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Modelling the Effects of Intangible Capabilities on ERP Implementation

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Abstract

Enterprise resource planning (ERP) system is well recognised as a key technological infrastructure that facilitates business operations and growth in a dynamic business environment. Implementation of ERP system however is mirrored by numerous problems, a fact well cited in many academic studies. Research addressing the reasons for ERP implementation problems has identified a plethora of success factors. Following a similar research direction, we leveraged on the resource based view (RBV) to investigate the effects of firms' capacity to deploy intangible resources with valuable and inimitable characteristics (termed as intangible capabilities) on successful ERP implementation. Three intangible capabilities were assessed, i.e. governance, knowledge and relationships. Using data collected from a survey with service firms in Malaysia, we found evidence that relationships capability effect towards successful ERP implementation was direct and significant. Further analysis revealed that governance capability reinforces the effects of knowledge and relationship capabilities toward successful ERP implementation. The empirical findings suggest that successful ERP implementation lie at the firms' capacity to deploy and reconfigure their intangible capabilities of valuable and inimitable characteristics to create reinforcing superseding effects. We conclude that governance capability plays the antecedent platform role to strengthen the effects of knowledge and relationships capabilities on ERP project's success.

Keywords: *Enterprise resource planning (ERP) system, RBV, intangible capabilities, Malaysian service firms*

INTRODUCTION

Investigations on the role of information systems (IS) toward improvements in organization's operational, tactical and strategic processes are not new in the literature. Numerous studies have found evidence of IS applications assisting firms in streamlining their business operations, enhancing operational flexibility, integrate disparate functionalities and improves both vertical and horizontal information flows (e.g. Aral et al. 2006; Brynjolffson and Hitt, 2000; Cooper and Zmud, 1990; Jonscher, 1983; Kuppusamy and Solucis, 2005; Kuppusamy et al. 2008). Some scholars however seem to contradict such view (e.g. Tait and Vessey, 1988) and argued that while IS applications do provide significant benefits to adopting firms, these applications can also lead to business downturn due to failed or poor implementation and/or acceptance of the system by related users. A similar stance is also promulgated in the context of Enterprise Resource Planning (ERP), an advanced IS application that helps a firm to unify different interfaces across the firm, thus enabling efficient and swift sharing of information (Bingi et al. 1999).

The adoption of ERP system has been cited as problematic in the literature (Cooke et al. 2001). Much research has been carried out to understand why ERP implementation fails. Some studies argue that the complexity of the system sometimes extends a firm's project schedule and budget, leading to delays or non completion of the project (e.g. Milford and Stewart, 2000). There are others who argue that since ERP project involves significant changes to organizational structure and processes, non-readiness to accept and manage new changes pose serious challenges to successful implementation (Davenport, 1998; Martin, 1998). The ERP literature has also identified a plethora of critical success factors (such as leadership quality, human skills and technology infrastructure) for successful implementation (e.g. Holland and Light, 1999; Nah et al., 2001). Most of these studies have loosely identified the success factors without intrinsic guidance of how these success factors, which often relates to different organisational resources, need to be strategically managed or used for ERP project purpose. More specifically, there seems to be little provisions on how organisational resources of intangible characteristics need to be strategically deployed to achieve successful ERP implementation. Such provisions are important, as firms that have planned to adopt ERP may possibly possess necessary resources to facilitate ERP implementation process, but poor effective deployment of organisational processes relative to intangible resources with valuable and inimitable disposition (a phenomenon Teece et al., 1997 termed as intangible capabilities) may delay or hinder successful ERP implementation.

Research on the importance of intangible capabilities is embedded within the Resource based view (RBV) (Penrose, 1959; Barney, 1991) of firm growth conceptualization. The RBV concept advocates on the role of firm capabilities (both tangible and intangible) in facilitating business competitiveness (Ray et al. 2004). While there are numerous studies on the role of tangible and intangible capabilities on business performance (e.g. Ravichandran and Lertwongsatien, 2004), research on the role of intangible capabilities toward successful ERP implementation are very limited. Research undertaken by Karimi et al., (2007) seems to be the only available study that has focused on a similar issue with some distinction. The authors found evidence of tangible and intangible capabilities reinforcing each others in ERP implementation process in a sample of manufacturing firms in the United States.

In our study, we follow the argument (e.g. Tanriverdi, 2006) of tangible capability such as IT infrastructure being noted as an easily imitable capability with little contribution toward improved business competitiveness. Intangible capabilities on the other hand is perceived as the real driver of business success (Chatterjee and Wernerfelt, 1991) as they fit perfectly well to the valuable and inimitable characterisation (Armstrong and Shimizu, 2006; Carmeli, 2004). A firm's capacity to deploy intangible capabilities may differ from their peer or competitor. This is primarily because intangible capabilities development in a firm is strongly influenced by the firm's work culture, experiences and limitations. In addition, while the management process of an ERP project may follow certain standard protocols imposed by the system's 'best practice' notion (Karimi et al. 2007), utilisation of unique or firm-specific organisational processes could become a valuable catalyst toward successful system implementation.

In this study, we draw on the RBV theoretical lens to investigate the effects of three intangible capabilities, namely *governance*, *knowledge* and *relationships* capabilities toward successful ERP system implementation in Malaysian service firms. We selected these three intangible capabilities due to two reasons. First, technology adoption in current business landscape requires adherence and utilisation of various governance mechanisms (Bernroider, 2008; Bowen et al. 2007). As ERP is known to be a complex system that adheres to 'best-practices', facilitation of effective governance processes are essential to safeguard the system's reliability and success (Bernroider, 2008). Thus, we are in the opinion that assessment of governance capability effects would indicate on the role and support of governance mechanisms in successful adoption of ERP system. Second, one of the core functionality of an ERP system is to facilitate management of knowledge flows within the using firm (Jones, 2005). The implementation process of an ERP system also entails extensive knowledge creation, sharing and dissemination activities, both from external consultant to project members, as well from the project members to system users (Stenmark, 2000; Vandaie, 2008). In line with the suggestions provided in ERP-knowledge management intersection literatures (e.g. Sumner, 2000; Soh et al. 2000), we argue that effective management of these knowledge are essential in ensuring successful ERP implementation. Third, implementation of a complex and time consuming ERP project requires strong cooperation and relationship building between all those involved in the project. Most critical success factor studies (e.g. Bingi et al. 1999; King and Burgess, 2006) have identified effective management of the cooperation and bonding amongst the ERP project members are essential for ERP success. Finally, as we explain in the ensuing section, these three intangible capabilities possess the valuable and inimitable resource characteristics. These rationales motivated our research focus on these three capabilities specifically.

We need to emphasise here that while we are leveraging on the RBV theoretical lens, this study have not incorporated the competitive advantage (dependent variable) component of the RBV in this phase of the research. Adopting the approach taken in most IS literature (e.g. Tanriverdi, 2005; 2006), the next phase of the research will incorporate 'business performance' as the proxy of competitive advantage. On this note, achievement of this study's research aim involves addressing the following research question: **What effects do governance, knowledge and relationship capabilities** *(i.e. firms' capacity to deploy and manage organisational processes relative to intangible resources)* ***have toward ERP system implementation success in Malaysian service firms?***

THEORETICAL FRAMEWORK

The primary foundation of the RBV is that a firm's growth or competitive advantage is associated with the type of resources that it possesses as well as the resources deployment capacity of the firm (Barney, 1991). This theory has its origin to the research work of Penrose (1959) who attempted to address the question of why firms in similar industries seem to have different performance outcomes. Penrose conceptualized that resources of firms can yield positive outcomes, provided that these resources are utilised strategically (Mahoney and Pandian, 1992). Further extensions to the theory was made by Barney (1986, 1991) who suggested that firms'

resources need to have valuable, rare, inimitable and non-substitutable (VRIN) characteristics to create and sustain competitive advantage.
The RBV framework defines resources as both tangible and intangible resources (Barney et al. 2001). Some studies suggested that the term resources can also be extended to include 'capability' (e.g. Barney and Clark, 2007; Ray et al. 2004; Makadok, 2001). Capability is defined as an "organisational embedded non-transferable firm specific resource whose purpose is to improve the productivity of the other resources possessed by the firm" (Makadok, 2001, p.389). Barney and Clark (2007) put forward that more recent studies are using these terms interchangeably. This seems to be the case in most IS literature (Bharadwaj, 2000; Mata et al. 2001; Tanriverdi, 2005, 2006). In this study, we adopt the term capability. Armstrong and Shimizu (2006) suggested that the 'valuable' and 'inimitable' characteristics are more appropriate to intangible than tangible capabilities as they are not easily obtainable from level playing field as it needs to be built within the firm. Further, as suggested by Barney (1991), a capability will be valuable if it can enable the firm to reduce their costs of operation. In the context of this study, we argue that a firm's capacity to deploy intangible capabilities would assist the firm to reduce their costs of ERP implementation, thus achieving successful implementation. As discussed earlier, ERP system implementation is cited as a costly process (Milford and Stewart, 2000) and could lead to incomplete or failed system implementation. Utilization of valuable and inimitable intangible capabilities can assist firms to complete their ERP implementation within their 'budget' and 'scheduled timeframe' – two metrics often used to denote successful ERP implementation (Wu, 2007).

Hypotheses Development

One of the most enduring problems faced by organization undertaking innovative activities is governing their technology functionalities as well as the processes and activities pertaining to financial issues. Having a sound governance strategy will provide better monitoring and control mechanisms to achieve the intended goal as efficient as possible. In IS literature, the term 'governance' has been used to broadly describe the policies, structures, and processes involved in managing technological functions (Brown and Sambamurthy, 1999; Weill and Broadbent, 2000). Governance is perceived to be critical in the case of ERP implementation as it involves adaptation to the 'best practices' of global business operation standards (Brown and Nasuti, 2005). Adhering to the best practices entails compliance to several standards, such as the Sarbanes Oxley Act (SOX), Section 302 (disclosure of internal controls), Section 404 (annual assessment of internal control effectiveness), Section 409 (disclosure to the public on material changes to firm's financial condition) and Section 802 (authentic and immutable record retention).

In recent years, new governance frameworks have emerged to induce greater control and adherence to best practices. In this context, the Control Objectives for Information Technology (COBIT), the Institute of Internal Auditors Research Foundation's Systems Electronic Security Assurance and Control – eSAC, and the IT Infrastructure Library – ITIL stands out (Brown and Nasuti, 2005; Salle and Rosenthal, 2005). The literature recognizes the COBIT standard as one of the best governance standard for technology implementation (Pathak, 2003, Ramos, 2004). The COBIT standard governs most aspects of technology implementation good practices that a business must follow in order to reap expected pay-offs from technological investment (Ramos, 2004). Our perspective in this study is that successful ERP implementation requires effective coordination and deployment of governance mechanism that entails adherence to guidelines or standards such as COBIT and Sarbanes Oxley. Following this contention, we hypothesise:

H1: Governance capability (GC) has a positive association with ERP implementation

There is a growing interest on knowledge as a critical source of competitive advantage in the literature (e.g. Corso and Paolucci, 2001; Malhotra et al. 2005). Firms are giving significant attention on effective management of knowledge in undertaking innovative activities (Hargadon, 1998). The importance of knowledge capability in ERP implementation has been explored in several studies (Chan et al. 2009; Parry and Graves, 2008; Pan et al. 2006; Vandaie, 2008; Xu et al. 2006). While one of the primary aim for firms to implement ERP system is to improve knowledge sharing activities within the firm (Vandaie, 2008), ERP implementation requires effective knowledge management capability (Jones, 2005). Successful ERP implementation requires engagement of a variety of expertise from both within and outside the firm, cross-functional and cross-divisional knowledge transfer (Baskerville et al. 2000). Possession of skilled employees is also critical in ERP implementation (Vandaie, 2008) as their tacit and explicit knowledge will be valuable in the process of getting the system up and running (Robey et al. 2002). Within the realm of this study, knowledge capability facilitates successful ERP implementation in the context of knowledge acquisition, conversion, transfer and dissemination (Li et al., 2006). An ERP project demand the adopting firm to acquire significant extent of knowledge from external parties such as the consultants and vendors. Proper acquisition of

new knowledge is vital to ensure that the knowledge is utilised effectively. Further, throughout the system implementation process, new tacit knowledge will emerge through discussions, communication, and practice between various interested people. The emerging new knowledge needs to be converted into internal information to be used by all other parties, especially by the ERP project team and the end users. In addition, ERP implementation creates knowledge gaps due to different understanding or absorptive capacity between vendors, consultants, internal experts and end users. Firms need to ensure that ERP knowledge obtained is successfully transferred between these parties. Apart from transferring the knowledge, firms also need to have adequate processes to facilitate access to important and relevant knowledge. Effective management of organisational processes relative to these knowledge activities could become a conductive platform for successful ERP implementation. Hence, we propose:

H2: Knowledge capability (KC) has a positive association with ERP implementation

Relationships capability is defined as the ability to coordinate and engage communication and cooperation between IT and business groups (Karimi et al. 2007). Engagement of different parties, primarily the IT business unit and other management units also entails sharing of risk and responsibilities relative to ERP project. Good relationship is also about trust emerging through interactions between different people (Nahapiet and Goshal, 1998). Effective implementation of technology is chiefly associated with the quality of relationship between different user/implementer groups (Ravichandran and Lertwongsatien, 2005). Appreciation and understanding of different parties' environment can help to deliver expected IT implementation business value (Ravichandran and Rai, 2000). Apart from internal relationship (between people within the firm), successful technology implementation is also dependent on external partnership with vendors and consultants. This notion is vital in the context of ERP implementation as the project involves cooperation and participation of internal staffs as well as external people. Good relationship management ensures efficient knowledge sharing and trust building between involved parties (Ross et al. 1996; Wang et al. 2006). Such commodity is not easily tradeable as it needs to be created upon trust and cooperation between different people within and outside the firm, and often involves a long period of time (Karimi et al. 2007). Organisational processes enabling relationship building and maintenance could play pertinent role in ERP implementation success. We thus propose:

H3: Relationships capability (RC) has a positive association with ERP implementation

Organisational capabilities (tangible and intangible) represent strategic framework that assist in successful completion of intended tasks (Karimi et al. 2007). Past studies highlights that firms' organisational capabilities that mutually reinforce each other will generate better opportunity to outperform competitors than firms that focus exclusively on individual capability (Tanriverdi et al. 2005). Successful completion of complex projects often requires significant collaboration of different capabilities in synch (Grant, 1991; Melville et al. 2004; Ray et al. 2005), a view that fits quite well with ERP system. Studies by Powell and Dent-Micallef (1997), Ray et al. (2005) and Ravichandran and Lertwongsatien (2005) for instance have found that complementarities between different capabilities such as IT, human resource and shared knowledge contributes significantly to firm performance. In other words, organisational capabilities with mutually reinforcing effects can have a combined impact on successful ERP implementation. Hence, we propose:

H4: Intangible capabilities have a combined positive association with ERP implementation

The research models of this study are given in Figure 1 and Figure 2. Figure 1 shows the direct association between the governance capability (GC), knowledge capability (KC) and relationships capability (RC) toward ERP implementation. Figure 2 represents the fourth hypothesis, with the double arrowed lines indicating the various possible combined effects between the three intangible capabilities to ERP implementation.

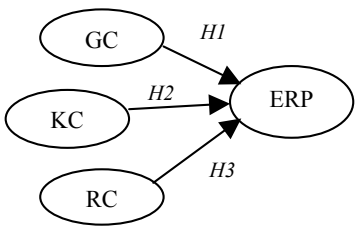


Figure 1: Model 1 in support of H1 – H3

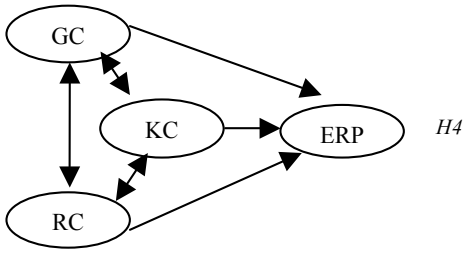


Figure 2: Model 2 in support of H4

RESEARCH METHOD

This research was undertaken in several stages. First, following a literature review we developed the scales used in the survey instrument. Second, we asked a group of experts consisting of three senior ERP consultants, four managing directors of service enterprise and three ERP project leaders, to ascertain the relevance and validity of the questionnaire. Third, experts review required modification to the survey questionnaire, with the final questionnaire mailed to 488 ERP using service firms in Malaysia in March 2009. The questionnaire was targeted to senior executives with reasonable amount of experience and involvement in their firm's ERP project. The survey questionnaire consisted of two sections. The sample firms' profiles (i.e. number of years in business; size of firm based on the number of full-time employees' equivalent; type of business, revenue per annum, preferred ERP vendor; the time period incurred to implement their ERP system) were probed in the first section. The questions related to GC, KC and RC were structured in the second section of the questionnaire. These questions were measured using a five-point Likert scale (*1 = strongly disagree* to *5 = strongly agree*). By mid April 2009, a total of 90 firms responded to the survey, representing an 18% response rate.

In this study, we used the Structural Equation Modelling (SEM) approach that integrates econometric prediction and psychometric measurement of latent unobserved variable with multiple observed indicators. Such approach enables simultaneous handling of construct measurement and structural relationships among the constructs (Venaik et al. 2005). We employed the Partial Least Square (PLS) path modelling approach to SEM to test both Model 1 (direct effects of intangible capabilities) and Model 2 (combined effects of the intangible capabilities). The PLS approach has several advantage over the other SEM approaches such as LISREL and AMOS. First, PLS can estimate second order constructs and constructs with both formative (construct with composite indicators) and reflective factors (reflection of the unobserved underlying construct) (Karimi et al. 2007). Second, PLS approach has fewer assumptions to satisfy than the other SEM approaches. Third PLS caters for small sample size study such as the present one. The significance of the parameter estimation is judged based on the *t-statistics* generated from bootstrapping procedures (Chin, 2001). The SmartPLS software was used for this purpose. We wish to acknowledge our understanding on one major drawback of PLS path modelling which relates to the non-reliance on data distribution assumptions. Due to this characteristic, some authors (e.g. Temme et al. 2006) argued that the significance values for the parameters estimated may not be accurate. The small response rate however does not allow us to use the conventional SEM approaches (e.g. AMOS). In this research, GC, KC and RC are reflective first order factors and measured by five items in each factor. Following Karimi et al. (2007), ERP implementation was measured using three formative factors: ERP functional scope, organisational scope and geographic scope.

RESULTS

Majority of the responding service firms employs between 200 to 500 workers (52%) and are primarily involved in the telecommunications business (51%). Most of the firms are in business for less than 5 years (56%) with an earning capacity of less than USD200, 000 per annum (53%). In terms of ERP software implementation, the entire sample indicated of using SAP AG's software, mostly in a single site (66%), Close to 54% of the firms indicated spending an average of USD1.5 million for the ERP project, with a majority of them implemented the software in less than a year (53%). The validity and reliability of the reflective measurement in both Model 1 and Model 2 were tested using the inter-item correlations, convergent validity, discriminant validity and composite reliability criterions. The validity of the structural model was evaluated using the R^2 of the latent endogenous variable and path coefficients (*bootstrap t-statistics*) (Ringle, 2008). The inter-item correlations in both models are above 0.30 threshold value, while the convergent validity (AVE) is above the 0.50 threshold in both models. The discriminant validity (computed as a square root of AVE) is above the inter-item correlation values. Lastly the composite reliability values are above the 0.60 threshold.

Inter-item correlations

	GC	KC	RC
GC	1		
KC	0.57	1	
RC	0.38	0.31	1

Convergent validity and Discriminant validity

	AVE	SQRT AVE
GC	0.68	0.82
KC	0.58	0.76
RC	0.55	0.74

Composite Reliability

	Value

Inter-item correlations

	GC	KC	RC
GC	1		
KC	0.68	1	
RC	0.38	0.36	1

Convergent validity and Discriminant validity

	AVE	SQRT AVE
GC	0.73	0.83
KC	0.56	0.75
RC	0.55	0.74

Composite Reliability

GC	0.80
KC	0.74
RC	0.82

Model 1: Validity and reliability test outcomes

	Value
GC	0.84
KC	0.70
RC	0.82

Model 2: Validity and reliability test outcomes

Table 1 presents the results of both, Model 1 and Model 2, structural evaluations.

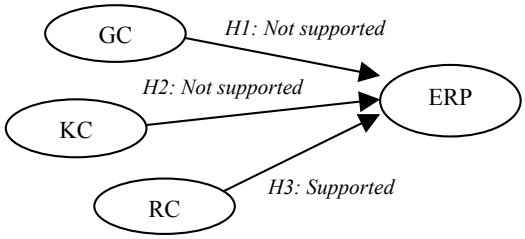
Table 1: Structural model results

Paths Hypothesized relationships:	Model 1	Model 2
	R^2 = 0.194	**R^2 = 0.192**
GC → ERP (H1)	0.018 (0.147)	*NA*
KC → ERP (H2)	0.203 (1.859)$^{+}$	*NA*
RC → ERP (H3)	0.346 (4.205)***	*NA*
GC → KMC KC → ERP (H4)	*NA*	0.683 (11.838) *** 0.208 (2.519)**
GC → RC RC → ERP (H4)	*NA*	0.393 (5.345)*** 0.348 (6.129)***

*Notes: *** $p < 0.001$;** $p < 0.05$; + $p < 0.10$*

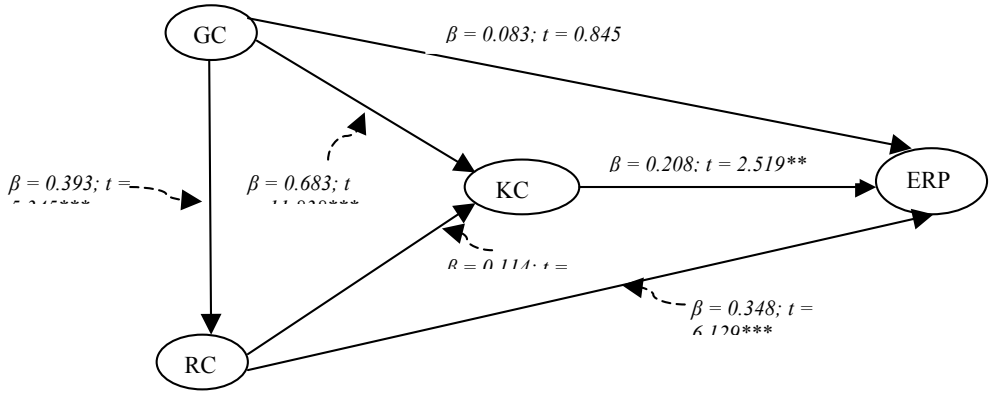
Model 1

The result presented in Table 1 show that the structural link from GC → ERP is positive but insignificant ($\beta = 0.018$; $t = 0.147$). The result does not provide support for H1. The path relationship between KC → ERP is positive but only mildly significant ($\beta = 0.203$; $t = 1.859$; $p < 0.10$), indicating a weak support for H2. RC on the other hand has a positive and significant structural link with ERP ($\beta = 0.346$; $t = 4.205$; $p < 0.001$), thus H3 is strongly supported. This model explained a 19.4 percent variance (see Figure 3).



Model 2

Estimation of Model 2 involved several tests to identify the optimum combined path relationships between the three intangible capabilities. We found that the structural link emerging from GC to the other two capabilities to be the best achievable outcome. Such decision is supported by the measurement of this path's large effect size of 0.34, which was computed based on the formula: (R^2 *included* – R^2 *excluded*) / (1-R^2 *included*) (Ringle, 2008). As shown in Table 1, there is a significant and positive structural path emerging from GC to KC ($\beta = 0.683$; $t = 11.838$; $p < 0.001$), which reinforced KC's positive and significant effect toward ERP ($\beta = 0.208$; $t = 2.519$; $p < 0.05$). Note that in Model 1, KC individually had a very mild effect on ERP implementation. GC also has a positive and significant association with RC ($\beta = 0.393$; $t = 5.345$; $p < 0.001$). Subsequently, the effect of RC toward ERP is much stronger as opposed to its individual direct effect. This is evidenced via RC's higher t-statistics value in Model 2 ($\beta = 0.348$; $t = 6.129$; $p < 0.001$). Model 2 explained a 19.2 percent variance, only marginally lower than the variance in Model 1. The result indicates that H4 is well supported (see Figure 4).



DISCUSSION AND CONCLUSIONS

This research was driven by the question of the extent intangible capabilities effects ERP implementation in service firms. Employing survey data from a sample of service firms in Malaysia, we examined the significance of three intangible capabilities (i.e. governance, knowledge and relationships) toward successful ERP implementation in these firms. The empirical finding suggests that only relationship capabilities have had a positive and significant direct effect toward successful ERP implementation. Past studies however have found evidence of knowledge (Karimi et al. 2007) and governance (Bernroider, 2008) having significant effects on ERP projects. Thus examination of a direct effect model may not be sufficient to explain the effects of intangible capabilities toward successful ERP implementation. An in-depth analysis revealed that governance capability reinforces the effects of knowledge and relationship capabilities toward ERP implementation, which was evidenced from the higher *t-statistics* estimation for knowledge and relationships capabilities. The empirical results imply that co-presence of different intangible capabilities with valuable and inimitable characteristics supersedes the individual effects of intangible capabilities toward successful ERP implementation. In practical sense, ERP adopting firms could experience greater implementation success if organisational intangible capabilities are not treated in seclusion with each other but strategically managed to mutually reinforce each other in achieving intended goals.

In the context of this study, the findings suggest that governance organisational processes, especially related to information technology (IT) audits and operational and financial risks reviews, plays the antecedent role with reinforcing effects on the role of project management tools and ERP technical knowledge transfer activities (*knowledge capability*) in ERP implementation process. The presence of good governance mechanisms also facilitates employee acceptance and involvement with the ERP project, as well as the bonding processes between project team members and internal and external stakeholders' to take place accordingly.

This study has few pertinent theoretical and practical contributions. From a theoretical perspective, this study contributes to the existing RBV-ERP intersection studies by incorporating intangible capabilities effects toward successful ERP system implementation. From a practical perspective, the finding of this study suggests that firms investing in ERP system needs to be aware of the importance of intangible capabilities in successful system implementation. In other words, apart from the tangible resources, firms also need to 'invest' in appropriate governance processes that foster efficient knowledge creation and sharing procedures as well as communication and cooperation within the firm. These processes if deployed effectively, leads toward successful ERP implementation.

This study is part of an ongoing research project. Two key limitations of the study need to be mentioned here. First, we have used only three intangible capabilities, which could have possibly resulted in a weak R^2. A R^2 of 0.194 and 0.192 describes a weak structural model (Chin, 1998). We move forward in this research by addressing this issue in the next phase of the study by incorporating more variables such as human capital capability, project management, etc. Second, we used the key respondent approach to capture the relevant information. We targeted a key person from senior management position to answer our questions. The responses could differ if they were answered by other personnel such as IT executives or users. A cross-validation with different group of respondents would have increased the robustness and confidence of the empirical results (Karimi et al., 2007). Due to time limitation this approach was not followed in this study. We intend to rectify this issue in the next stage of the research. Apart from addressing the identified limitations of the study, we will also be giving significant concentration on the complementarities effect of organisational capabilities to ERP implementation success. A large scale survey will be carried out between September to

December 2009 in Malaysia and Taiwan. We anticipate obtaining higher response rate since the new survey will be carried out for mixed industries as opposed to service industry per se and in two countries with similar socio-economic demographics landscape.

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