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Attaining business alignment in information technology innovations led by line-of-business managers

Research in Progress

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Abstract

With the advent of digital technologies, the line-of-business (LOB) managers have a unique opportunity to innovate by developing LOB specific technology applications. While this is opportune for the LOBs, such myopic innovations often yield conflicts with the corporate IT strategy, creating a mis-alignment. Past literature argues that for IT innovations to create firm performance, they must attain a high degree of IT-business alignment. With a backdrop of growing prevalence of digital technologies, corporate compliance and security reaching highest levels of importance, this research investigates how firms encourage LOB-led innovations, while maintaining corporate IT-business alignment. Using data from four cases, the study provides early insights into LOB-led innovation process and three alignment types emanating from LOB-led innovations.

Keywords Digital technology, Innovation, IT-business alignment.

1   INTRODUCTION

Digital technologies like social, mobile, analytics, cloud and Internet-of-Things (SMAC-IoT) have amplified the role of technology in organisational innovation (Yoo et al. 2012). Such technologies purport to reduce the initial costs of acquisition, increased affordability, easy-to-learn and easy-to-manage (Nylén and Holmström 2015; Yoo et al. 2012). Del Giudice and Straub (2011, p. iii) argue that, "information technology (IT) is the magic ingredient that inspires and most often enables contemporary entrepreneurial endeavours" in firms. Researchers concur with such observations and state that digital technologies can provide firms with new opportunities to innovate by empowering the participation of managers (Brinker and McLellan 2014). Moreover, recent studies identify a trend, where the digital technologies encourage participation of line-of-business (LOB) managers in innovations, challenging the traditional top-down hierarchical approach (Brinker and McLellan 2014; Henfridsson and Lind 2014). Such participation of the LOB-managers in innovations using digital technologies is increasing due to low resource commitments and low risks attached with such innovations (Yoo et al. 2012). Studies highlight that LOB-innovations are effective, given that (i) such innovations are closer to operational issues and concerns, (ii) LOB-managers take stronger ownership of innovations arising from their operational boundaries and (iii) such innovations (or attempts of innovations) yield a culture that encourages innovations (Henfridsson and Lind 2014; Tumbas et al. 2018). This emerging phenomenon of LOB-managers engaging in departmental IT innovations increase the firm's ability to improve their operations effectively (Augier and Teece 2009; Brinker and McLellan 2014).

Brinker and McLellan (2014) observe the rise of roles like the chief marketing technologist (CMT) in firms, encouraged by the advent of digital technologies. Such roles would be focusing more on the technology and bridging the gap between the business strategy and the technology (Brinker and McLellan 2014). Augier and Teece (2009, p. 411) state that "the new world we are in requires a different breed of managers and highly skilled employees with capacities to combine and integrate." Specifically commenting on the paradoxical leadership in innovation, prior research highlights that creativity and innovativeness of managers are becoming ever more important in IT related innovation. Such commentaries challenge the orthodox views of the IT-business alignment perspective in the firm, suggesting an alternate view on participation by middle managers and operations staff. While the increased participation of LOB-managers in IT innovations is noble, the introduction of such a multi-layered approach challenges the traditional organisational status-quo (Tumbas et al. 2018). Such innovations have the risk of increasing the IT-business misalignment (Tallon and Kraemer 2003) and also traditional governance structures are not designed to provide a conducive inductive decision making. Moreover, there is a strong sense of organisational culture that had been engraved that favours IT projects to be initiated, led and managed by the top IT managers (i.e. CIO-led) (Tumbas et al. 2018). Similarly, complexity of the IT portfolio means that the risk of non-compliance or failure is higher if the innovations are introduced by the LOB-manager without clear coordination. From a resource viewpoint too, LOBs are unlikely to command for substantial budget or resource allocations for IT projects. Finally, innovations of the LOB-managers may have a myopic view of the department, compromising the overall wellbeing of the firm. Overall, IT innovations of the LOBs could potentially compromise firm performance (Gerow et al. 2014).

Despite the emergence of the phenomenon of LOB-led digital technology innovations (for brevity, this would be referred to as 'LOB-led innovations,' where the role of digital technology is assumed in all examples), there is a dearth of studies investigating this topic. This paper provides preliminary findings, through which the process of the LOB-led innovations and three alignment types are proposed. In doing so, this study contributes to the body of knowledge of IT-business alignment, where Luftman et al. (2013) describe it as the most vexing problems for IT executives. To investigate this phenomenon, data was collected from six cases. The exploratory nature of this research required a qualitative approach (Klein and Myers 1999). The remainder of this paper proceeds in the following manner. Next section provides the background of the research followed by methodology, analysis and the preliminary findings. The conclusion section entails key findings, contributions to academia and practice and an outline of the limitations of the study.

2   BACKGROUND

As Penrose (1959) argues, acquisition or the owning of resources does not guarantee competitive advantage, however, "cultivating alignment between business and IT strategies could increase profitability and generate a sustainable competitive advantage" (Gerow et al. 2014, p. 1159). In IT-business alignment, the 'alignment' refers to the degree to which the needs, demands, goals, objectives, and/or structures of IT are consistent with the business' (Gerow et al. 2014; Gerow et al. 2015).

According to Henderson and Venkatraman (1993) firms should align four business and IT components such as business strategy, IT strategy, business infrastructure and processes, and IT infrastructure and processes to harvest the full potential of IT innovations. When these components are 'aligned' well, it is considered that firms are more likely to invest in IT and utilize IT to gain sustainable competitive advantage (Sabherwal and Chan 2001). Further, the strategic alignment model (SAM), highlights that a firm requires to integrate these components at intellectual (external), operational (internal) and cross-domain levels to improve the performance of the firm (Gerow et al. 2015). While prior research on IT-business alignment suggests that it increases firm performance (e.g., Luftman et al. 2013), some research proposes an alignment paradox (e.g., Tallon and Kraemer 2003) which highlights no positive association between alignment and firm performance. According to alignment paradox discussion, the need to align business and IT creates inflexibility, rigidity and ultimately leads to inability to be agile. For firms to maintain IT-business alignment, they require additional time, financial resources, formal processes and procedures in place, which may provide firm performance (Chen et al. 2010).

In the contemporary business landscape, with the advent of digital technologies, the LOB-managers are also provided with the opportunity to innovate (Brinker and McLellan 2014). Contrary to the tradition whereby the CIO and IT department initiates IT innovations, innovations can be initiated at the grassroot functional department level as well. In accordance with the literature, the success of the IT innovations initiated at the LOB-level also must concur with the IT-business alignment. Prior researchers have investigated IT-business alignment from multiple perspectives such as, alignment between business strategy and IT strategy (Chan et al. 2006), business strategy and IT capabilities etc. Queiroz et al. (2018) discuss how IT-business alignment of multi-business organisations affect strategic business units. Even though they consider IT-business alignment of multi-business organisations and strategic business units as two separate entities, this study is an extension to Queiroz et al. (2018). According to Gaba and Joseph (2013) strategic business units can be separate units and they are initiated as a diversification plan or due to globalization of business. However, LOBs are separate units such as marketing, sale, finance which prior research considered only as supporting business units. Further, with the advent of digital technologies, LOBs also have access to a budget that allows them to acquire IT resources, manage their own IT portfolio and initiate IT innovations (Henfridsson and Lind 2014). As such, it is interesting to explore how LOB-led innovations could manage alignment with firm level strategies and policies. When LOBs initiate IT innovations, it is important for CIO/IT department to make sure that there are minimal effects to the overall business processes. In this context, there is a constant conflict between LOBs and CIO over IT innovations which need to be constantly managed to ensure alignment. Based on the discussion above, in this research we investigate how LOB-led innovations take place and how the IT-business alignment is sought. To the best of our knowledge, such discourse is yet to take place and highlights a gap in the literature. While the extant studies provide a wealth of knowledge on the IT-business alignment, less attention has been given in investigating the management of IT-business alignment between CIO (IT department) and LOBs when the LOB-led innovations are initiated.

3   RESEARCH METHOD AND ANALYSIS

To explore and to get an in-depth understanding of the phenomenon, a qualitative case study method was applied (Klein and Myers 1999). The researchers engaged with 4 firms for a period of 12 months investigating 1-2 IT projects that were initiating digital technology innovation to achieve competitive advantage. The study used snowballing technique to recruit interviewees. The study commenced with interviews with the CIO, or with the individual holding an equivalent position (i.e., Chief Technology Officer or Technology Lead). In addition to the CIO, the LOB-managers and managers from each project (i.e., cases) were interviewed to obtain a closer perspective of each project. The data collection was conducted through 31 semi-structured interviews, totalling 45 person-hours. Table 1 includes a summary of the data collection with pseudo-names due to the confidentiality agreements.

Case	TRAN		INSU		TELE	LOGI
Industry	Transport		Insurance		Telecom	Logistics
Region	Australia		Asia		Asia	Australia
Project	A1	A2	B1	B2	C1	D1
# of interviews	5	5	5	4	5	7
# of hours	7	7	9	6	5	11

Table 1. Summary of the data collection

All the interviews followed the same case protocol. Each interview took between 1-2 hours and in most cases, follow-up interviews were conducted for clarification or due to time constraints. Several new probing interview questions were added based on the interviews which allowed the emergence of new themes. All the interviews were conducted face-to-face, in the English language, and were recorded and transcribed. Further, to obtain an appropriate degree of reliability, three sources of evidence (i.e., internal documentation, general web search and interviews) were used (Klein and Myers 1999). To ensure the depth of interpretations, we selected firms that represent different industry sectors and selected interviewees from both CIO and LOB-levels (Klein and Myers 1999).

Following the guidelines of Klein and Myers (1999), an interpretive data analysis approach was applied. As the sensitizing device, IT-business alignment model and the vast amount of literature on this topic was applied (e.g., Gerow et al. 2015; Queiroz et al. 2018). The two researchers initiated the data analysis process by reviewing the interviews throughout the data collection. The data was divided into distinctive meaning units and identified domains in these meaning units by understanding the phenomenon (Hill et al. 1997). While identifying the meaning units, the phases and domains were identified. The categorized data was then further examined through IT-business alignment literature and the emerging themes were then organised to describe the alignment to the overall firm processes, procedures and strategy. In comparing the emerging themes to existing literature, the researchers adopt existing labels, concepts, or explanations when there were commonalities. Similarly, new labels, concepts, or explanations were developed when there were opportunities to extend the existing literature. For example, we identified three phases of LOB-led innovation process guided by Brown (2008).

4   PRELIMINARY FINDINGS

4.1   LOBs initiating IT innovations

According to all four cases, in all six projects, the LOB-managers received inspirations from digital technologies for their IT innovations. Here the LOB-manager took advantage of the digital technology features like affordability, trialability, ease of use and ease of learning to derive solutions. "We [customer mgt. dept] wanted a solution that maps accidents with weather, road maintenance, mapped on to Google Maps. We could get all [software] for a trial period to test our ideas" – Customer Mgt. Dept. Head of A1 at TRANS. Moreover, the LOBs sought inspirations from various sources. For example, they observed competitor behaviours, solutions of IT companies and technologies that they use as customers in analogues areas. "I was observing what our solution partners offer to other customers…and things that I use as a customer…there is much we can do, if we learn from each other" – Director of D1 of LOGI

Further, LOBs were aggressively promoting their business needs and opportunities to their CIOs through compelling business ideas. Their objectives of such suggestions pertained only to their departmental considerations and boundaries. On one hand, the LOBs made specific observations of the bottlenecks and inefficiencies of the current business processes, while other suggestions marked clear 'leaps' of thinking, boundaries and efficiencies. "we have departmental managers looking at cloud and telling us what to do now… I must admit some of them know exactly what they want from IT. You can't blame them…" – CIO of INSU. Evidences suggest that LOB-led innovation is valuable for tailoring specific IT solutions within the department (narrow functional scope). Having initiated such innovations, the LOB-manager then drew feedback from the CIO. This demonstrated the first point of consultation between the LOB and IT department on firm level IT alignment. "Our sales department came to us regarding a mobile app… they were proposing the functions and features they would like to have. We must then help them with technology options" – CIO of INSU

4.2   The CIOs trying to take control of IT again

Once the idea was consolidated, the respective CIOs played a substantial role in developing a prototype of the required solution. Therein, the CIOs highlighted the shorter development time and effort of LOB-led innovations. "We [IT department] can now implement things much faster…initially as prototypes. It does not take much time or effort anymore" – CIO of TELE. In the iterative process of technology development, the prototype was handed over to the LOB for feedback and testing. The LOB in turn was able to see how the proposed applications featured in the organisational strategy. The iterations allowed the LOB-managers to better understand the role of corporate IT, strategy and the utility of existing technology infrastructure. "We have a responsibility in mapping what we want and the company's strategy…if things are aligned, then we [LOB] have a better chance of getting it through" – Customer Analytics Lead at C1 of TELE. However, the CIOs lamented about lack of a 'holistic' view of the firm emanating from the ideas proposed by LOB. Especially, CIOs argued that LOB-mangers lacking knowledge on compliance, policy, security and creating bottlenecks as a result of stimulating part of a

business process. "These managers did not do anything about policies that we have in place to manage IT...especially when it comes to [IT] security issues...they are clueless" – CIO of INSU

The cases also highlighted how CIOs developed protypes that aligned closely with the existing infrastructure and strategies. It was identified that, when designing the prototypes, the IT department did not consider possibilities that are 'out the box,' fearing too much misalignment. "We have to make sure that new solutions they [LOB] had proposed don't go too far from our main strategy...and to see how things fit into our existing stacks [infrastructure]" – CIO of LOGI.

Moreover, the cases attempted to derive policy or guidelines that encourage re-use of corporate-wide IT. This was observed as an attempt to consolidate a 'single corporate image' across the operational areas. Similarly, purchasing new on-demand systems for departmental use were curtailed to a 'preferred vendor list' that gets renewed periodically. "we used to have multiple Facebook sites for various campaigns...I am sure they all were all good initiatives – but, we have to have a standard. So, we created guidelines." – CIO of TELE

4.3   The disjointed harmony

Once LOB approves the technical and business architecture of the proposed solution, IT department began implementing it. Therein, IT department appreciated the innovation capabilities of LOB– though there had been multiple points of contentions and frictions. "The maintenance app was a great idea...and it will address their issues. We [IT department] would not have thought of this product...They knew the issue that they wanted to resolve, and it was perfect from its operational standpoint." – CIO of INSU. Moreover, the IT management was coming to terms with new culture, where LOB-managers are eager to contribute to the corporate IT portfolio. Such a recognition marks the departure from a highly corporatized model of managing IT to a federated IT portfolio management model. "I have no doubt that this is the future...where we all [LOBs and IT department] develop apps, use on-demand services, and perhaps even use multiple applications for the same purpose." – BI Dept Head of A2 at TRANS

Furthermore, we observed a general displease regarding the initiatives by LOBs, as an aversion towards risk. The IT leadership of the cases were cautious about all LOB-led innovations, worried about IT governance, compliance and security risks. "For them [LOBs], it is just a small gig...they do not see the larger picture. With every new application, we have to seriously think about cyber-security...hacks and security breaches" – CIO of TELE

The IT leadership also recognized opportunities and risks associated with this involvement of LOBs and made several adjustments in their management approach. At LOGI, CIO provided membership to the Logistics Manager to IT executive team, creating a direct conduit. "We used to give instructions from the top...we had good reasons for that. For example, IT was complicated, expensive... and sort of exclusive...not anymore, things have changed...– CIO of LOGI

5   DISCUSSION

Our preliminary findings are captured in Figure 1, demonstrate LOB-led innovation process and the alignment types. The three types of alignment corresponded with 3 phases of LOB-led innovation process guided by Brown (2008). As depicted in Figure 1, there are 7 activities in LOB-led innovations and LOBs and CIOs play a distinctly different role in relation. The activities, roles and the responsibilities were identified by interpreting the meaning units and domains identified in the analysis.
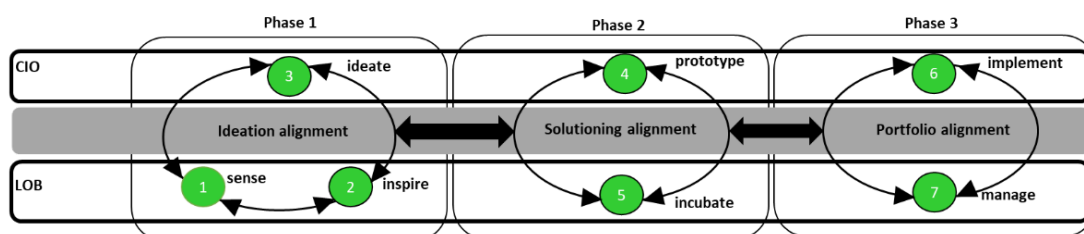

Figure 1. The process of LOB-led innovations

Further investigating 'disjointed harmony,' category which described the business and technology alignments, we observed three types of unique alignment types that emerged in LOB-led innovations: (i) ideation alignment, (ii) solutioning alignment and (iii) portfolio alignment (See Figure 2). Each unit such as business scope, governance and architecture were derived by interpreting the data with existing

literature. The alignment types were identified based on the LOB-led IT innovation phase and the activities carried out in this phase.
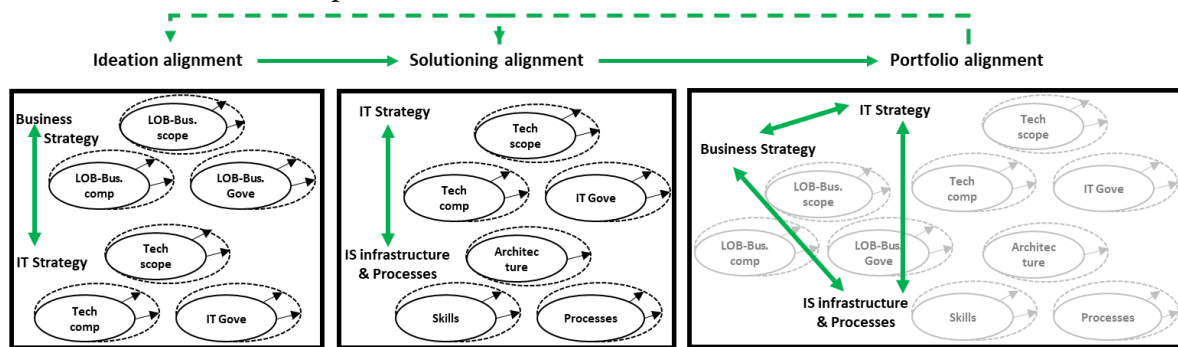

Figure 2. Preliminary findings

We conceptualize these three types of alignment as iterative processes, that commence with ideation alignment. The '*ideation alignment*' is a conceptual alignment that focuses solely on deriving an agreement on the proposed idea. Here, the alignment is sought by negotiating the scope, management and value propositions of the proposed solution. Here, we observed an attempt to expand both business and IT scope, competencies, governance efforts and value propositions. When the ideation alignment is not sought, firms identified the innovations as risky and terminated the projects. Second, akin to the SAM's functional integration perspective, the '*solutioning alignment*' focused on aligning the IT infrastructure (available or available to acquire) with the prototype of the proposed solution. Here, through prototyping, a wavering agreement of CIOs to increase the skills, technology architecture and processes was obtained. The CIOs role was prominent here and IT skills, competence and architecture were important for assessing the alignment. Third, the '*portfolio alignment*' refers to degree to which the needs, goals, objectives, and/or structures of IT at the LOB-level are consistent with firm level. Therein, the implemented solution is incorporated to the corporate IT portfolio creating an alignment between business strategy, IT strategy and IT infrastructure/processes. This can be optional in some cases where the project is customized and only applicable to the department.

6   CONCLUSION

In recent times, IT-business alignment faces new challenges through the advent of SMAC-IoT. With the background of such technology interventions, we conducted a qualitative interpretive study, using data collected from 4 cases to understand how contemporary firms manage IT-business alignment when LOB-managers also initiate IT innovations. Our specific emphasis was on understanding the LOBs role in driving IT solutions and its effects on IT-business alignment. The key observations of the study include: (i) The LOB-led innovation takes place through seven steps that can be organised under three phases, (ii) within each phase, attempts are being made to align the IT solution with business objectives, where CIO works collaboratively with LOB-managers and (iii) ideation alignment, solutioning alignment and portfolio alignment demonstrate three specific types of alignment unique to LOB-led innovations. This study explores a new role of LOB-managers in LOB-led innovations. When LOBs lead IT innovations, their initiatives also require aligning with the corporate processes, procedures and strategy. As such, the study extends Queiroz et al. (2018) and provides foundation to conceptualize IT-business alignment at multi-level (LOB and firm level). Considering the novelty of this phenomenon, to the best of our knowledge, there are no discussions presented in IS literature on LOB-led innovations. As such, the preliminary results of the study: (i) LOB-led innovation process and (ii) the alignment types provide a commencing point for researchers to examine how different alignment types can assist firms to assess maximum firm performance. The need for three alignment types become critical as LOB-led innovations may not consider the strategy, processes and technology at the firm level.

The study findings highlighted several implications for practitioners. The abundance of digital technologies requiring relatively low resource allocations have necessitated a re-thinking of the role of IT and innovation in firms. For example, each salient LOB in all major firms should have a designated technology officer. Furthermore, the notions of LOB-led innovation seem to provide an evidence-based approach to allow firms to focus on specific functions, rather than focusing on business processes. Further, the discussion on alignment types highlights the collaborative role of both CIOs and LOB-managers necessary for IT innovations. There are several limitations of the study. First, the study was conducted using a small sample. To further verify these alignment types, a quantitative approach is more appropriate. Second, future study can add further granularity to the alignment types.

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