergent phenomena, their dynamic relationships are analysed using a local/global network approach. The negotiation process towards achieving the alignment of interests is illustrated and explained by using a trajectory of ITG implementation at a Malaysian public listed company.

Keywords

IT Governance arrangements, IT infrastructure, strategic alignment, actor-network theory, local/global network.

INTRODUCTION

Strategic IT alignment is a concept which has attracted the interest of researchers and practitioners for over thirty years. It is seen as essential for organisations to assist them maximise return on investment, achieve competitive advantage through IS usage and provide flexibility and direction for taking advantage of new opportunities (Avison et al., 2004). Strategic alignment is a term synonymous with terminology such as "fit", linkage, cohesion, fusion, integration, and harmony(Avison, et al., 2004; Chan & Reich, 2007; Luftman, 2005), and it focuses on how an organisation's IT strategy can be aligned with business strategy to deliver value to the business. Many studies have been conducted from both academic and practical perspectives (Vargas et al., 2007) and interest in strategic alignment as a research domain continues. Since the publication of Henderson & Venkatraman's (1992) Strategic Alignment Model, the literature has evolved, from considering various alignment dimensions (i.e., strategic and intellectual, structural, the informal structure, social, and cultural dimensions) to investigating diverse levels of alignment and their different measures. Based on a review of the strategic alignment literature, Chan & Reich (2007) concluded that the discussion of the concept falls into two distinct streams; alignment as an ongoing process, or alignment as an end state. While researchers who view strategic alignment as an end state focus their studies on identifying the antecedents, measures, and outcomes of alignment, the view that alignment is an ongoing process, (e.g. Campbell (2007))is an important, yet under-researched stream of inquiry. In this paper, we adopt this process perspective and investigate how IT governance (ITG) arrangements and IT infrastructure play a role in the ongoing process of strategic alignment.

STRATEGIC ALIGNMENT, IT GOVERNANCE AND IT INFRASTRUCTURE

Empirical research into strategic alignment has shown that firms which successfully align their IT with their business strategy have more focussed and strategic uses of IT leading to better performance. While there is a comprehensive range of studies that examine strategic alignment, explanations of what alignment is, why it is needed and how it can be best achieved, remains vague (Avison, et al., 2004). Nevertheless, there is general agreement in the literature that the concept concerns the integration of business strategy and IT/IS.

Despite general agreement that strategic alignment is an important area for research, Campbell (2005) among others, have argued that the strategic alignment literature takes a predominantly positivist approach in the sense that the focus is frequently on achieving and measuring alignment as a mechanistic outcome (Chan & Reich, 2007). Ciborra (1997) however argues that that positivist research into strategic alignment does not

actually measure the 'naturally occurring phenomena', as they occur in reality, rather measuring only theoretical and artificial constructs. As a result, "the messiness of everyday reality gets virtually hidden" (Ciborra, 1997, p. 69) and no pure alignment is measured (Ciborra, 1997, 2000). In this paper we follow Ciborra's (2000) argument that a 'geometric model' of strategic alignment (i.e., the output from positivist approaches) is problematic due to the difficulties in measuring the strength of the alignment (Ciborra, 1997; Luftman, 2004). Hence, in order to understand the concept of strategic alignment, we return to the foundations of the geometric model and focus on the relationship between the governance of information technologies and the underlying IT infrastructure.

Strategic alignment is identified as one of the key drivers of the need for information technology governance (ITG) (IT Governance Institute, 2003). In this context, to facilitate the alignment of IT strategy with business strategy, IT governance arrangements need to be put in place to ensure that decision rights and management accountability mechanisms (Weill & Ross, 2004) are available to direct and control IT resources. Furthermore, ITG has been identified as having an impact on alignment maturity level (Nfuka & Rusu, 2010; Van Grembergen & De Haes, 2009); the structure of IT decision making (Sambamurthy & Zmud, 1999); enterprise architecture (Bartenschlager & Goeken, 2010); the role of IT steering committees (Prasad et al., 2010); IT value delivery (Ramirez et al., 2010); IT risk management (Du et al., 2007) and the performance of IT systems (Dahlberg & Lahdelma, 2007).

Two critical aspects of ITG are the focus on corporate ITG arrangements (Sambamurthy & Zmud, 1999) and the locus of IT decision making authority (Peterson, 2004a, 2004b; Weill & Ross, 2004). Key issues arising in these foci include corporate ITG arrangements with a concentration on centralised, decentralised and federal types of governance; as well as, the locus of IT decision making authority which focuses on (1) who is entitled to make the decision; (2) who is accountable for implementing the decision; and (3) what is the objective of the decision. Arising these streams of ITG research, the contemporary view suggests that in order to develop effective ITG arrangements, organisations should have a good balance of ITG structures, processes and relational mechanisms. 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 (Van Grembergen & De Haes, 2009).

Both corporate ITG arrangements and the locus of IT decision-making authority concentrate on how organisations can sustain their IT investments to support business functions. This implies that organisations rely heavily on their IT infrastructure to support a wide range of organisational tasks for smooth business operations. Consequently, organisations need to govern the processes involved in the acquisition and implementation of IT infrastructure in order to reduce risks such as investing in IT infrastructure that is incompatible with existing platforms. We refer IT infrastructure 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 & Wulf, 2009, p. 455). This definition highlights the important role of both human and nonhuman actors, in which analytically, they have the same role in shaping the IT infrastructure. In this context, similar to viewing ITG as dynamic in terms of the development of arrangements, IT infrastructure is also viewed as being dynamic because it is continuously defined and re-defined within its use (Cordella, 2010). Hence, both ITG and IT infrastructure are emergent phenomena that evolve over time.

In this paper, we explore an alternative perspective of the process of strategic alignment to that which predominates the literature. Strategic alignment in the context of this study focuses on the alignment of interests among actors involved in networks of relationships. We recast the notion of strategic alignment from being viewed as a matching (or alignment) of IT strategy with business strategy, to one in which strategic alignment is viewed as an ongoing process in which the interests of the actors which constitute IT infrastructure and the interests of actors involved in IT governance, become aligned.

In the following sections, we explore how the arrangements for ITG are set in place in relation to the development and implementation of IT infrastructure. We are particularly concerned with how the interests of actors become dynamically aligned. Specifically, we examine the interplay and interactions between social and technical actors over time in order to understand how these relationships shape, or are shaped by, the process of strategic alignment. To inform our analysis, we adopt a socio-technical perspective using Actor-Network Theory (ANT) as a theoretical lens to investigate the development of ITG arrangements at a Malaysian publicly listed company, named in this paper, Group of Companies ABC (GC-ABC).

THEORETICAL LENS

As a means to further understand how the various social and technical interests in ITG arrangements and IT infrastructure interact, we conceptually base our analysis in the language of Actor-Network Theory. ANT explains that "the stability and form of artifacts should be seen as a function of the interaction of heterogeneous elements as these are shaped and assimilated into a network" (Law, 1987, p. 113). ANT relies on two fundamental concepts; the actor and the actor-network. Actors can be human or nonhuman, or they may be hybrid (Callon, 1991). An actor-network is a collection of human and nonhuman actors (i.e., heterogeneous) with aligned interests. The somewhat controversial view of treating nonhuman actors in a fashion similar to human actors needs to be viewed from analytical perspective rather than an ethical point of view (Law, 1992). Analytically, human and nonhuman actors have the same role and responsibility in shaping and stabilising the network. In this context, assigning the actors symmetrically does not mean that ANT diminishes the important role of human actor, but it is a means to understand the role of technology and its contribution to the organisation. Table 1 below summarises the ANT concepts and the corresponding descriptions that were used in this paper.

Table 1. Summary of key concepts used

Concept	Description
Translation	A process of creating body of allies between human and nonhuman actors by aligning their interests with the focal (key) actor. Translation includes four phases of problematisation (the process of the focal actor to become indispensable to the other actors by defining their interests); interessement (a set of strategies used to persuade all actors to accept the obligatory passage of point defined by the focal actor); enrolment (acceptance of new roles in a new network); and mobilisation (commitment to the roles and appointment of a spokesperson to avoid betrayal in the latter)
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 (i.e., interests)
Inscription	The inscription is a process of artefact creation that ensures the protection of some interests (Sarker et al., 2006)
Punctualisation / black box	Treating a heterogeneous network as an individual actor to reduce network complexity (Law, 1992)

In our analysis we focus on two important domains: ITG arrangements and IT infrastructure. For our purposes we conceptualise both as heterogeneous actor-networks that contain elements of collective human and nonhuman actors that are tied together. Callon (1986) claims that the analysis of stories that are analysed with ANT lead to a better understanding of the establishment and the evolution of power relationship because all the fluctuations are preserved. We concur with Doolin & Lowe (2002, p. 76) who acknowledged ANT as a powerful tool to understand heterogeneous relational network because of its *'relatively sophisticated combinations of resources and people that they mobilize... we can seek to demystify the facts and data that they produce... and show just how ordinary and mundane they often are. In doing this, actor–network theory offers the hope of a more fundamental appreciation and critique of the underlying relationships that pervade contemporary society'*. We, therefore use ANT to trace, explain and understand the process of how the interests of ITG arrangements and IT infrastructure (i.e., heterogeneous relational actor-networks) are aligned to create a stable ITG network in organisations.

ITG Arrangements and IT Infrastructure

The prevailing view in ITG research is that in order to develop effective ITG arrangements, organisations should have a good balance of ITG structures, processes and relational mechanisms (De Haes & Van Grembergen, 2005; Van Grembergen & De Haes, 2008). Despite the practical value of ITG in assisting the achievement of strategic alignment (Van Grembergen & De Haes, 2009; Webb et al., 2006), little attention has been paid to how ITG is implemented and its relationship with IT infrastructure to achieve such alignment. As a result, ITG is viewed as a static and one-dimensional representation that only focuses on what organisations possess in regards to their ITG but says little of how those arrangements are set in place (Hsbollah et al., 2012). Furthermore, ITG is frequently treated as a concern for organisational design in isolation to the IT infrastructure that the arrangements are designed to govern. We however suggest that both should be studied together. Firstly because ITG reflects an organisations' commitment to allocate appropriate IT infrastructure for the business' current and future development. Secondly, the fact that IT infrastructure can affect their ability to use IT in a competitive manner (Duncan, 1995). Therefore, while we subscribe to Van Grembergen and De Haes' (2009) framework of ITG structures, processes and relational mechanisms to delineate what is included in ITG, we are also concerned with the relationship of these arrangements to the IT infrastructure.

Given our theoretical lens, we adopt Star and Ruhleder's (1996) 'relational approach' in which IT infrastructure is viewed as a socio-technical network that emerges from the interplay of the technological and the social worlds. From this perspective, information infrastructure is an emergent phenomenon that is built

upon an installed base of existing infrastructure consisting of both the social and technical elements. This perspective has a developed a steady stream of research investigation into the dynamic evolution of information infrastructure (Cordella, 2010; Monteiro, 2000).

In this tradition, we suggest that ITG should also be viewed as an emergent phenomenon to reflect its dynamic development. The ongoing relationship between ITG and with IT infrastructure should be taken into consideration to avoid ITG being viewed as an extreme of social determinist approach. Following several of the main tenets of ANT which highlight the principle of agnosticism (i.e., the analytical impartiality between all actors involved), generalised symmetry (i.e., every element should be treated with the same analytical vocabulary), and free association (i.e., the abandonment of all a priori distinctions between the technology and the social), we consider both ITG arrangements and IT infrastructure as actor-networks. They are actor-networks consisting of heterogeneous elements of human and nonhuman actors. Each actor, despite its means, roles, technical or non-technical characteristics, is equally important in shaping and influencing the ITG network formation. Therefore ITG arrangements comprising structures, processes and relational mechanisms can be viewed as an actor-network of relationships and interests embodied in those component actors. Similarly, an IT infrastructure is also actor network. It consists of relationships between heterogeneous actors including humans (e.g., IT personnel) and nonhuman actors (e.g., physical IT infrastructure such as application systems).

In ANT, all actors have interests (Callon, 1986). All interests need to be aligned in order for the actor-network to become stable. In our case, ITG arrangements and IT infrastructure are actor-networks, but they can also be treated as an actor. This is due to the effect of punctualisation. We follow Law (1992) and treat the heterogeneous elements in the ITG arrangements and IT infrastructure as individual actors to compensate for the complexity of the network. Therefore, the heterogeneous elements in the ITG arrangements that contain structures, processes, relational mechanisms, and IT infrastructure are both *punctualised* into black boxes to become an individual actor.

METHODOLOGY

We illustrate the process of aligning the interests of ITG arrangements and IT infrastructure through a case study approach. This approach allows us to obtain richer information in a detail from the actors' natural setting. The case study was conducted in a Malaysian multinational government-linked company (GLC), GC-ABC. In order to reconstruct the development of ITG arrangements over time, in-depth interviews were conducted with senior managers who each had a long working history at GC-ABC Through the interview process, we were able to identify key events and decisions in the development and implementation of ITG arrangements and IT infrastructure. Interviews were semi-structured in which each interviewee was enabled to separately account their understanding of ITG and IT infrastructure using their own language. The interviews lasted 60-90 minutes and were digitally recorded. Transcripts of the interviews were subsequently created and the events were cross-checked with the interviewees. The interviewees included the Group Chief Information Officer (GCIO), and the Heads of each IT units. In addition, a wide range of strategic direction documents, annual reports, organisational charts and reporting relationships were examined to inform the analysis.

Analysis Technique

In this study, we analyse the ITG arrangements and IT infrastructure implementation at the GC-ABC using a local/global network approach. Our aim is to explain how the interests of ITG arrangements and IT infrastructure actor networks achieve alignment of interests. This is best explained using the following diagram in Figure 1.
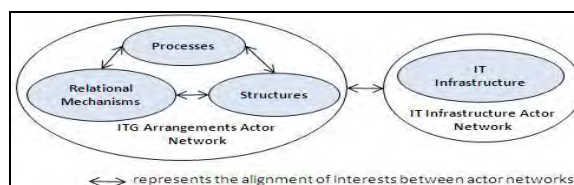

Figure 1: The alignment of interests between ITG and IT infrastructure actor networks

Based in ANT, Law & Callon (1992) developed the local/global network approach to study complex projects involving social and technical elements. In their analysis, they defined a global network as a set of relations 'outside' the project that provide space (e.g., support) and resources to enable a project to take place, and the local network as a set of relations 'inside' the project that is necessary to actually implement the project. They developed a project trajectory of a two-dimensional graph to plot the changing strength of actors over the project duration. Their analysis showed that the TSR.2 project failed and they (1992, p. 46) concluded that for a project to be success or failure, it depends on "a function of three interrelated factors" of (1) the ability of the global network to provide appropriate resources for an expected return; (2) the ability of the local

network to develop the project using resources provided by the global network; and (3) the capacity of the project to establish an OPP to link these two networks.

Claiming that the local/global network approach had limited use in the IS literature, Gasson (2006), Stanforth (2007) and Heeks & Stanforth (2007) used the technique as a framework to study a trajectory for several IS project. More recently, Strong & Letch (2012) explored the dynamics of information system integration in a national e-Government project. Each of these applications revealed the dynamic relationship between global and local actors, in terms of their continuous attachment to and mobilisation of the network.

The local/global network analysis is used in this current analysis to help us in plotting the alignment of interests between ITG arrangements and IT infrastructure. In our analysis, even though the ITG arrangements and IT infrastructure were interchangeably depicted as local or global actors (depending on the role played by them), they have their own interests that need to be aligned. Hence, the trajectory will demonstrate the alignment of interests between the two actor networks.

CASE OVERVIEW AND HISTORY

The case under analysis is GC-ABC (formerly known as Group A). The company is one of Malaysia's largest conglomerates, and was established in 2007 as a result of a merger of three established Malaysian government linked companies (Group A, Group B and Group C). GC-ABC has core businesses in six divisions; plantations, property, industrial equipment, motors, energy and utilities, and healthcare. Prior to 2004, the IT arrangements at Group A comprised three layers which operated independently of each other: the Electronic Data Processing (EDP) group level; divisional level; and subsidiary level. Across these layers, each unit was stand-alone and disparate, running non-standard applications and IT infrastructure. . Below, the historical development of ITG arrangements and IT infrastructure implementation at GC-ABC is described in terms of four phases over a nine year period.

Phase 1: Foundations of ITG and Information Infrastructure
Phase 1 (2004-2005) of developments in the structuring of GC-ABC's ITG arrangements, is framed by the abolition of the group level EDP and the resignation of the EDP manager. The decision by Board of Directors to introduce shared IT services and implement SAP led to the establishment of a subsidiary group called XYZ Solution which had responsibility for implementing SAP. The first CIO was appointed to oversee the overall IT development and governance in 2005 and a governance model that was built upon a federated approach, emphasising strong collaboration between IT players at Group A, was set up. One of the first actions of the new CIO was to revive the Group level EDP- renaming it Group IT and giving it responsibility for overseeing the overall ITG development across business divisions by providing a central IT plan, architecture and common infrastructure. The IT organisation at divisions and subsidiaries was maintained to focus on their specific business needs. XYZ responsibilities, were transferred to the CIO's portfolio of responsibilities with SAP extended to become a part of Group A's Enterprise Resource Planning (ERP). A blueprint on how SAP/ERP could be implemented at Group A was developed which then drove the integration of IT infrastructure (i.e., SAP/ERP).

Phase 2: The Merger of Groups to Create GC-ABC
Developments during Phase 2 (2006-2007) were dominated by the Malaysian Government's decision to merge Group A with Groups B and C to create synergy between the three groups. A Special Purpose Vehicle (SPV) company was set up to facilitate the merger of the assets and liabilities of the three groups. To accommodate the merger, an IT Steering Committee was established (the membership included all the CIOs from the merged companies together with their top management representatives) and the decision to adopt a standard ERP for the merged company was made. Subsequently, the merged entities were rebranded GC-ABC and a three-phase merger roadmap was introduced to ensure that all integration activities, including IT infrastructure, were completed in a planned and timely manner.

Phase 3: Three Pillars of IT
Phase 3 (2008-2009) saw the CIO from Group A promoted to Group CIO, while both the CIOs from Group B and Group C were promoted to Division IT Heads. To account for the new company structure, the central SAP implementation (XYZ Solution) was renamed as ABC Global Service Centre (AGSC). In the creation of these responsibilities, the GCIO decided to use a federated model to govern IT, and as a result, the "Three Pillars of IT" (TPIT) was introduced. The first pillar was the Group IT, an organisation that reported directly to the GCIO. The Group IT acted as a centre of excellence that had primary responsibility for IT principles, architecture and planning, common IT infrastructure, business application needs, and IT investment and prioritisation. The second pillar was Division IT that was responsible for specific divisional business applications. The third pillar was the GSC-IT (Group Shared Service for IT), a unit under the control of the

AGSC. It was responsible for providing IT shared services for the GC-ABC. Consolidation and upgrade of IT infrastructure were performed through the GSC-IT.

Phase 4: Collaboration in Governance

Phase 4 (2010-2012) is characterised as a period of collaboration between the various IT governance bodies. The GCIO introduced IT-business partnership frameworks as a guideline for the "three pillars" in performing IT operations. Two committees were established to support the ITG structures: (1) IT Steering Committee meets quarterly to discuss group-wide IT projects for approval and revisits any issues or problems related to existing group-wide IT projects.; (2) IT Leadership Committee that meets quarterly to discuss and review the annual IT direction and its strategic planning, ongoing IT projects, and opportunities for new IT projects. At the division level, an IT Council discusses divisional IT specific needs. The GCIO uses a more pragmatic and diplomatic approach to leading the TPIT. The GCIO focused on two-way communication as a way to encourage active participation, collaboration and shared understanding between IT and business people. Top management support was achieved through direct business engagement by the GCIO. The Group IT started to embrace new technology (e.g., the desktop outsourcing) for enabling and enhancing workforce innovation, productivity and operational efficiency. Through the GSC-IT, the Group IT began the process of expanding their shared services especially the ERP, to other regions.

ITG ARRANGEMENTS AND IT INFRASTRUCTURE: A LOCAL/GLOBAL PERSPECTIVE

The analysis is divided into four phases. Eight turning points (Point A to H) that contributed to the ITG implementation trajectory were identified and analysed. This is in terms of which actors are enrolled, not enrolled and the network implication (Table 2). The turning points are mapped into the global/local network matrix as devised by Law & Callon (1992).

Table 2. The ITG development from the local and global networks perspectives and the network implications

Milestone	Enrolled Network Actors	Non-Enrolled Network Actors	Network Implications
-4: **Phase 1: The Foundation of IT Governance** **Global Actors:** Group A management; CIO **Local Actors:** XYZ solution ; Group IT; Divisional and subsidiary IT teams; IT infrastructure			
A. Establishment of XYZ Solution	*Global Network*: • XYZ Solution was established to embark on SAP. *Local Network* • XYZ Solution became the local network.	*Local Network (Blocked)* • The ITG arrangements and IT infrastructure at the divisions and subsidiaries were not involved.	• At this point, the SAP project was totally driven by the global network.
B. Appointment of the first CIO at Group A	*Global Network* • The management appointed the CIO as their proxy to govern the network. The SAP was extended to become a part of Group A's ERP. • Group IT focused on IT planning across the company. *Local Network* • IT team at divisions and subsidiaries became the local network.	*Local Network (Blocked)* • No changes were made to the existing ITG arrangements and IT infrastructure at the division and subsidiaries.	• The CIO established the *OPP* (i.e., to develop a federated ITG arrangements and IT infrastructure in a collaborative process). • Strategic IT planning, architecture and policy were ITG processes that were used as devices of *interessement*.
C. XYZ Solution became one of the CIO's portfolios	*Global Network* • The XYZ Solution was transferred to the CIO's responsibility. *Local Network* • XYZ Solution focused on the ERP implementation (IT infrastructure). • Local IT teams were responsible to provide support after the ERP implementation.		• The ERP blueprint and its implementation at a selected pilot site were used as tactics to lock in the actors' interests. • The tension between the global and local networks (e.g., after reviewing the positive outcome at the ERP pilot site) was minimised.
-4: **Phase 2: Group Merger** **Global Actors:** Malaysian Government; Group A, B & C's management teams; SPV; IT Steering Committee **Local Actors:** Group A, B & C's IT organisations, IT Infrastructure			
D. Merger and establishment of GC-ABC	*Global Network* • The SPV became the global actor. *Local* Network • The ITG arrangements and IT	*Local Network (Partly Blocked)* • Each company had various ITG	• Political interference from the government ensured the success of the merger. • Both local and global networks

	infrastructure from the Groups A, B and C were merged as local actors.	arrangements and IT infrastructure.	were merged with their *punctualised* ITG arrangements and IT infrastructure.
Phase 3: Three Pillars of IT **Global Actors**: GCIO, Group IT, Group Head AGSC **Local Actors:** Division IT, GSC-IT, IT Infrastructure			
E. CIO from Group A became the GCIO for the merged company	*Global Network* • Group A's CIO was appointed as the GCIO. • The GCIO and Group IT focused on restructuring the ITG arrangements and IT infrastructure. *Local Network* • IT organisations from the merged entity were *enrolled* in the network.	*Local Network (Partly Blocked)* • The IT infrastructure still not heavily enrolled.	• The identity and interests of each actor in the local network were defined. The TPIT was an important actor that was used as a device of *interessement* to entice the local network. • Communication was promoted to help the *negotiation* process (i.e., to accept the *OPP*).
F. Establishment of the AGSC	*Global Network* • The GC-ABC decided to detach XYZ Solution from Group IT. *Local Network* • The AGSC was established, and its divisions of GSC-IT focused on consolidating IT infrastructure. • Group-wide IT infrastructure was enrolled as a local network.	*Local Network (Partly Blocked)* • The divisions maintained specific IT infrastructure.	• The local network accepted the GSC-IT role in providing group-wide IT infrastructure across the GC-ABC.
Phase 4 : Collaboration in Governance **Global Actors:** GCIO, IT Steering Committee, IT Leadership Committee; Group IT **Local Actors**: IT Council; Division IT; GSC-IT, IT Infrastructure			
G. Alignment of ITG structure with business divisions	*Global Network* • An attempt to strengthen the ITG structures through the establishment of the IT Steering Committee, IT Leadership Committee. *Local Network* • The IT Council was established (to support Division IT) and its IT infrastructure was enrolled.		• Communication between the local and global actors was strong, and the *OPP* was accepted. • The global and local networks were enrolled when they accepted the interests and roles assigned to them through the TPIT.
H. Increase in the contribution of IT to value creation	*Global Network* • The GCIO established an IT-business partnership framework. *Local Network* • The relationships between the local actors were strong.	*Global Network (Partly Blocked)* • The challenge is to standardise the IT infrastructure across the GC-ABC.	• Both the local and global networks are mobilised into the network. • Communication was emphasised to reduce the tension between the local and global actors, and as a means to achieve network *durability*.

Based on local/global network analysis summarised in Table 2, we plotted the strength of alignment of interests by referring to the degree of attachment for global and local actors as shown in Figure 2 below. In our case, we view the trajectory as a successful progress toward strategic IT alignment through the alignment of interests embedded in the ITG and IT infrastructure actor networks. The global actors involved refer to the management of the GC-ABC, and to some extent, the GCIO and the Group IT. This is because of the culture of the company that promote collaboration through a federated approach, where the Group IT provides the common infrastructure across the GC-ABC. The local actors are basically the actors who performed the task to support the IT mission at the GC-ABC, such as IT infrastructure.
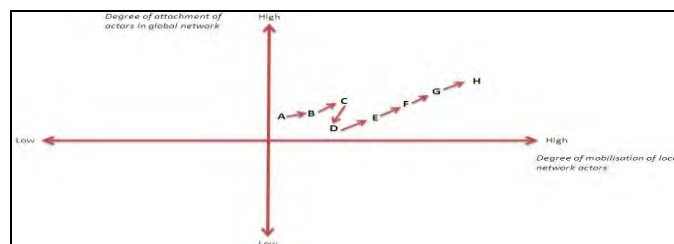

Figure 2: The ITG trajectory at the GC-ABC

Understanding the Relationship between ITG Arrangements and IT Infrastructure towards Achieving Alignment of Interest through the ITG Trajectory

The ITG trajectory has been shaped by the alignment of interests, or attachment between the local and global actors in eight turning points. The discussion is as follows:

Phase 1: Point A, B, C. The management of Group A's interests were to implement SAP as the standard financial system. Their interests were translated by the establishment of the XYZ Solution group, as a new local network to replace the former EDP group. This indicates that the global actor was willing to provide the resources and requisite space for the SAP implementation to take place (Point A). The newly appointed CIO became the focal global actor and his interest was to ensure that proper ITG arrangements were in place and that the IT infrastructure (i.e., the ERP) was successfully implemented (Point B). The CIO played an important role in ensuring the alignment of interests between both local and global actors. The CIO therefore created what in ANT terminology is known as an obligatory passage point (OPP). An OPP is the point through which all actors interests pass in order to become aligned. Here the OPP was to develop Group A's ITG arrangements and IT infrastructure under a federated model in a more collaborative manner. The CIO's previous experience as an ERP consultant had positively influenced the approach that he took in planning and driving the transformation process. Through this approach, the attachment of the local actors to the global actors was enhanced, reflecting the alignment of their interests. Hence, the trajectory aligned interest was slightly increased to reach Point C.

Phase 2: Point D. The government's interests were translated into a decision to merge Groups A, B and C into one company. At this point, the management of the three merged companies did not have the power to protect their interests but had to accept the merger solution offered by the SPV. The impact of the merger was the detachment of the local actors from the global network, which in essence meant that their interests were no longer aligned. As a result, the relationships between the local actors - who were now struggling to reposition themselves in the new network, and the global actors - who were in the process of strengthening their role to facilitate the merger process, were both weakened, leading to Point D.

Phase 3: Point E, F. The newly appointed GCIO became the global actor who worked together with the Group IT in redefining the ITG model for the GC-ABC. Their interests were translated into the establishment of the "three pillars" of IT (TPIT). Communication was stressed within the TPIT to ensure that the local actors could re-engage with their latest role in the new IT organisation at the GC-ABC. This can be seen by a slightly positive movement in the trajectory to reach Point E, showing that the attachment between the global and local actors was emerging. The AGSC was established to replace XYZ Solution, which had the responsibility to consolidate the IT infrastructure from the merged companies. The implementation of the ERP as a group wide IT infrastructure was active and the reconstruction of the global (i.e., Group IT) and local (i.e., Division IT and GSC-IT) actors was fairly rapid (Point F). Both actors accepted their new role that was predefined by the GCIO and their attachment was becoming stronger.

Phase 4: Point G, H. The IT steering Committee and IT Leadership Committee were formed, emphasising the role and responsibility of the global actors in the ITG network. As part of the effort to stabilise the local network, an IT Council was established. The dynamic relationships between the global and local actors were linked through the significant role of the GCIO in each of these committees. At this stage, the focal actor managed to convince all actors to align their interests with the OPP. The degree of attachment between the global and local actors was therefore steadily strengthened, reaching Point G. At this point, the GCIO focused on establishing new IT infrastructure as a platform to support collaboration between IT and business people (Point H). The IT-business partnership framework supported the alignment process, which then resulted in the gradual movement of the trajectory from Point G to H. In this context, the dynamic relationships between the ITG arrangements and IT infrastructure were stable, reflecting the ability of the global network to provide resources and the ability of the local network to support the development of ITG network.

DISCUSSION

Using the local/global network approach, we examine the translation of different interests between ITG arrangements and IT infrastructure for strategic alignment. In this case, the trajectory takes an almost linear form, shaped by the alignment of interests between the ITG arrangements and IT infrastructure. We found that the alignment of interests between the actor networks had resulted in dynamic relationships between the global and that each actor plays an important role in ensuring the stability of the network.

In particular, this case study highlights four key points. Firstly, the success in the ITG development at GC-ABC is not only dependent upon the mobilisation of the local actors, but also on a strong relationship between both the local and the global actors, and the OPP. Mobilisation reflects that the interests of both ITG arrangements and IT infrastructure has satisfactorily aligned with the OPP. Secondly, the enrolment and mobilisation of all actors into an agreed network is also contingent upon the power held by the focal global

actor (i.e., the GCIO) to shape the network. We found that the commitment, experience, and leadership style of the focal global actor has a significant impact to shape the alignment process. Thirdly, this case study demonstrates how the focal actor reconsidered the elements that resided in the IT infrastructure black boxes by defining their interests, re-enrolling them into the new network, and appointing a spokesperson to speak on their behalf (e.g., the GSC-IT was the spokesperson for IT infrastructure). The appointment of the spokesperson to represent the mobilised actors was successful to avoid betrayal in the future. We saw this as critical and important because the decision to develop, consolidate and integrate IT infrastructure is heavily influenced by the installed base and that indicates they are not designed from scratch. Finally, we also found that the selection of appropriate devices of interessement together with various tactics (e.g., the TPIT and IT-business partnership framework) can successfully lead alignment of interests for various actors for them to enrol and mobilise in the network.

Our study shows strategic alignment as a continuous process because the alignment of interests between the actors and actor-networks will continue to evolve with the entry of new actors, desertion of existing actors, or changes of alliances within the network. We found that the concept of strategic alignment goes beyond the traditional conception of aligning IT/business strategy. Strategic alignment is a journey that can never be completely achieved because business environment and technology will keep on changing over the time. This is the point where the understanding of the role of ITG arrangements and IT infrastructure and their interests can help organisations to quickly respond to those changes. In our case, the ITG trajectory shows that strategic alignment is an ongoing process for the GC-ABC in its journey to achieve competitive advantage.

CONCLUSION

In this paper, we have explored the ITG arrangements and IT infrastructure that were previously discussed in isolation in the IS literature. Our aim is to bridge this gap by analysing their alignment process that focuses on both social and technological dimensions. In this context, the ANT provides us with a framework to understand how the alignment of interests between the ITG arrangements and IT infrastructure shaped the ITG network. We present a success story of the GC-ABC in implementing its ITG arrangements and IT infrastructure with a positive trajectory across the time period being studied. We also demonstrate that both the global and local actors are important, and that their alignment of interests contributes to the development of a stable ITG network. We have presented the idea of having a similar vision (i.e., the OPP), and convincing the actors to pass through the OPP are important to achieve strategic alignment. We have added a new dimension in IS literature by analysing both the ITG arrangements and IT infrastructure together using a local/global network approach. In this context, we showed how ANT can be used as a theoretical lens to examine the alignment of interests between two actor-networks.

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