2014

Coordinating the processes of resource enrichment and capability deployment: Lessons from IT implementation at a medium-sized accounting firm

Gary PAN
Singapore Management University, garypan@smu.edu.sg

Sayyen TEOH
Royal Melbourne Institute of Technology

Poh Sun SEOW
Singapore Management University, psseow@smu.edu.sg

Citation

PAN, Gary; TEOH, Sayyen; and SEOW, Poh Sun. Coordinating the processes of resource enrichment and capability deployment: Lessons from IT implementation at a medium-sized accounting firm. (2014). *International Journal of Accounting and Information Management*. 22, (4), 357-374.
Available at: https://ink.library.smu.edu.sg/soa_research/1249

Coordinating the Processes of Resource Enrichment and Capability Deployment: Lessons from IT Implementation at a Medium-Sized Accounting Firm

Introduction

Increasingly, organizations have been responding to wide range of information technology (IT) based opportunities and pressures (Alves, 2010; Yunis et al., 2012). The situation is no different for an accounting firm (Omoteso & Sangster, 2011). Many accounting practitioners have advocated IT investments to keep up with advancement in accounting information systems. According to Lee and Arentzoff (1991), IT investments committed by public accounting firms are an important means to improve accounting firms' levels of productivity. To date, there are many examples of how IT has radically transformed the nature of accounting practice (Elliot, 1998): the use of specialized audit software to substitute IT for labour, and changed audit practices and structure within audit teams (Razi & Madani, 2013); the use of IT as a common platform to utilize accounting data as it allows sophisticated queries to be performed for decision making (Granlund & Mouritsen, 2003); the adoption of enterprise resource planning (ERP) systems that enables accounting firms to integrate various functions to streamline information flows across entire business (Ferguson & Seow, 2011); and the introduction of eXtensible Business Reporting Language (XBRL) that changes financial reporting process.

Nevertheless, whether a firm achieves competitive advantage depends on its available resources and how it mobilizes these resources (Barney, 1991). The mastery of mobilization may require a knowledge discovery process that involves 'learning and unlearning' the resources and capabilities, and the way they are synchronized. Such an improvisation process may create a set of enriched resources and capabilities. Resource enrichment enhances the integration between resources and capabilities. According to Sirmon et al. (2007), the aim of a resource enrichment process is to extend and elaborate a current capability. Capabilities can be enriched by learning new skills that extend the repertoire of current skills or by adding a complementary resource from the resource portfolio to the current bundle. An additional resource may have existed in the resource portfolio for some time, or it may have been developed or acquired recently with the purpose of enriching a particular capability.

To date, the transformation processes of resource and capability enrichment and deployment during IT implementation are not well-understood as relatively few resource enrichment and capability deployment processes have been examined empirically (Montealegre, 2002; Sirmon et al., 2007). This is especially so in an accounting context such as a medium-sized accounting firm (Omoteso & Sangster, 2011). This is an important topic because small and medium-sized firms are recognized as being the driver of economic growth (Pan, 2008) and

effective adoption of IT raises these firms' productivity. As a consequence, there is a need for more research efforts directed at resource enrichment and capability deployment during IT implementation at an accounting context. Accordingly, our research question is as follows: how are the processes of resource enrichment and capability deployment coordinated during IT implementation at a small and medium-sized accounting firm? Against such backdrop, this paper focuses on a medium-sized accounting firm (SMAF)'s (a pseudonym) effort in coordinating its processes of resource enrichment and capability deployment during its IT implementation project. Towards this end, we employ the resource-based view of firms (RBV) and the coordination theory as the theoretical perspectives of this study. The study involves identifying and examining enriched resource and capability, the attributes that contribute to the transformation processes and the coordination mechanisms which ensure effective deployment of resources and capabilities during IT implementation.

Literature Review

Impacts of Information Technology on Accounting

Continuous advancement in IT is likely to affect various aspects of accounting (Lord, 2004). For example, firms automate their business processes and incorporate technologies, such as web services architecture and Internet-based supply chain management systems, into their infrastructure. In addition, with the adoption of ERP systems, firms transfer and store data in electronic form as most transactions are performed online (Rikhardsson & Kræmmergaard, 2006). Technology-related risks and security issues have drawn auditors' attention. Identity management is now the primary transaction security focus for banks and financial institutions. Internal controls and audits have to be implemented properly for diagnosing vulnerabilities and threats to firms (Weidenmier & Ramamoorti, 2006). It is therefore unsurprising for accountants to play a significant role in IT governance to ensure business systems deliver values that organizations expect (Lynch & Gomaa, 2003). Internal controls are enacted within ERP systems to execute calculations and record transaction entries to ensure data validity, accuracy and completeness (Kuhn Jr, et al., 2013).

With the new requirements of the Sarbanes-Oxley Act of 2002, internal audit functions must use appropriate technology to increase their efficiency and effectiveness. As small and medium-sized accounting firms face even more challenges compared to large accounting firms owing to the lack of strategic planning and resources when building up IT capability (Alves, 2010), it is therefore important to improve our understanding of the resource and capability development process during IT implementation of small and medium-sized accounting firms. The topic has been identified in the IS literature as important but under explored (Alves, 2010).

RBV in IS Adoption and Capability Coordination

The Resource Based View of firms describes a firm as a specific collection of resources and capabilities that can be deployed to achieve competitive advantage (Barney, 1991). Firm

resources are defined as all assets (tangible or intangible) and capabilities that belong to or are controlled by a firm that can be used to implement competitive strategy (Teece et al., 1997; Pan et al., 2006). Makadok (2001) suggests organizations acquire, accumulate and divest resources to put together an effective resource portfolio. Resource management is critical since resources drive and constrain the growth of the firm and as such, they play a major role in firms' processes of capability development (Peteraf, 2005). A firm's combination of resources forms the basis of competitive heterogeneity (Helfat et al., 2007), where the scarcity of resources results in maximum rent generation (Grant, 1991). Firm-specific resources and capabilities must be protected and made difficult to transfer, imitate or replicate (Barney, 1991). Therefore, by protecting their valuable resources against imitation or substitution, firms can sustain existing advantages. RBV suggests heterogeneity of resources and imperfections in resource mobility contributes to the creation of sustainable competitive advantage (Barney, 1991). By deploying organizational resources, firms develop capabilities by reacting, adapting and responding to changes in volatile environments (Winter, 2003).

Adopting a resource-based perspective, IS researchers have identified various IT related resources that serve as potential sources of competitive advantage (Peppard & Ward, 2004). IS research using RBV has largely focused on classifying information-based resources along the attributes of resources - value, rarity, appropriability, imitability, substitutability and mobility - posited by RBV with a view towards understanding which IS resources are most likely to contribute to competitive advantage (Wade & Hulland, 2004). It has been argued that IS managerial skills, as opposed to technical IS skills or infrastructure, is more likely to be the source of competitive advantage (Wade & Hulland, 2004).

There is growing recognition that resources do not create value. Rather, value is created by an organization's ability to manage and organize its resources to achieve a desired outcome. According to Sirmon and Hitt (2003), enriching is important in a resource management process since it extends and elaborates a current capability by integrating resources which may have existed, developed or acquired recently with the purpose of enriching a particular capability. Sirmon et al. (2007) also suggest enrichment is necessary to create new value or to maintain the current value created in highly uncertain environments. Hence, capabilities are often firm specific and are reinforced and redeveloped over time through complex interactions between the firm's resources and its key practices. To date, while the resource enrichment and capability deployment processes are viewed important, little is known about how these processes are coordinated during IT implementation within small and medium-sized accounting firms. Our paper aims to address this particular knowledge gap in the IS literature.

Research Approach

Our strategy was to undertake qualitative case research of an ERP systems upgrading project at SMAF. We approached our fieldwork at SMAF, with a premise that resource enrichment and capability development exist and identifiable using an existing theoretical lens.

Accordingly, our study draws on Sirmon et al. (2007)'s concept of resource enrichment process and objectively studied the IT capability development process through the resource enrichment lens.

The research access was negotiated with SMAF in August 2005. From September 2005 to August 2007, we conducted our data collection. Primarily, semi-structured interviews and informal discussions were conducted with all relevant project stakeholders. These semi-structured interviews were taped-recorded with interviewees' permission and transcribed immediately after the meetings. Seventeen interviews were conducted, each lasted an average of one to two-and-a-half hours involving altogether ten interviewees (refer to their roles in Table 1). The interview questions were prepared prior to the interview session. Based on the background of each informant, specific questions were selected. The questions were generated from relevant literature coupled with several follow-up emails to clarify interviewees' responses. These questions were aimed at identifying the resources committed and capabilities developed during the ERP systems upgrading project. The interviewees represent various "voices" (Qu & Dumay, 2011). Gathering different perspectives is important for triangulation purpose (Rubin & Rubin, 2005) and to prevent elite bias (Miles & Huberman, 1994). Secondary data such as reports, memos and meeting minutes were also gathered to supplement the information collected through interviews. To ensure the reliability of our data, the interview data were triangulated with other secondary data for validation.

Table 1: A Summary of the Informants, their Roles and Number of Interviews Conducted

Informants	Number of Interview
Managing Director (1)	5
General Manager (1)	1
Project Manager (1)	2
IT Consultants (2)	4
User Manager (1)	1
User (4)	4
Total	17

Our analysis of the resource enrichment and capability development processes also combined positivist and interpretivist approaches to analysis. For data analysis, we first open-coded the transcripts and labeled statements as pertaining to some assets, capabilities or actions. Based on existing research on capability development research (Barney, 1991), we took asset to represent human capital resources (e.g., managerial skills), organizational assets (e.g., culture) or physical capital assets (e.g., technology) whereas capabilities refer to the ability to use some assets (Amit & Schoemaker, 1993). Just because one has the ability to do something does not imply that one will do it nor does it imply how one does it. Thus, "actions" describes the actual activities undertaken in the performance of some capabilities using some resources. This aspect of the analysis implied a positivist approach of deciding, in advance, expected assets and capabilities, and assessing based on informant comments whether the assets and capabilities were, or were not, experienced. After this first general coding, we made tables, one for each of the three general categories that listed the particular asset, capability or action discussed in one column and the quotes or references in the second column. We then reflected on the tables and

agreed upon labels to describe the assets, capabilities, and actions as mentioned by informants. Following this, we used a more interpretivist approach in drawing conclusions about the relationship of resource enrichment and capability development processes. Our data analysis is thus positivist in the sense that we purposely set out to examine existing IS-related assets, capabilities and actions, but interpretive in the sense that the specific bundle of resources and coordination of the resources emerged from the data.

Case Description: SMAF's SAGE ACCPAC System Upgrading Project

Company Background

SMAF was established in 1985. Apart from the global Big Four accounting firms, SMAF was Singapore's largest domestic accounting firm. SMAF had a set of core values that are indelibly etched in the minds of SMAF employees. For example, the administrator of the IT department who has worked in SMAF over 10 years commented: "*our core values are important especially when we have to manage more than 500 employees in this firm*". To instill the corporate culture, senior employees would play the role of mentors to guide new employees. The general manager commented: "*new employees need to adapt to our working culture quickly. Therefore, experienced employees would have to mentor new employees to 'ease them in'"*. Within SMAF, standard operating procedures (SOPs) were adopted to ensure accountability across various departments. The IT director commented: *"SOPs provide a set of guidelines to reduce ambiguities at work. They certainly have improved the organization's work processes"*.

For the past decade, SMAF has been operating its business based on the DOS version of SAGE ACCPAC system until the introduction of the Windows version. To support its fast-growing business in Singapore, SMAF made the decision to upgrade to the Windows version that includes new functionalities. At that time, Singapore was faced with an economic recession. Nevertheless, SMAF's general manager was able to negotiate a better-than-expected bank loan for the IT investment. As a result, SMAF incurred a 20 per cent saving for the system hardware and software costs that came with a mere 0.5 per cent interest rate from the bank. The general manager commented: *"to persuade our company partners to purchase such an expensive system, [we came up with] a very practical proposal to explain how this new system could benefit us… the figures included bank loan creditability and future cash flow"*. The upgrading project was expected to achieve a 30 per cent reduction in the firm's operating cost. A summary of the benefits achieved by SMAF's system upgrading project is presented in Table 2 below.

Table 2: Technical and Business Values for SMAF's System Upgrading Project

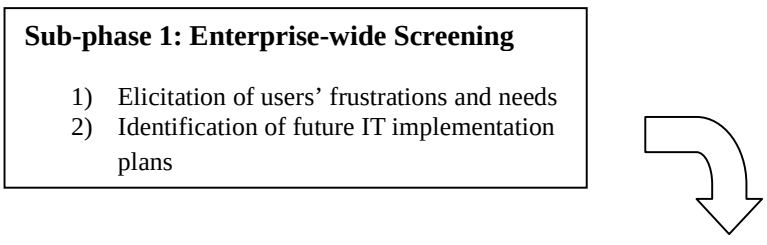
- Replace obsolete ACCPAC DOS interface
- Integrate various applications across functionalities
- Eliminate redundant data entry and errors
- Improve the data security at CLSF
- Reduce the costs of operating the IT infrastructure
- Ease technology-capacity constraints
- Run ACCPAC on SQL by providing a very strong security protection for users
- Accommodate envisaged business growth
- Improve informal and/or inefficient business processes i.e., improve productivity of employees
- Clean up data and records through standardization
- Reduce business operating and administrative expenses
- Eliminate delays and errors in filing purchase orders and/or sales orders
- Facilitate the process of providing integrated IT support
- Implement standard operating procedures across various departments
- Streamline, standardize, and consolidate reports (e.g., financial and sales reports)
- Improve company-wide decision-making

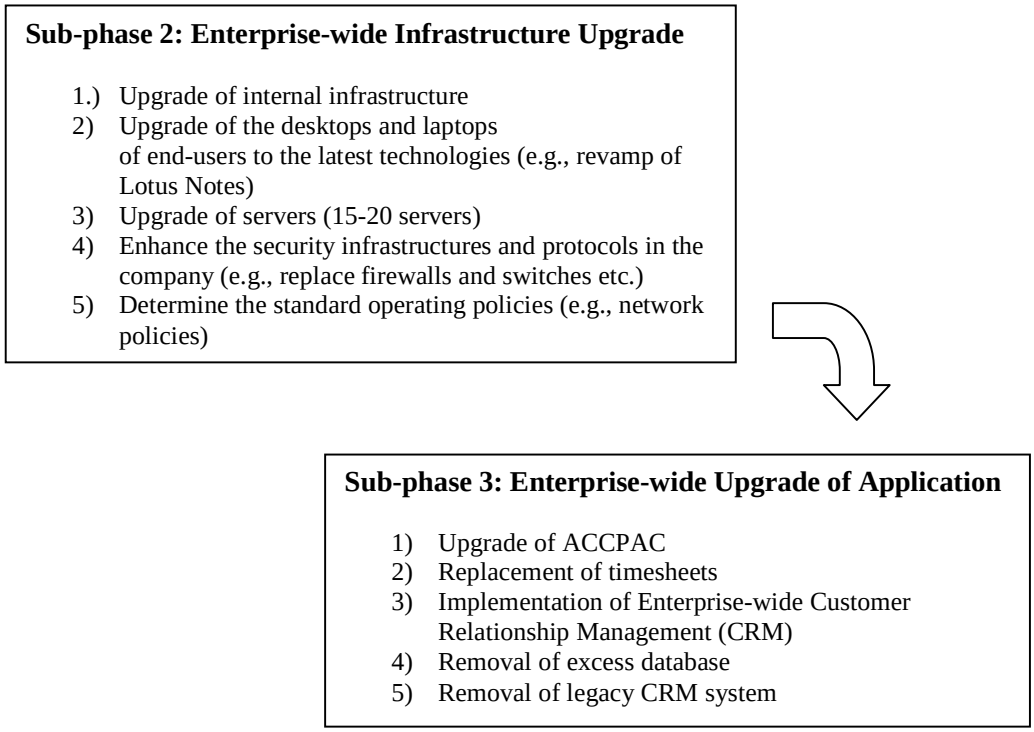
The 1-million-Singapore dollar project was approved by SMAF's management and partners within a week. The general manager recounted: *"we have supportive management and partners. They were willing to approve the investment when the ERP upgrading project was related to the firm's long-term growth plan"*. Immediately after the project was approved, SMAF's managing director communicated to some users the benefits of the upgrading project. The general manager mentioned: *"our managing director talked to some of our staff and let them understand the rationale for upgrading the system. She tried to create buy-in among the process owners as early as possible. In fact, she saw the process owners as leaders in their individual functions. To her, the success of the project would hinge on process leaders' collective efforts in soliciting support from the users in their functions"*. Two 'Meet the Managing Director' sessions were arranged to help staff understand the managing director's vision and her commitment to the project. Several focus groups were also organized to obtain feedback from the end-users.

Preparation for System Upgrade

Prior to the ACCPAC system upgrade, SMAF's focus was to protect integrity and confidentiality of the company data by strengthening the system security of the key applications. Some of the security infrastructure upgrades included the installations of firewalls with virtual private network (VPN) and the implementation of system networks for end-users. Monitoring tools were installed to detect intrusion and network irregularity. Figure 1 summarizes the sub-phases of the ACCPAC system upgrade.

Figure 1: Sub-phases of ACCPAC System Upgrade





SMAF had a team of 50 IT consultants that possessed over a decade of experiences of providing ACCPAC system upgrade services to its clients. In view of their experience and expertise, SMAF turned to its in-house IT consultants to perform its ACCPAC system upgrading project.

Execution of System Upgrade

To understand the daily operational workflows, many users were interviewed by its in-house IT consultants. It was important for the IT consultants to understand the workflows adopted in various departments before embarking on system modification and customization. As a result, a considerable amount of time was invested in streamlining the workflows in various departments. A user commented: *"The IT consultants took down what we needed and promised to incorporate our requests in the new system"*. Since many users were not technically trained, soliciting user requirements before Proof of Concept (POC) posed to be a potential challenge for IT consultants. As such, the focus centered on clarifying the logical flow within daily work processes so as to administer seamless information integration across departments. The general manager commented: *"our IT consultants are well-versed in business and IT knowledge. So they had little problem assessing the users' workflow processes and helping them to streamline [the processes]"*. After the completion of POC sessions, the pre-implementation training sessions were led by the IT project manager who commented: *"From an earlier system study, we have already walked through certain workflows with key users. We tailored the training sessions to cater to individual users' needs. Besides, we have also exposed them to SAGE ACCPAC Windows environment"*. Prior to the upgrading project, work schedules were dispatched to respective departments to inform them of the possible work disruptions. This was in line with

SMAF's project SOPs. By doing so, various departments could arrange their work schedules to synchronize with the SAGE ACCPAC system upgrading project timeline.

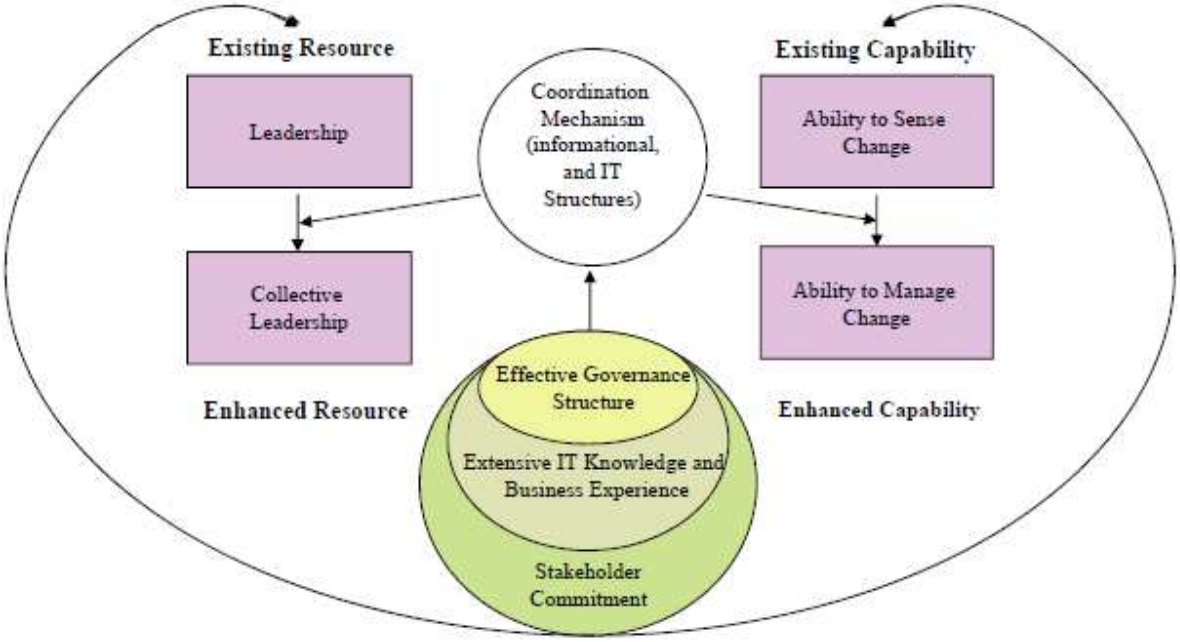
Stabilization of the Upgraded System

Overall, SMAF successfully converted all data to the new system. While overall upgrading process went rather smoothly, SMAF still encountered some minor issues. According to the IT project manager: *"although we conducted system reviews, we still encountered a few hiccups before the system 'went-live'"*. It was noted additional support was provided by the IT consultants to assist users in overcoming hurdles in coping with the new system. For instance, training programs were carefully designed and tailored to users' needs. In general, most users were satisfied with the support given by the IT consultants. For instance, the administrator from the accounting department commented: "*I managed to receive support from the IT consultants*". Overall the project was widely viewed as successful. SMAF's general manager commented: *"I would attribute the success to our careful planning in managing the change process"*.

Case Analysis

SMAF's case demonstrated how a medium-sized accounting firm can develop IT capability to support its overall competitive strategy. Notably, SMAF's IT capability development experience involved an important resource enrichment process where its resources were bundled and enriched to develop IT capability. In the case of SMAF, two actions were instrumental in enhancing its resources and capabilities. Specifically, we noted enhancements to 'leadership' resource and to 'change management' capability. Three attributes supported the resource enrichment process: effective governance structure, extensive IT knowledge and business experience and stakeholder commitment. In addition, two coordinating mechanisms were put in place to enable an organization to transform existing resource and capability: informational and IT structure. The coordination mechanisms have proven to be essential in binding the aspects of the model together. Figure 2 presents a resource and capability transformation model that encompasses supporting attributes and coordination mechanisms.

Figure 2: A Resource and Capability Transformation Model that Encompasses Supporting Attributes and Coordination Mechanisms



From Leadership to Collective Leadership

Collective leadership occurs when multiple leaders unite with a shared goal, shared understanding of accomplishing the goal, and shared willingness to divert necessary resources in order to accomplish the goal. Pearce and Conger (2003) view shared leadership as different individuals being called upon to provide specific leadership from different positions with each making a unique contribution. In fact, selecting strong and effective visionary leaders is the most important factor in any technology-driven transformation project (Roberts et al., 2003). This is consistent with the suggestion that any technological change requires visionary leaders who are capable of projecting their vision of the new technology (Kotter, 1995). Sutcliffe (1999) suggests leaders may influence outcomes based on timely and appropriate actions and responses to contingencies at three different levels: strategic, tactical and operational. At the strategic level, leaders determine the strategic direction and influence how resources should be used to support the organization strategy. At the tactical level, leaders align activities, people and IT systems coherently and work towards a common goal. At the operational level, regular and specific interventions from leaders are necessary and common. For collective leadership, various layers must work towards a common goal following a common path. It is this aspect of following that is perhaps the key to collective leadership – layers of leaders set aside their own agendas and preferred actions and adhere to those set by the task force.

In the case of SMAF, the managing director of SMAF recognized with such major system upgrade, there might be endless squabbling over what ought to be done. By instructing and appealing to various process owners to "work in unison", the managing director established a mentality of collective leadership. By treating process owners as leaders in their own functions

and letting them convince their own staff, the 'buy-in' from staff would be stronger. The managing director's appeal to the users was pivotal in persuading them to adopt the new system. Basically, she earned the trust of her employees through her declaration that IT would improve their work situation. As a result, users responded to her appeal by cooperating fully in carrying out the system adoption. The managing director's Her influence may be attributed to the high level of internal social embeddedness within the firm which refers to the degree to which leaders become involved in rich interconnected social networks within their organizations and acquire tacit knowledge about how things are done (Denis et al., 2001). Overall, effective leadership plays a very important role in encouraging the adoption of new technology within an organization. This is corroborated by Feeny and Willcocks's (1998) argument that leaders influence the overall business perception of IT's role and contribution, and influence the relationship at the executive level, and leverage those relationships to achieve a shared vision for IT. In addition, our findings also suggest that social influences will help the adoption of technology by modifying the attitude of the users in the organization towards IT (Amoako-Gyampah & Salam, 2004). Such an influence goes beyond plans, and creates an environment where users can interpret and adapt IT to their work, with the support and cooperation of the leadership.

From Sensing Change to Managing Change

Organizations adapt and respond rapidly to dynamic conditions by linking resources to form resource chains that can respond flexibly to dynamic change (Sanchez, 1995). The capability to recognize signals, which is based on attentiveness in assessing and detecting the risks associated with unexpected and potentially widespread threats (Quarantelli, 1988), is crucial in attaining competitive strategy. It reflects the ability of an organization's alertness in looking out for possible danger or simply adopting "a policy of open-eyed awareness" (Billings et al 1980). Related to the ability to recognize signals is the ability to see the big picture. Seeing the big picture entails understanding the risks of failing to act (Watkins & Bazerman, 2003). Also if organizations recognize problems do exist but deny any responsibility, such denial may lead to negative stakeholder reactions (Gundlach et al., 2003). The basis of gaining stakeholder commitment is the legitimization of the project and the project development team by all potentially affected stakeholders. In the case of SMAF, it presented a comprehensive and rigorous business case to its partners and bank to negotiate an attractive deal by viewing the economic downturn as an opportunity to obtain strategic investment. Such capability is optimally developed with careful consideration of the requirements for business growth and the potential benefits of improving business efficiency and effectiveness (Ives & Learmonth, 1984).

In addition, SMAF was able to identify and manage embedded risks in systems configuration, integration, testing, data conversion, training and rollout. Unlike most SMEs, which suffer from a lack of IS strategic planning (Cragg & Zinatelli, 1995), SMAF adopted a systematic approach to planning this implementation with a series of structured practices to identify potential risks. Such planning is crucial as an iterative, incremental approach to implementing technochange can be a better strategy in many situations. Essentially, each phase of the technochange should involve both new IT functionality and related organizational changes, such as redesigned business processes, new performance metrics and training (Markus, 2004). SMAF's ability to manage the change process was supported by: (1) fostering a supportive

environment for users to adapt to change and (2) offering a receptive feedback channel. For example, focus groups were held where participants sought ideas on providing end-users with optimal level of support. These various forms of support certainly improved users' 'buy-in' in implementing system change (Levesque & Roberto, 2005).

Supporting Attributes of Resource Enrichment Process

Three attributes supported the resource enrichment process: effective governance structure, extensive IT knowledge and business experience and stakeholder commitment.

Effective governance structure. Dyer and Singh (1998) identify the ownership of an effective governance structure as one of the several sources of competitive advantage. They argue senior managers ought to structure the organization appropriately and put into place governance mechanisms that would provide effective decision-making. Organizational control is defined as 'encompassing all attempts to ensure that individuals in an organization act in a manner that is consistent with meeting the organization's goals and objectives (Eisenhardt, 1985). In the case of SMAF, both formal and informal controls (Kirsch, 1997) were enacted. For formal control, SOPs are considered a set of specific rules and procedures introduced during project implementation that aligned the behaviour of SMAF's users and the IT consultants in achieving the firm's objective. SMAF's use of SOPs in project implementation has lots of resemblances with the characteristics of behavior control. According to Rustagi et al. (2008) and Kirsch (1997), behavior control in the context of software development is exercised through the specification of methods for tasks such as project management, analysis, design, programming, testing, and documentation. For informal mode of control, the act of mentoring new employees at SMAF could be considered a channel of disseminating desired value, belief and philosophy of the organization by socializing the individuals to a common set of norms and values within the firm (Adebayo, 2011). The mentorship played an important role in generating the bonding and trust among the project team members because shared ideology may create an attractive identity and a collective interpretation of reality shared by project stakeholders (Van den Bosch et al., 1999). Overall, the formal governance structure has played a supporting role in forming the collective leadership structure and complying with SMAF's organizational goal. The informal governance structure provided the support for nurturing a conducive environment for users to adapt to the new system.

Extensive IT knowledge and Business Experience. An organization has to be able to convert its IT expertise and resources into practical applications which benefit its overall performance (Barua & Mukhopadhyay, 2000). The IT expertise and resources of SMAF have contributed significantly to the success of the ACCPAC system upgrading project. This IT expertise includes the technical know-how required to understand and meet the new system requirements. The availability of IT expertise and resources has been extremely important in developing SMAF's IT capability. For example, having contextual knowledge, business knowledge and IT domain knowledge allowed SMAF's IT consultants to rapidly understand

users' requirements and exercised better judgment in both infrastructure and application upgrading. Furthermore, developing IT capability depends on exploiting existing knowledge within the organization. Organizational learning is a cyclical process, where experience accumulation from existing routines leads to knowledge articulation and subsequent codification through changes in organizational routines (Zollo & Winter, 2002). Hence, the tacit accumulation of experience is an important component in developing and sustaining rent-generating capabilities (Grant, 1991).

Most individuals lack the range of knowledge needed to resolve the problems they encounter, and as a result, they collaborate with others to obtain this knowledge (Kogut & Zander, 1996). In the case of SMAF, its team of 50 IT consultants who were involved in many previous ERP system upgrading projects for its clients provided the body of knowledge for its internal system upgrading. Their prior project experiences led to the creation of new knowledge and actions based on lessons learned. The consultants were able to tap on one another's strengths, competencies and expertise (Carte et al., 2005). Such IT business experience may enhance SMAF's ability to integrate IT strategy and business strategy, and develop reliable and cost effective systems for the business (Sambamurthy & Zmud, 1997). Furthermore, accumulated experience from managing existing client operations was also in estimation and coordination of organizational manpower resource. SMAF could leverage such experience to forecast manpower requirements for its project. In the long run, ideas exchanged through shared narratives of individual experiences would contribute to the development of the firm's strategic vision (Nonaka, 1994).

Stakeholder Commitment. Establishing and maintaining strategic partnerships with various stakeholders were essential to SMAF in maintaining its ability to deliver IT solution. The collaborative relationship between the system developer and end-users, and the close communication between senior management and end-users provided SMAF a critical source of innovation, knowledge and resources that could enhance existing capabilities or even develop new capabilities (Wheeler, 2002). Conducting effective persuasion to promote awareness and interest in a new system is always challenging. To attract interest, one needs to highlight how the new system is going to bring about a better working environment and more efficient work processes. In our case, establishing and maintaining dialogues were essential to SMAF in driving its initiative to deliver effective and efficient IT solutions. For example, two 'Meet the Managing Director' sessions were arranged so that end-users could understand the managing director's vision and her commitment to the project. This is consistent with Garvin and Roberto's (2005) argument that top level commitment is vital to engendering commitment from others. It is important for change leaders to explain the purpose of the change to all of the people involved in making change happen, so that their efforts and contributions will be worthwhile to them as individuals. These sessions were opportunities for staff to question her and understand the vision behind the project. Focus groups were also organized to obtain feedback. The trust developed between the senior management and end-users certainly helped to improve staff morale and

commitment. Over time their commitment may grow and resistance wane, an outcome previously attributed to good communications during organizational change (Kitchen & Daly, 2003). Furthermore, the managing director's continuous communication and her social interaction at all levels of the organization were important contributing factors in the IT adoption process. The staff understood the strategic vision and their individual role in achieving these goals. More importantly, executives ought to preserve a receptive climate for change (Kotter, 1995). In our case, persuasion was also used as a tool to promote understanding and acceptance. Overall, effective communication was the fulcrum of change, since it allowed users to exchange and share their views. Nevertheless, in order for communication to be effective, the organization has to think beyond its hierarchical organization, and stimulate exchanges among staff in order to foster trust and adaptation.

Coordination Mechanisms

Coordination is the mechanism that enables an organization to transform existing resources and capabilities into actions. Based on our analysis, the major coordinating mechanisms are informational and IT structures.

Informational Structure. The informational structure refers to the protocol for information gathering, sharing and transparency across the stakeholders. For instance, SMAF set up a policy to clean up data and records through standardization. This structure promoted a communication protocol that enhanced SMAF's agility in data conversion and migration to the new system (Faraj and Sproull, 2000). In addition, immediately after the project was approved, SMAF's managing director communicated to some users through the 'Meet the Managing Director' sessions on the rationale for system upgrade. By communicating to stakeholders directly, stakeholders were fully aware of the need for system upgrade and the significance of individual roles in the implementation, and this encouraged their commitment in the project. This also helped to build trust between the project team and the users. The direct communication enrolled most if not all users into the project. This is important as the success of the project would hinge on process owners' collective efforts in soliciting support from everyone in their functions. Overall, information structure had acted as the coordination mechanism for developing SMAF's ability to manage change through resolute informing.

IT Structure. Similar to informational structure, the IT structure also played a primary role in coordinating the transformation of resources and capabilities. IT structure (also referred to as IT governance) refers to the distribution of IT decision-making rights and responsibilities among enterprise stakeholders (Peterson, 2004). In the case, SMAF relied on its in-house IT consultants to perform its upgrade of ACCPAC system. During the system upgrade, the governance followed was more akin to what Weill (2004) labels an IT monarchy: owing to their business knowledge and IT implementation experience, the IT consultants were allowed to make key implementation decisions. What made the governance change possible were two enablers: (1) the availability of a pool of knowledgeable and experienced in-house IT consultants and (2) the trust between the management and the IT consultants. Overall, the flexible IT governance structure was central in enabling SMAF to deploy its IT resources and capabilities in response to the implementation project.

Implications and Conclusion

The purpose of our paper has been to address our research question of how are the processes of resource enrichment and capability deployment coordinated during IT implementation at a small and medium-sized accounting firm? In this study, we have used resource based view of firms and coordination theory as our analytical perspectives. We have drawn on SMAF's ACCPAC system upgrading experience by interviewing relevant project stakeholders and reviewing secondary data extensively. Our analysis identified two actions that were instrumental in enriching resource and capability in the IT implementation process: collective leadership and managing change. In addition, three attributes that supported the resource and capability transformation processes include effective governance structure, extensive IT knowledge and business experience, and stakeholder commitment. In addition, two coordinating mechanisms were put in place to enable an organization to transform existing resource and capability: informational and IT structure.

From research point of view, our paper makes several theoretical contributions. First, this study has contributed to the accounting information systems literature by examining the transformation processes of resource and capability enrichment during IT implementation of a context that is little known. It helps to address the call for more research into IT use and the impact of such tools by small and medium-sized accounting firms by Omoteso & Sangster (2011). Second, this study extends our understanding of the IT capability development process by demonstrating how an organization developed IT capability. Through our case, we have uncovered how fundamental resources can be leveraged through specific actions and strategies undertaken. The empirical evidence gathered in the case of SMAF provides useful insights into how resources and capabilities may be enabled. Third, the coordination of the resource and capability transformation contributes to theory development as the coordination mechanisms derived from our analysis offers an insights into how a set of enriched resources and capabilities are synchronized during IT implementation.

From managerial point of view, our findings have emphasized the need for organizations to expand and improve their internal capabilities in achieving advantageous performance outcome. Importantly, the resource and capability transformation concept highlights the influence of the environmental climate upon the organization and encompasses the notion that resources are developed and utilized through agentic activities and it is the appropriate utilization of resources that will impact on organizational outcome. During the initial stage of IS implementation, management should collect user feedbacks to assess users' needs and constraints, and a detailed analysis of the resources and capabilities of the organization. Strategies must be developed to overcome the constraints, especially during the initial stage. The transformation of leadership into collective leadership during the adoption phase would require senior management to be actively involved in changing the mindset and actions of relevant parties. The leadership resource can be enacted and transformed through championing, i.e. visibly advocating for the implementation and exemplarily providing role model for relevant parties. Thus, the championing of leadership resource during the adoption phase may provide the

condition for the transformation of leadership into collective leadership resource to be enacted in subsequent IT capability development phases.

Future research is clearly needed to re-examine the attributes uncovered in this study in other resource enrichment and IT capability development contexts. As in any social process, there may be other issues that play their part in shaping the outcome. For instance, the case study in this research is that of a SME accounting entity. It would be interesting to study other types of SME entities, in which the organizational structures may differ in nature.

References

Adebayo A. (2011), "Organizational culture and performance: the role of management accounting system," *Journal of Applied Accounting Research*, Vol. 12 No 1, pp.74 – 89.

Alves, M. (2010), "Information technology roles in accounting tasks – a multiple case study," *International Journal of Trade, Economics and Finance*, Vol. 1 No. 1, pp. 103-107.

Amit, R. and Schoemaker, P. (1993), "Strategic assets and organizational rent," *Strategic Management Journal*, Vol. 14, pp. 33-46.

Amoako-Gyampah, K. and Salam, A. (2004), "An extension of the technology acceptance model in an ERP implementation environment," *Information and Management*, Vol. 41 No. 6, pp. 731-745.

Barney, J. (1991), "Firm resources and sustained competitive advantage," *Journal of Management*, Vol. 17 No 1, pp. 99-120.

Barua, A. and Mukhopadhyay, T. (2000), "Information technology and business performance," in *Framing the Domains of IT Management: Projecting the Future through the Past*, Zmud, R.W. (ed.), Pinnaflex Press, Cincinnati, OH.

Billings, R.S., Milburn, T.W., and Schaalman, M. (1980), "A model of crisis perception: a theoretical and empirical analysis", *Administrative Science Quarterly* Vol. 25 No. 2, pp. 300-316.

Carte, T., Schwarzkopf, A., Shaft, T. and Zmud, R. (2005), "Advanced business intelligence at Cardinal Health," *MIS Quarterly Executive*, Vol. 4 No. 4, pp 413-424.

Cragg, P., and Zinatelli, N. (1995), "The evolution of information systems in small firms", *Information & Management*, Vol. 29, pp. 1-8.

Denis, JL., Lamothe, L., and Langley, A. (2001), "The dynamics of collective leadership and strategic change in pluralistic organizations," *Academy of Management Journal*, Vol. 44, No. 4, pp. 809-837.

Dyer, J. and Singh, H. (1998), "The relational view: cooperative strategy and sources of interorganizational competitive advantage", *Academy of Management Review*, Vol. 23 No. 4, pp. 660-679.

Eisenhardt, K. (1985), "Control: organizational and economic approaches," *Management Science*, Vol. 31, pp. 134-149.

Faraj, S., Sproull, L. 2000. Coordinating expertise in software development teams. *Mgmt. Sci*. **46**(12) 1554-1568.

Feeny, D., and Willcocks, L. (1998), "Core IS capabilities for exploiting information technology," *Sloan Management Review*, Vol. 39, No. 3, pp. 9-13.

Ferguson, C., and Seow, PS. (2011), "Accounting information systems research over the past decade: past and future trends," *Accounting and Finance*, Vol. 51 No 1, pp. 235-251.

Garvin, D., and Roberto, M. (2005), "Change through persuasion," *Harvard Business Review*, February, pp. 1-8.

Granlund, M., and Mouritsen, J. (2003), "Introduction: problematizing the relationship between management control and information technology", *European Accounting Review*, Vol. 2 No. 1, 77-83.

Grant, R. (1991), "Porter's competitive advantage: an assessment," *Strategic Management Journal*, Vol. 12 No 7, pp. 535-549.

Gundlach, M., S. Douglas, and Martinko, M. (2003), "The decision to blow the whistle: a social information processing framework," *Academy of Management Review*, Vol. 28 No 1, pp. 107-123.

Helfat, C.E., Finkelstein, S., Mitchell, W., Peteraf, M., Singh, H., Teece, D., and Winter, S. (2007), Dynamic capabilities: understanding strategic change in organizations. Blackwell Publishing, UK.

Ives, B. and Learmonth, G. (1984), "The information systems as a competitive weapon," *Communication of the ACM*, Vol. 27 No 12, pp. 1193-1201.

Kirsch, L. (1997), "Portfolios of control modes and IS project management," *Information Systems Research*, Vol. 8, pp. 215.

Kitchen, P. and Daly, F. (2003), "Exploring the role of internal communication during organizational change," *Corporate Communications: an International Journal*, Vol. 8 No 3, pp 153-162.

Kogut, B. and Zander, U. (1996), "What do firms do? coordination, identity and learning," *Organization Science*, Vol. 7 No 5, pp 502-518.

Kotter, J. (1995), “Leading change: why transformation efforts fail,” *Harvard Business Review*, March-April, pp. 59-67.

Kuhn Jr, J., Ahuja, M., and Mueller, J. (2013) "An examination of the relationship of IT control weakness to company financial performance and health", *International Journal of Accounting and Information Management*, Vol. 21 Iss: 3, pp.227 - 240

Lee, J., and Arentzoff, S. (1991), “The productivity factor – justifying your computer purchase”, *The National Public Accountant*, May, pp. 22-24.

Levesque, L., and Roberto, M. (2005) “The art of making change initiatives stick”, *MIT Sloan Management Review*, Vol 46 No. 4, pp. 53-59.

Lord, A.T. (2004), “ISACA model curricula,” *International Journal of Accounting Information Systems*, Vol 5 No 2, pp. 251-265.

Lynch, A. and Gomaa, M. (2003), “Understanding the potential impact of information technology on the susceptibility of organizations to fraudulent employee behavior,” *International Journal of Accounting Information Systems*, Vol. 4 No 4, pp. 295-308.

Markus, L. (2004), “Technochange management: using IT to drive organizational change,” *Journal of Information Technology*, Vol. 19, pp. 4-20.

Miles, M., and Huberman, A. (1994), *Qualitative data analysis: an expanded sourcebook* (2nd ed.). Newbury Park, CA: Sage

Montealegre, R. (2002), “A process model of capability development: lessons from the electronic commerce strategy at Bolsa de Valores de Guayaquil,” *Organization Science*, Vol. 13 No 5, pp. 514-531.

Nonaka, I. (1994), “A dynamic theory of organizational knowledge creation”, *Organization Science*, Vol 5 No 1, pp. 14-37.

Omoteso, K., & Sangster, A. (2011), “Special issue: advances in applications of IT in accounting practice”, *Journal of Applied Accounting Research*.
http://www.emeraldinsight.com/authors/writing/calls.htm?id=3023

Pan, G. (2008) “Partial Abandonment as an Exit Strategy for Troubled IT Projects: Lessons from a Small-and-Medium Enterprise,” *Journal of Enterprise Information Management*, (21:6), pp. 559-570.

Pan, S.L., Pan, G., and Hsieh, M. (2006) “A Dual-level Analysis of Capability Development Process: a Case Study of TT&T,” *Journal of American Society for Information Science and Technology* (57:13), November, pp. 1814-1829.

Pearce, C.L. and Conger, J. A. (2003), *Shared leadership: reframing the hows and whys of leadership*. Thousand Oaks: Sage Publications.

Peppard, J. and Ward, J. (2004), "Beyond strategic information systems: towards an IS capability", *Journal of Strategic Information Systems*, Vol. 13 No 2, pp. 167-194.

Peterson, R. 2004. Crafting Information Technology Governance. *Information Systems Management*, Fall, (21): 7-22.

Qu, S. and Dumay, J. (2011), "The qualitative research interview", *Qualitative Research in Accounting & Management*, Vol. 8 No. 3, pp. 238-264.

Quarantelli, E.L. (1988), "Disaster crisis management: a summary of research findings", *Journal of Management Studies,* Vol 25 No 4, pp. 373-385.

Razi, M., and Madani, H. (2013) "An analysis of attributes that impact adoption of audit software: An empirical study in Saudi Arabia", International Journal of Accounting and Information Management, Vol. 21 Iss: 2, pp.170 - 188

Rikhardsson, P. and Kræmmergaard, P. (2006), "Identifying the impacts of enterprise system implementation and use: examples from Denmark," *International Journal of Accounting Information Systems*, Vol 7 No 1, pp. 36-49.

Roberts, B., Jarvenpaa, S., and Baxley, C. (2003), "Evolving at the speed of change: mastering change readiness at Motorola's Semiconductor Products Sector", *MIS Quarterly Executive*, Vol 2 No 2, pp 58-73.

Rubin, H., & Rubin, I. (2005), Qualitative interviewing: The art of hearing data (2nd ed.). Thousand Oaks, CA: Sage.

Rustagi, S., King, W., and Kirsch, L. (2008), "Predictors of formal control usage in IT outsourcing partnerships," *Information Systems Research,* Vol. 19 No 2, pp. 126-143.

Sambamurthy, V., and Zmud, R.W. (1997), At the heart of success: Organizationwide management competence. In C. Sauer and P. Yetton (eds.), Steps to the Future: Fresh Thinking on the Management of lT-Based Organizational Transformation. San Francisco: Jossey-Bass, pp. 143-163.

Sanchez, R. (1995), "Strategic flexibility in product competition," *Strategic Management Journal*, Vol 16, pp. 135-159.

Sirmon, D. and Hitt, M. (2003), "Managing resources: linking unique resources, management, and wealth creation in family firms", *Entrepreneurship Theory and Practice*, Vol 27 No 4, pp. 339-358.

Sirmon, D., Hitt, M. and Ireland, D. (2007), “Managing firm resources in dynamic environments to create value: looking inside the black box,” *Academy of Management Review*, Vol 32 No 1, pp. 273-292.

Sutcliffe, N. (1999), “Leadership behaviour and business process reengineering (BPR) outcomes: an empirical analysis of 30 BPR projects”, *Information & Management*, Vol 36 No 5, pp. 273-286.

Teece, D.J. Pisano, G. and Shuen, A. (1997), “Dynamic capabilities and strategic management”, *Strategic Management Journal*, Vol 18, pp. 509-533.

Van Den Bosch, F., Volberda, H., and De Boer, M. (1999), “Coevolution of firm absorptive capacity and knowledge environment: organizational forms and combinative capabilities,” *Organization Science*, Vol. 10 No. 5, pp. 551-568.

Wade, M. and Hulland, J. (2004), “The resource-based view and information systems research: review, extension, and suggestions for future research”, *MIS Quarterly*, Vol 28 No 1, pp. 107-148.

Watkins, M. and Bazerman, M. (2003), “Predictable surprises: the disasters you should have seen coming”, *Harvard Business Review*, March, pp. 72-80.

Weidenmier, M.L. and Ramamoorti, S. (2006), “Research opportunities in information technology and internal auditing”, *Journal of Information Systems*, Vol 20 No 1, pp. 205-219.

Wheeler, B. (2002), “NEBIC: a dynamic capabilities theory for assessing net-enablement”. *IS Research*, Vol 13 No 2, pp. 125-146.

Yunis, M., Koong, K., Liu, L., Kwan, R. and Tsang, P. (2012), "ICT maturity as a driver to global competitiveness: a national level analysis", *International Journal of Accounting and Information Management*, Vol. 20 Iss: 3, pp.255 - 281

Zollo, M., and Winter, S. (2002), “Deliberate learning and the evolution of dynamic capabilities”, *Organization Science*, Vol 13 No 3, pp. 339-351.