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An exploratory study of alignment ERP implementation and organizational development activities in a newly established firm

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Abstract

Purpose – The importance of alignment of enterprise resource planning (ERP) implementation for organizational strategies has been widely recognized. However, ERP implementation in the context of new ventures has not yet been convincingly demonstrated. Furthermore, how to align ERP implementation with organizational development in new ventures deserves further examination as new ventures are in the emergency or early growth stage and thus have distinct concerns in adopting ERP. Against this background, the main purpose of this paper is to explore how ERP implementation can facilitate the organization development of new ventures.

Design/methodology/approach – This study adopts an in-depth case study method for gathering and analyzing data. The case research strategy allows the exploration of unforeseen phenomena and offers insights into the inter-dependencies among the factors captured in the study. It is believed that case study research will be most appropriate in gaining in-depth knowledge of the practices of ERP implementation in new venture development.

Findings – Drawing on an in-depth case study from a Taiwanese IC design house, this study shows that, to leverage the value of ERP system, the implementation should consider the firm's growth stages, the unique industrial characteristics, the influences from the business group, and the alignment of the internal control and audit function, corporate governance, and information technology governance.

Practical implications – The findings of this study contribute to the literature on ERP implementation and organization development in new ventures. The implications and future research directions are also discussed.

Originality/value – This single case study has provided valuable insights into the practice of ERP implementation. Furthermore, data analysis of this study provides a set of vocabularies that researchers and practitioners could employ in similar organizational processes as in new ventures. Accordingly, future ERP implementation processes can be compared and benchmarked.

Keywords Strategic alignment, Manufacturing resource planning, Internal control, Internal auditing, Corporate governance, Organizational development

Paper type Case study

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Introduction

This paper focuses on the strategic alignment of organizational development activities and the implementation of enterprise resource planning (ERP) in a new venture. Increasingly, the advance of information technology (IT) is evolving toward a strategic role with the potential not only to support chosen business strategies, but also to shape

new business strategies (Presley, 2006; Wideder *et al.*, 2006). In recent years, a large number of organizations have implemented ERP in an integrated suite of systems and information resources for operational and management processes across a broad range of business activities (Buonanno *et al.*, 2005; Ward *et al.*, 2005). Many previous studies (Huang *et al.*, 2004; Frank, 2004) concentrated on offering architectures, models and critical factors for the successful implementation of ERP systems. Parr and Shanks (2000) suggested that management support, business experts, empowered decision makers, deliverable dates, champions, vanilla ERP, small scope, definition scope and goals, balanced team, and commitment to change are the critical success factors for ERP implementation. Besides, this, the implementation process needs to consider organizational knowledge sharing or transfer (Jones and Price, 2004; Lee and Lee, 2000), corporate national cultures (Krumbholz *et al.*, 2000), and enterprise application integration (Devadoss and Pan, 2007; Lee *et al.*, 2003).

However, these previous studies are typically conducted based on well established firms and have neglected the implementation of ERP in the new ventures context. Firm stages such as emergency, early growth, later growth, maturity, and death represents not only mere changes over time; rather they function as a proxy for many strategic issues (Hite and Hesterly, 2001). In addition, new firms fail because entrepreneurs inefficiently deal with management production and organizational design and development (Williamson, 1985). ERP systems reflect a new phase in the information about organizations, integrating various business processes within and between organizations. Apparently, how to integrate the ERP implementation along with the new ventures organizational development is of critical importance to the new firm's survival and growth, but this critical issue has not yet been demonstrated.

With this issue, this paper explores the practices of ERP implementation with the new ventures organizational development. The main purpose of this paper is to understand the process of aligning ERP implementation with the organizational development. For instance, this study is interested in knowing how a new venture can employ ERP in facilitating a newly established firm's growth, under the constrained resources context. More specifically, this study intends to answer the following research questions:

RQ1. What are the appropriate ERP implementation considerations for a newly established firm's growth?

RQ2. How can ERP implementation and organizational development activities be aligned over time?

In order to answer these questions, this study adopts a case study research method. The process of case study research is interpretive, which is driven by the epistemology of interpretivism which allows us to understand the practice and the articulation of rationale or philosophy of practice in order to improve the practice (McCutcheon and Jung, 1999). The analysis is based on an in-depth case study from TCT (a pseudonym), a Taiwanese fabled integrated circuit (IC) design company focusing on wireless communication. This study explores the process of aligning ERP implementation with the case company's organizational development.

The next section discusses, the background of ERP implementation and the context of new ventures. This discussion provides a theoretical background of the research issue. This is followed by a detailed description of the case. Subsequently, the analysis

and findings of the study are discussed. The implications of organizational development for the ERP implementation and management of IT projects are also discussed. The final section concludes by discussing future research directions.

Theoretical background

The implementation of ERP

There is a significant body of research that has been devoted to the implementation of ERP as companies have increasingly opted for this generic packaged software. For example, it is common to speak of an ERP system as being configured rather than programmed and for any implementation problems to be seen as organizational rather than technological failings (Cadili and Whitley, 2005). Thus, unlike the implementation of centralized office data process systems, the implementation process of an ERP system is best conceptualized as a business project rather than the installation of a new software technology (Presley, 2006; Parr and Shanks, 2000).

Implementation activities include: detailed gap analysis, business planning, identification of complementary solutions, construction of a prototype, data conversion, clarity of work procedures, full implementation, user training, and acceptance tests (Raymond and Uwizeyemungu, 2007; Bajwa *et al.*, 2004). Bajwa *et al.* (2004) also indicate that external stakeholder support, internal management support, change management, training, IT unit competency, IT provider and integrator support, and value chain connectivity are of critical importance of ERP implementation. In addition, quite a number of process models have also been developed (Ross, 1998; Tan and Pan, 2003; Pan and Pan, 2006). These models show ERP implementation states including design, implementation, stabilization, continuous improvement, and transformation.

Adopting organizations must develop a quantifiable business model, define its best practices, and then structure its ERP implementation to achieve its business goals (Laukkanen *et al.*, 2007; Madapusi and D'Souza, 2005). But, the challenges of implementing ERP can come from both the technical and the human side such as scope creep and change management (Okrent and Vokurka, 2004). Apparently, ERP implementation is a socio-technical challenge that requires a fundamentally different outlook from technologically driven innovation, and will depend on a balanced perspective where the organization as a total system is considered (Krumbholz, 2006).

A related implementation issue is alignment. There are several aligning mechanisms that should be taken into consideration including strategic alignment, system and process alignment, and knowledge alignment. In spite of growth in the ERP market, recent research shows growing dissatisfaction with ERP in that they have failed to deliver the anticipated benefits (Wei *et al.*, 2005; Ross and Vitale, 2000). In fact, many organizations adopting ERP have serious conflicts with their business strategies and the majorities of ERP projects are often characterized by delays and cost overruns (Kansal, 2006). Thus, the alignment of IT plans with organizational objectives has consistently been among the top concerns reported in a survey of information system (IS) managers and business executives (Beich and Benbasat, 2000; Henderson and Venkatraman, 1993). For example, researchers (Madapusi and D'Souza, 2005; Wei *et al.*, 2005) suggest that misalignments can hamper a firm's efforts to effectively control and coordinate it business activities.

To automate and integrate an organization's business processes, to share common data and practice across the enterprise, and to produce and access information in a real-time environment are the most important attributes of ERP (Nah *et al.*, 2001). The ERP implementation often entails transferring the business knowledge incorporated in the basic architecture of the software package into the adopting organization (Lee and Lee, 2000). Therefore, ERP outsourcing may be considered co-sourcing, where external ERP vendors need to incorporate the expertise of in-house IT staff to develop a specific ERP system for the company. From this perspective, ERP implementation process is a knowledge sharing and learning process. Accordingly, the learning approach and positive attitude towards new skills of organization helped to make implementation effective (Krumbholz, 2006).

Implementing ERP in a newly established firm

Paralleling prior research (McDougall and Oviatt, 1996), a firm was considered a new venture if it was eight years old or less. Apparently, how new ventures can survive is a critical important issue. Factors such as age, legal structure, growth, firm size, ownership advantages, sunk costs in the industry, organizational ecology, and technology regimes are considered very important to the new firm's survival (Mata and Portugal, 2002; Mahmmod, 2000; Shane, 2001).

The types of new ventures also need to be taken into account. Two types of ventures, independent ventures, and corporate ventures, have been identified. Independent ventures are established by individual entrepreneurs and corporate ventures are controlled by large companies. Different types of ventures may have different strategies, resources, and performance (Shrader and Simon, 1997). For example, corporate ventures with parent firms may be able to supply expertise in management, which may help the new firm in developing a successful entry strategy. As mentioned, inefficient organizational design may lead to new firms failing (Williamson, 1985). The organizational design, the hard frame of control systems, corporate policies, and organizational forms, are a bare bones framework through which a more organic social structure develops as people interact, argue, play power, come together, and otherwise manage their day-to-day situation (Bate *et al.*, 2000; Krackhardt and Hanson, 1993).

An appropriate organizational structure must be in place that can process the tremendous volume of information generated from both internal and external sources; the information processing capabilities that are possible through the continuing advances of IT (Dibrell and Miller, 2002). Oura and Kijima (2002) indicate information systems have been developed for their own sake and not examined in the context of organization design as a whole.

Apparently, both ERP implementation and organization development are critical for new ventures. However, the practices of how ERP implementation can facilitate the organizational development of new ventures still unknown. Thus, the present study employs the concept of "contextualism" as advocated by Pettigrew *et al.* (1988). This school integrates process, content and context to study organizational issues such as decision making. Based on Pettigrew's *et al.* (1988) argument, content refers to the particular issue (e.g. decision) under study. In this study, this dimension explores the basic nature and scope of ERP implementation. The process of ERP implementation refers to the actions, reactions and interactions of the various interested parties as they

seek to make a commitment to allocate corporate resources. The context includes the outer context, which refers to the national economic, political, and social contexts of an organization, and the inner context, which refers to the ongoing strategy, structure, culture, management and political process of the organization. This dimension helps to shape the process of ERP implementation.

Methodology

Research methods such as case study are most suitable to capture the complex of aligning the ERP implementation strategies with organization development. In addition, studying ERP implementation in new ventures requires a deep appreciation of the context of new firms. Therefore, this study adopts an in-depth case research method for the gathering and the analysis of data. The research steps of this study can be seen in the Appendix 1. The case research strategy allows the exploration of unforeseen phenomena and offers better insights into the inter-dependencies among the factors captured in the study (Benbasat *et al.*, 1987). It is believed that case study research is most appropriate in gaining in-depth knowledge of the practices of the process of ERP implementation in new venture development, at least in the holistic understanding as presented.

An interview-based qualitative approach was adopted. Face-to-face interviews were conducted each lasting two-three hours. In total of 16 interviews were supplemented by follow-up e-mail exchanges with continuous secondary data analysis enabled for all collected information from January to May, 2007. The interviews were unstructured, with only a standard set of questions that were designed to help initiate and guide the interview process. Some typical questions can be seen in the Appendix 2. The nature of the research questions, the type of data necessary for generating answers to the main research objectives, and the wider practical considerations of feasibility, time and resources were the main issues which influenced the design of the research (Blaikie, 2000; Blaxter *et al.*, 1996).

All of the interviewees have worked in TCT for at least five years, thus providing insightful personal observation and ensuring the quality of data. Furthermore, this study also interviewed a senior staff who was the advisor to the ERP project during 2000-2004. His role was to be the consultant addressing issues raised by the users and managers. He also assisted in the planning and implementation of an ERP project along with consideration of organizational development. The interviewee involvement in the whole ERP implementation process allowed collection through direct observations, interviews, and the review of the company. The involvement of this key advisor in the entire ERP implementation process makes the data collection easier by his candid revealing of many interesting accounts of key events in the implementation process.

The case

This section provides a description of the case. The global leading position and maturity of the foundry industry have stimulated the growth of IC design industry in Taiwan. According to statistics data obtained from the Ministry of Economic Affairs, Taiwan, the Taiwanese chip foundries achieved 73 percent of the global production value (including IC packaging industry) which was ranked number one globally in 2004. Back then, the goal of production value was expected to reach US$46.7 billion

in 2006, in comparison with product value US$33.2 billion in 2004. Taiwan is also the world's second largest supplier of IC designs, next only to Silicon Valley, accounting for 28 percent of the world's output (www.gov.tw). Accordingly, it is worthwhile to pay much more attention to this industry as the foundry industry does have brilliant economic performance.

Established in 2000, TCT is a fabled IC design company focusing on wireless communication. The company's CEO expects the applications market for bluetooth IC to have matured in the near future. Through an alliance with global partners and the self-developed key technologies, TCT is the first company in Taiwan to provide both Bluetooth and personal handy system based on IC and became the primary supplier of the ICs.

Regarding of the issue of ERP implementation activities, quite a number of process models have been developed by researchers (Tan and Pan, 2003; Pan and Pan, 2006). These models show ERP implementation states including design, implementation, stabilization, continuous improvement, and transformation. Accordingly, the description of this study is divided into four stages: the initial phase, search solution phase, building standards phase, and leveraging the value of IT phase which are identified in the ERP implementation processes as follows.

Stage 1. The initial phase-assess organizational niche

The IC manufacturing process can be broken into five major steps including circuit design, mask, tooling, wafer fabrication, assembly and test. TCT is purely an IC design house. The company has to contract with wafer fabrication facility (foundry companies) to make their wafers. In addition, to provide clients with high-performance and low-cost chips, and to satisfy end-user demand for carefree ubiquitous communications, TCT has devoted itself to developing system-on-chip solutions since the inception. TCT also provides technologies for integrating systems, software, and hardware to suit individual customer's demand.

TCT was established by capital venture by a Taiwanese business group (corporate ventures). But, unlike other new ventures spinning out from their parent companies, in 2000, TCT operated independently and did not have any product for the market when the company was first established. For the first two years (2000-2002), basically, TCT had all efforts in R&D activities, which aims to design new IC and therefore no operation or marketing activities are required in the initial stage. As indicated by one manager:

> When we first started in 2000, since yet we had no product, the only thing we did was to focus on R&D activities. We did not operate like other well-established firms. From another perspective, we had no income either. We needed cash for our R&D expenses, and therefore, we had to save every penny. During that period, we had no intent need to adopt an ERP system.

Although TCT was focused on the R&D activities, at the same time, the company recognized the need for a business management system that could integrate all facets of the business, including planning, manufacturing, sales, and marketing. Even though ERP systems claim to support a broad range of business process, Soh *et al.* (2000) argued that there are incompatibilities between organizational requirements and ERP software in terms of data, process, and output. Therefore, from the perspective of TCT,

it was worthwhile to make an effort to search for a solution that could fit with the adopting organization.

The company spent about one year in identifying the best ERP solutions while many of the systems provided by international vendors such as SAP emphasize planning, standardization and elaborate procedures (Kallinikos, 2004). Many organizations in Asian countries where business practices often vary markedly from Western ones, often result in "misfits" between systemic demands and local needs and requirements (Soh and Kien, 2000). Therefore, in addition to save cost, TCT decided to employ an ERP system from the biggest local ERP software vendor, Data Systems Consulting (DSC).

Stage 2. Searching for solution phase

In 2002, TCT started to outsource their manufacturing process to foundry companies and also started the ERP implementation process. Just as what Parr and Shanks (2000) call "vanilla" implementations, to reduce the complexity, TCT approached their ERP implementation by partitioning a large project into several smaller ones. The first phase focuses on sale and order management, scheduling and planning, quality management, and inventory management. The second phase focuses on the financial management module to improve visibility of the financial side of TCT and monitor cash flow and control costs. The third phase includes implementing the human resource module and workflow management.

Since 1982, DSC has been constantly developing its enablement capabilities, providing customers with total solutions from ERP through to ERP II. In 2002, DSC was awarded a Ministry of Economic Affairs Certificate for Excellence in the Field of Sustainable Development and Management. However, the core of DSC's ERP system is mainly based on material requirement planning and bill of materials (BOM). The BOM is the fundamental building block for scheduling, costing and inventory control. As noted by a manager:

> In IC design house, the manufacturing processes are outsourced. The most important concepts for product control are "lot tracking" and stage management, rather than BOM. We need to have integrated order fulfillment and lot tracking capability. Accordingly, our ERP system needs the lot tracking module, in order to provide the retrievable data as well as ingredients, processes, finished products, customers, spilt lots and all points in between for our venders.

At that time, there was no ERP system for an IC design house developed by local ERP vendors. For new ventures, the solutions provided by SAP are too costly. In the meantime, a system manager in TCT found that there was a well designed lot tracking system by another ERP vendor, Xaccel Technology, Inc., and Xaccel Technology, Inc. is one of the leading companies in Taiwan that provide fabled operation application and a total supply chain solution. However, this company did not provide the other ERP modules. The system manger started to consider the possibility of integrating these two information systems into one. After several meetings, the two software vendors, DSC and Xaccel, agreed to form a strategic alliance in supporting TCT's ERP implementation project.

Two important issues forced these two vendors to join the alliance. The first one is the rapid growth of the Taiwanese IC design industry. This trend reveals a huge business opportunity for local software vendors. The second one is the business

opportunities from TCT's business group. TCT belongs to a business group of 30 companies. For DSC, TCT becomes an entry point to connect with the group for building the relational ties. The potential influence from TCT business group emerged. DSC is in charge of the development of integration interface for two ERP systems.

Stage 3. Building standards phase

Building a fine-tuning of the standard system is a key process in the implementation and requires translating business needs into appropriate parameter settings (Kim *et al.*, 2005). Thus, after a three stage design, the TCT finishes their ERP implementation at about the middle of 2004. In addition, three organizational issues were taken into account in the period including the design of the internal control and the audit (ICA) function along with the adoption of International Organization for Standardization (ISO) and the enhancement of TCT's corporate governance. Overall, the ICA function is the control and supervision of company's operations by the management team. For all companies, there are objectives with regard to ICA to achieve: improving the effectiveness and efficiencies of operations; providing highly reliable financial reports; and complying with applicable laws and regulations. TCT designs it ICA function with the support of ERP implementation.

In general, the ERP vendor will follow the application implement procedure such as standard flow training, standard flow mapping, pilot production and go live. For new ventures like TCT, ERP implementation has helped the firm standardize its business processes and achieve a system response time. These mechanisms are of critical importance to TCT in standards development along with ERP implementation. The implementation and certification of the quality management system (QMS) in TCT compliant with ISO 9001 has been aimed at the establishment of a quality-focused management system. The QMS is subject to continual improvement and enhancement. An efficiently functioning system guarantees that all processes are verified for effectiveness; they are improved and adjusted in line with market and technological developments as well as changing requirements of the customer. Thus, the overall aim is to ensure customer satisfaction. Accordingly, in the ERP implementation process, the managers in TCT concurrently plan the fit between ERP, ISO and ICA designs. The implantation of ERP becomes an efficiency means for achieving these goals. As mentioned by a manager:

> The internal control and audit function in the company is a key mechanism in the internal control structure, so careful efforts must be taken in considering (1) how to use ERP system and other information technologies in conducting internal control and audits, and how has it enhanced the conduct of the internal control and audit? (2) How does ERP provide the internal audit data efficiently?

From another perspective, TCT also see ERP as part of their corporate governance system, which is the system and process that allow shareholders to oversee the management of TCT. The efforts of corporate governance focus on improving management transparency and accountability, and clarifying the division of roles between management oversight and business execution. In particular, the managers in TCT had the experiences in their previous jobs on bridging missing linkages between standard setting, internal audit, and corporate governance. The missing linkages many lead to the reconfiguration of ERP systems, the inefficiency ICA, and even the failure of corporate governance. However, as mentioned by a manager:

> It's impossible for our board members to examine our ERP system closely, to achieve internal audits or corporate governance. Therefore, the top-down approach of linking ERP implantation with corporate governance cannot work. We need a bottom-up approach in practice. We need to propose a system configuration along with the endorsement from our accountants to the board and ensure the ERP system, internal audits, and corporate governance is aligned and meets the requirement of regulations as well. Therefore, our decision rights are well defined.

Stage 4. Leveraging the value of IT phase

In the following stage, TCT not only considered how ERP implantation can enhance the firm's standard setting, internal audits, and corporate governance, but also carefully examined the ERP system itself. That is, the implementation of ERP also facilitates the development of controlling how IT operates within the business, to ensure the value of IT investments. The mechanism of ERP implementation in this stage can be referred as the development of IT governance. For example, even though almost all their peer high-tech firms have ERP systems, TCT's CEO still asks for the evaluation of the value of return-on-investment. As expressed by a manager:

> In a presentation to our board members, we make a commitment in ERP implementation: no recruitment for managerial department is required if our revenue is under one billion NT dollars. We establish a standardize procedure for IT investment decisions. We need to ensure our IT investment is worthy, and the payback of any IT investment should be clearly presented. No taken-for-granted IT investments, we focus on IT expenses and proof of value.

The decision rights for each ERP module along with data security, accessibility, and reliability are embedded and carefully designed in the business process. Also, a respectable risk management plan to enhance the business continuity capability such as a disaster recovery site for data, applications and users is designed. The intention of business continuity planning is to keep a business running during a natural, man-made, or technological disaster. By integrating firewall and Cisco virtual private network products, administrators can lockdown specific files, directories and system areas as well as the entire system, improving the security on the intranet or the internet.

Lessons learned and discussions

The main purpose of this paper is to explore the practices of ERP implementation along with a new firm's organizational development activities. Drawing on a case study from the Taiwanese IC design industry, this study shows that, in the context of conducting a new venture's organizational development, ERP implementation should be considered in stages. Table I summarizes the stage, key issues and findings in terms of ERP implementation context, content and process.

A strategic alignment model purposed by Henderson and Venkatraman (1993) identifies the need to specify two types of integration between organization and IT domains: strategic integration and operational integration. The former is the link between business strategy and IT strategy reflecting the external components. The later is the link between organizational infrastructure and processes and IS infrastructure and processes. In this study, in the initial stage, TCT focuses on this R&D. In the searching solution stage, TCT tried to deal with the capability of ERP functionality to both shape and support this business strategy. It goes further and

Stages	Context	Content	Process
The initial phase	TCT in a new venture and the company mainly focuses on R&D and cost saving	✔ Prior adoption study ✔ Vendors evaluation and selection ✔ No ERP has deployed	Before adoption, TCT is searching possible solutions, including ERP systems from international and local company
Searching solution phase	TCT starts to outsource its manufacture processes. The restrictive resources lead to TCT in favor of local companies' solutions	✔ Design the three stages of implementation process ✔ Integration of two ERP systems, to fit with the processes in IC design industry	TCT starts to think of the possibility for integrating these two ERP systems into one. After several joint meetings, the two software vendors agree to from a strategic alliance and DSC will be in charge of the development of integration interface
Building standards phase	Standards development and QMS need to be employed and TCT also sees ERP as part of their corporate governance system	✔ Standard setting ✔ Internal control design ✔ Internal audit design ✔ Corporate governance	ERP is designed to improve management transparency and accountability, and clarify the division of roles between management oversight and business execution
Leveraging the value of IT phase	The context has changed from organizational issues to IT itself. TCT focuses on the organizational logic for the IT function	✔ Strategic alignment ✔ Value delivery ✔ IT resource development ✔ Risk management ✔ Performance measurement	ERP is designed to support the controlling of IT operated within the business. TCT decides on what must be arranged in order for the organization to profit from IT synergy

Table I.
Summary of the case findings

deals with the corresponding internal domains. It links organizational infrastructure and processes and ERP infrastructure and processes in the building standards stage. Finally, it highlights the criticality of ensuring internal coherence between the organizational requirements and expectations and the delivery capability within the ERP functions in the leveraging the value of the IT phase.

In this study, business strategy serves as the driving force to conduct the implementation of ERP. As shown in Figure 1, borrowed from Henderson and Venkatraman (1993)'s concept, this perspective is anchored on the notion that business strategy is the driver of organizational design choices and the design of ERP infrastructure.

Figure 1 shows the TCT strategic alignment process model from this case study. The solid arrows indicate direct processes which link the development of strategy. The alignment perspective is a widely understood perspective as it corresponds to the classical view of strategic management (Presley, 2006). The broken arrows show the assessment of implementing the chosen business strategy through appropriate IT strategy and the articulation of the required ERP infrastructure and processes. In this case, TCT seeks to identify the best possible ERP competencies through a strategic alliance of two software vendors, DSC and Xacce's. It is important to identify the specific roles of management to make this perspective succeed. That is, business strategy serves as the driver to conduct the strategy alignment along with top management playing the role of strategy formulator and technology visionary and IT/IS management playing the strategy implementer and technology architect in this case study (Henderson and Venkatraman, 1993).

This case also offers potential lessons that may have a bearing on the future management of ERP implementation. Four important lessons may be drawn from the practices of the ERP implementation in the case of TCT. These lessons include:

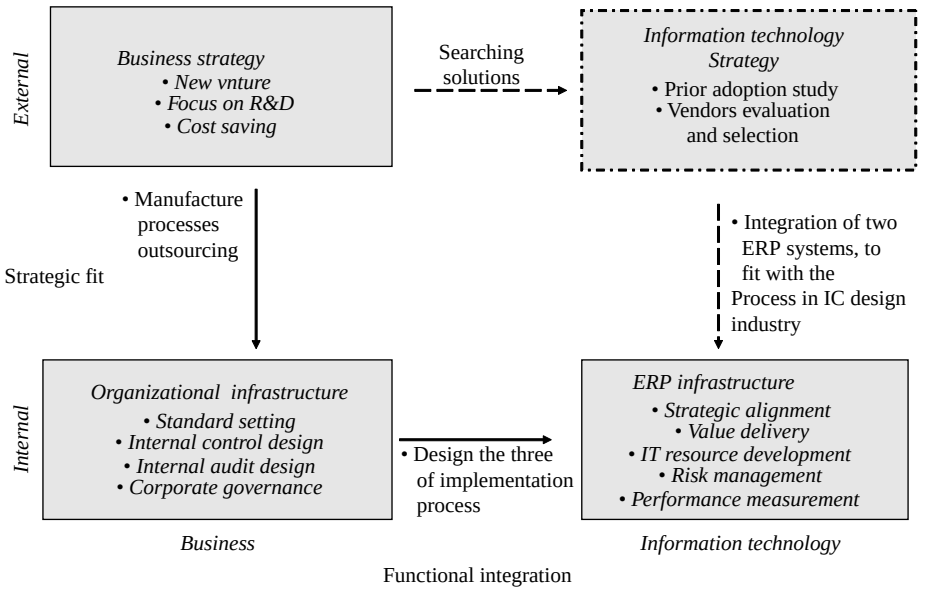

Figure 1.
Strategic alignment process model

(1) considering the firm's established process with ERP implementation;
(2) examining the potential;
(3) aligning the ERP implementation with ISO, ICA, and corporate governance; and
(4) employing IT governance in leverage ERP's value.

The following provides a detailed description of these lessons, and the implications and future research directions are also discussed.

Lesson 1. Linking ERP implementation with organizational development

The field of organization development aims to employ the system applications of knowledge deriving from system science, management science, and behavioral science to improve organization effectiveness (Deaner and Miller, 1999). Therefore, as indicated in this case study, it would be useful to consider issues related to organizational development during ERP implementation as a strategic organizational change. In fact, successful strategic change rests on alignment and integration, on the fusion of structure, systems, leadership, strategy, and culture into an integrated and synergistic competitive whole (Bate *et al.*, 2000). TCT is a nascent corporation and involved in a transition from zero to well established, which is what Golembiewski *et al.* (1976) called Gamma change of organizational development. Four stages have been identified including the initial stage, the searching solution stage, the building standards stage, and the stage of leveraging the value of IT.

The development of these four stages has its unique organizational context and specific implementation decisions. For example, in the initial stage, TCT's IT plan only focuses on searching for the best possible ERP solutions. The constrained resources lead the company to employ an ERP system from a local ERP software vendor to save money. Thus, in other words, ICI's IT plan was aligned with its organizational objectives. There are many studies (Parr and Shanks, 2000) that examined critical success factors of ERP implementation. However, these existing studies are all based on well-established firms. This study argues that more research is needed to examine some of the critical success factors of these proposed stages. For example, what are the critical success factors in the standard building stage? What is unique about ERP implementation in new ventures is that when implementing ERP systems, each stage has different organizational objectives. This is an important issue, since the alignment of IT plans with organizational objectives has consistently been among the top concerns reported in surveys of IS managers and business executive (Beich and Benbasat, 2000).

Lesson 2. Acquiring resources from related business groups

Resource acquisition is particularly important for new ventures, because the poverty of resources that characterize new ventures frequently leads to their demise (Shrader and Simon, 1997). TCT's case shows some resources are intangible and may come from TCT's business group. As mentioned, TCT integrated two software vendors to form a strategic alliance. Based on the data analysis, the business opportunities from TCT's business group and the opportunity to build relational ties become a powerful source. That is similar to what previous studies suggest is the resource from the structural dimension of social capital. Social capital is a means of enforcing the norms of behavior among individual or corporate actors; it thus acts as both constraint and resource (Walker *et al.*, 1977).

From DSC's perspective, to develop an inter-organizational relationship with TCT business group, DSC will have to invest its scarce resources (e.g. time, technical supports) and energy to start and sustain the relationship, even when the possible returns on the investment may be unpredictable or intangible (Leung *et al.*, 1995). Thus, with the social capital acquired from its business groups, TCT can gain more advantages (such as lower expense and better service qualities) from DSC. In the case of scarce resources related to such as TCT, social capital may become a useful means in achieving the organizational goals for the following reasons. In addition, good relationships may act as substitutes for formal institutional support (Xin and Pearce, 1996). Too often, outsourced projects are delayed or incompleted. Thus, this explaines why TCT still needs DSC's support.

Lesson 3. Aligning ERP implementation with ISO, ICA, and corporate governance

ERP represents an understanding of organizations as containing common elements and having generic business needs which can be met by standardized packages (Verville *et al.*, 2005). An ERP system can be viewed as an enterprise-wide information system that integrates all aspects of a business. Most companies must first reengineer their business process to adopt ERP standard business process (Lee *et al.*, 2000). That is, during ERP implementation process, organizations need to adapt their business processes to the ERP supplier's best-practices. Adaptation is a process of modifying existing conditions in an effort to achieve alignment (Majchrzak *et al.*, 2000). However, previous research has shown the problematic nature of organizational change. For example, redistribution of roles and responsibilities among members can destroy an organization if it is not properly managed (Lee *et al.*, 2000). Otherwise, failure to adapt ERP systems to fit with organizational culture could lead to projects which are expensive and overdue (Pan *et al.*, 2004; Krumbholz *et al.*, 2000). Furthermore, while the focus of ERP systems is on the operational and tactical level, it may lack comprehensive reporting and analysis functionalities at the strategic level (Rom and Rohde, 2006).

Since a new venture is still developing its organization, like TCT, it is a good opportunity to learn the best-practices from its ERP systems and system vendors. As shown it this study's findings, TCT was able to learn the standard setting from the ERP implementation. However, integrating software and hardware-the technical integration-is only one aspect of integration. The biggest challenge may be the behavioral integration. That is, how to resolve the conflicts between the business knowledge transferred from the ERP package and the existing organizational knowledge (Lee *et al.*, 2000).

Lesson 4. Employing IT governance in a leverage of ERP's value

As mentioned, in leveraging the value of ERP, TCT's efforts in IT governance can be observed in terms of key elements such as strategic alignment, value delivery, resource management, risk management, and the performance of IT governance (Weill and Ross, 2004). Indeed, with the growing emphasis on enterprise risk management, IT governance is becoming an increasingly important issue of corporate governance. IT governance represents the framework for decision rights and accountabilities to encourage desirable behavior in the use of IT. Effective IT governance helps ensure that IT supports business goals, optimizes business investment in IT, and appropriately manages IT-related risks and opportunities. IT governance may be considered as the

organizational logic for the IT function (Sambamurthy and Zmud, 1999). Essentially, IT governance refers to IT governance deciding on what must be arranged in order for the organization to profit from IT synergy (Sohal and Fitzpatrick, 2002).

However, the links between IT governance and corporate governance are rather weak. In addition, the empirical studies for IT governance have not yet been convincingly demonstrated. To address the gap, further research should help to establish the link between IT governance and corporate governance in the ERP implementation process.

Conclusion

In response to the *RQ1*, this study provides the much needed empirical suggestions into the notion that the alignment of organizational development issues in the ERP implementation process is just as important as the economic considerations of adoption. By employing an in-depth case study of a new venture from Taiwanese IC design industry, it has demonstrated that the practices of organization development and governance issues are indeed important topics in ERP implementation research.

Regarding the *RQ2*, this study contributes to ERP implementation research in a number of ways. First, this study has identified, in a new venture, the various stages of ERP implementation processes, and the distinct context and characteristics found in different stages. This study had derived four distinct stages of ERP implementation, including:

(1) linking ERP implementation with organizational development;

(2) acquiring resource form related business groups;

(3) aligning ERP implementation with ISO, ICA, and corporate governance; and

(4) employing IT governance in leveraging ERP value.

This study clearly depicts that the context of a venture company influences ERP implementation processes implicitly and should be taken into account in ERP decisions. This set of considerations which this study reports as findings have not been previously examined. Second, these findings suggest that unique industries where no ready-to-use ERP systems are available need to be considered in pursuing the effectiveness of ERP implementation. According to Yeh *et al.* (2006), there are four areas in which domestic ERP vendors perceive themselves as having competitive advantages over foreign venders: their ability to meet special requirements, the ability to support the flexibility and speed of domestic companies, the benefits of direct implementation, and the ability to learn from their engagement with local customers. Although this case company integrates two ERP systems successfully, the business strategic alliance and system integration still remain problematic. Based on the findings of this study, it is worthwhile to study the underlying psychological and environmental factors influencing user adoption behavior (Lim *et al.*, 2005), taking into consideration organizational development needs. Third, ERP should be considered not only as an information system, but also part of corporate governance systems. Fourth, the implementation of ERP also facilitates the development of IT governance in pursuing overall strategic alignment, value delivery, resource management, risk management, and performance.

This single case study has provided the valuable empirical insights for the practices of ERP implementation. It is acknowledged that there is the limitation of the case study method for this paper. However, the analysis of this case study did provide a vocabulary that researchers and practitioners could employ in following similar process in new ventures, so that future ERP implementation processes can be compared and benchmarked. ERP systems in Taiwan's hi-tech industries also play the similar role as that in the Asian firms or in Western firms. For future studies on the subject, additional investigation is needed to ascertain the impacts of different stages on the effectiveness of ERP implementation.

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Appendix 1

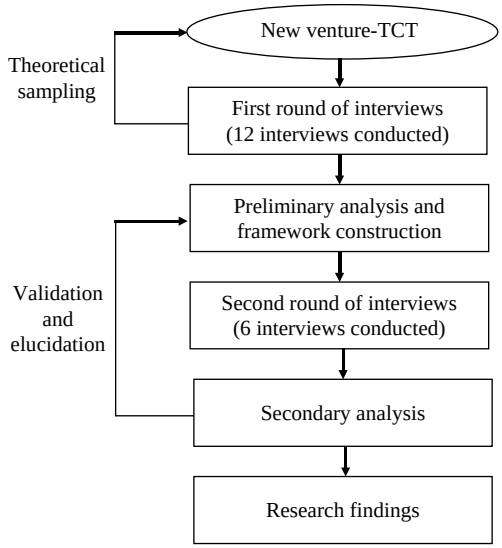

Figure A1.
The research steps

Appendix 2. Research typical questions

(1) What is your ultimate motivation for launching this new enterprise?
(2) What is your business idea?
(3) What is your business model?
(4) When will be the proper timing to conduct the ERP system in your company?
(5) What are the appropriate ERP implementation considerations for a newly established firm's growth?
(6) How much should you budget?
(7) How do you know you have found the right solution if you do not know what you are looking for? How best to narrow down your potential solution list?
(8) What are your evaluate options?
(9) How will be your ERP implementation partners?
(10) How do you design your negotiate contracts?
(11) How can ERP implementation and organizational development activities be aligned over time?

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