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E-BUSINESS USE AND VALUE FOR FAST GROWTH SMALL-TO-MEDIUM ENTERPRISES IN TURBULENT ENVIRONMENTS

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Abstract

While e-business has been playing an increasingly role in facilitating firms to conduct businesses, there is a dearth of research examining the antecedents and outcomes of e-business use in the entrepreneurial small-to-medium enterprises (SMEs). Drawing upon the technology-organization-environment (TOE) framework and resource-based view (RBV) of the firm theory, we develop, theorize, and test an integrated theoretical model to evaluate the antecedents and consequences of e-business use in the fast growth SMEs context. We propose that IT resources, strategic IT alignment, market orientation, managerial perception of industry environments, and business partnerships are the key antecedents enabling fast growth SMEs to use e-business, and thus help these companies to achieve and sustain e-business value in turbulent environments. Structural equation modeling is employed to test our theoretical conceptualization on a cohort of 310 Australian fast-growth SMEs across different industrial sectors. The results confirm our conceptualization, highlighting the prominent role of IT, strategic planning, culture, managerial skills, and business partnerships in SME success. Our study provides initial empirical evidence to understand the relationship between IT and entrepreneurial SME performance. These findings have important implications for research and business practices.

Keywords: IT Resources, Strategic IT Alignment, Market Orientation, Managerial Perception of Industry Characteristics, Business Partnerships, E-business Capability, E-business Value, Technology-Organization-Environment Framework, Resource-based View of the Firms Theory, Fast Growth SMEs

1 INTRODUCTION

Electronic business (e-business) has been widely incorporated into business strategies, helping firms to grow, identify new markets, and outperform their competitors. Firms use e-business to speed up transactions along value chain activities, achieve real-time communications, lower transaction costs, and enhance flexibility (Lee and Whang 2001). In this study, e-business is defined as the application of Internet-based technologies to conduct both downstream and upstream business activities along the value chain (Zhu and Kraemer 2005).

Information systems (IS) research (Rai et al. 2006; Sambamurthy et al. 2003) highlights the importance of digitization for technology use and firm performance. Specifically, the adoption, use, and value of e-business has gained thematic attention in the IS field (Lin and Lin 2008; Zhu and Kraemer 2005). Notwithstanding, extant research is limited essentially in four ways. First, most research depends heavily on case studies using small samples of organizations; there is limited quantitative data to explore e-business activities or gauge the scale and characteristics of e-business and its impact on firm performance (Lu and Ramamurthy 2011). Second, investigations testing an integrated model of the antecedents and consequences of IT use, and firm performance are rare. Previous IS research has explored the relationships between IT investments and firm performance (Bharadwaj et al. 1999), IT use and firm performance (Armstrong and Sambamurthy 1999), and determinants of IT use (Teo et al. 2003). Nevertheless, the IT payoff literature, in general, has not considered IT usage, whereas the usage literature has largely overlooked issues concerning firm performance (Mishra et al. 2007). Accordingly, a nuanced understanding of the process of IT use and associated implications is absent in the literature. Third, the ongoing debate on IT business value has focused predominantly on large firms, with comparatively little attention paid to SMEs. It is widely acknowledged that SMEs are the driving engines of most economies (OECD 2010). For example, in the US, small businesses are a seed-bed for the creation of two-thirds of new jobs, contributing to 39% of GNP (Johnston et al. 2007). In Europe, 99.8% of firms are classified as SMEs, constituting two-thirds of turnover and business employment (Carayannis et al. 2006). In Australia, about 94% - 96% of businesses can be categorized as SMEs, contributing to an estimated 30% of GDP (OECD 2007). Particularly, fast growth SMEs¹ represent a substantial proportion of power in the small business sector and creating wealth, income, and jobs (Delmar et al. 2003). Nevertheless, there is a dearth of literature focusing on the way in which fast growth SMEs utilize IT to create business advantage. Finally, the conditional impact of volatile business environments on the capability-performance link has been frequently alluded to in the IS literature (Rai et al. 2012). Yet, few empirical studies have been undertaken to test this claim, particularly in the SME context. Therefore, the value that IT contributes to SME business success in turbulent environments still remains open to question.

In the present study, we aim to narrow these gaps, synergizing the literature to achieve a comprehensive understanding of IT business value in the e-business context, through a focused study on fast growth SMEs in Australia. Drawing upon the technology-organization-environment (TOE) framework and resource-based view of the firms (RBV) theory, we develop, theorize, and test an integrated model of antecedent resources, e-business capability, and e-business value under turbulent business environments. We provide initial empirical evidence to understand how fast growth SMEs leverage e-business innovation to achieve outstanding business performance via building and enhancing essential organizational capabilities. The overarching research question addressed by this study is: In what way, does e-business help fast growth SMEs to achieve business value in competitive environments?

¹ Fast growth SMEs are those enterprises that “are willing to take risks, to be innovative, and to initiate aggressive competitive actions” and grow faster than their industry sector average (Upton et al. 2001).

This paper is structured as follows. The theoretical background section introduces the TOE framework and the RBV theory which form the backbone of our conceptual model for hypothesis formulation. The research method section outlines the procedures used for data collection, validation of the measurement properties of the constructs, and the test of the proposed research model. Next we present our findings and finally conclude with a discussion of findings, implications for research and practice, limitations and potential avenues for future research.

2 THEORETICAL BACKGROUND AND HYPOTHESES

E-business and Technology-Organization-Environment (TOE) Framework

Tornatzky and Fleischer (1990) developed a conceptual framework incorporating three key contextual elements: technology, organization, and environment to explain the processes by which firms adopt, implement, and employ technological innovations. The technology context describes both internal and external technologies relevant to firms, including existing technologies available in the market. The organization context is defined in terms of firm size and scope; centralization, formalization, and complexity of managerial structures; quality of human resources; and the extent of available internal slack resources. The environment context considers the arena within which firms conduct business: industry sector, competitors, and access to resources supplied by others. The TOE framework has been adapted to a number of IS domains, such as open systems (Chau and Tam 1997) and electronic data interchange (EDI) (Kuan and Chau 2001). More recent research (Mishra et al. 2007; Zhu and Kraemer 2005) extends the TOE framework to the e-business area which is relevant to this study.

While extensive research has been undertaken exploring the antecedents and consequences of e-business use in large firms, much less attention has been paid to SMEs, especially fast growth SMEs. This is significant because the potential impact of e-business depends on a variety of different constraints and contingencies related to organizational circumstances. The specific characteristics that fundamentally distinguish SMEs from large enterprises relate not only to environment, structure, strategy, decision process, and the dominant role of the founder/CEO, but also to organizational flexibility, proximity to markets, and quickness to react and reorient themselves (Raymond et al. 2005). Fast growth SMEs are entrepreneurial entities associated with risk-taking, proactive, and innovative attributes. E-business provides these companies with operational, managerial and strategic advantages such as great internal and external process integration, close links with customers and other business partners, great market penetration and expansion capabilities, rich information for decision-making, good competitive intelligence, and great access to external resources and expertise that contribute to the development of small businesses (Raymond et al. 2005). As high growth SMEs are largely responsible for increases in the economic development of industrialized countries in terms of employment and commercial balance, governments have promoted e-business as a mean to sustain and increase this development (Peet et al. 2002). Therefore, understanding which characteristics of fast growth SMEs' technolgocial, organizational, and environmental contexts influence e-business use is imperative.

Given the theoretical and empirical evidence, the TOE framework can be regarded as an appropriate conceptual driver for this research. In this study, we explore the antecedent resources within TOE framework from technology context (i.e., IT expertise, IT infrastructure), organization context (i.e., strategic IT alignment, market orientation), and environment context (i.e., managerial perception of industry characteristics, business partnerships). These factors are particularly relevant to e-business innovation and fast growth SME literature.

E-business and Resource-based View (RBV) Theory

Although the TOE framework has been employed widely to study IT adoption and use and has been described as simple, elegant, and broad-based, it does not provide a theoretical rationale for establishing causal relationships (Mishra et al. 2007). For this reason, IS research (Mishra et al. 2007; Zhu and Kraemer 2005) has combined the best attributes of the TOE framework with the resource-based view (RBV) of the firm. The RBV posits that enterprises succeed and gain business advantage through treatment of resources and capabilities as central considerations in strategy formulation and as

primary sources of profitability (Barney 1991). Makadok (2001, p.387) suggested that firms create value from two complementary and distinct mechanisms: “resource-picking” and “capability-building”.

IS research has employed the RBV theory to analyse the competitive advantage implications of IT. Although IT per se (e.g., hardware, software) does not provide distinctive advantages because it can be commoditized through competitive imitation and acquisition, leveraging IT with other organizational resources and managerial skills can help firms to gain sustainable business advantage (e.g., Mata et al. 1995). Scholars (e.g., Kohli and Grover 2008; Melville et al. 2004; Wade and Hulland 2004) have suggested that research on IT business value should explore the relationships between resources, a firm’s capability to deploy IT to improve intermediated business processes. Based on the above arguments, we develop our theoretical model integrating antecedent resources within TOE contexts, e-business capability, and e-business value. We aim to explore how entrepreneurial SMEs combine resource qualities to exploit resources in order to develop e-business capability and thus achieve e-business value in turbulent environments.

In this study, we define e-business capability as a firm’s ability to leverage e-business technology in order to conduct upstream and downstream value chain activities. E-business value refers to the impact of e-business capability on firm performance, measured by sales performance, operational efficiency, relationship development, and customer satisfaction (Zhu and Kraemer 2005). According to Porter (2001), it is critical for organizations to extend their boundaries and link integrated processes with upstream (i.e., suppliers/business partners) and downstream (i.e., customers) partners along value chains. In line with this view, we conceptualize e-business capability as a multidimensional construct encompassing five dimensions: communication with customers, order taking, internal communication, procurement, and communication with partners. This conceptualization is consistent with Zhu (2004), who suggested that e-business capability represents a firm’s ability to use e-business to support order cycle activities along a value chain including providing information to customers, facilitating transactions, and working together with suppliers/partners to fulfil customer orders. These five dimensions are discussed below.

Communication with Customers: Companies use e-business technology to communicate with customers. For example, web-based systems provide useful information about a firm’s products and services, and navigation and online purchase functionalities to customers. Web-based systems are a communication platform to familiarize customers with company protocols, enabling direct online choice and purchase of customized products.

Order Taking: Provision of web-based information can lead to online purchases or business transactions. E-business capability includes online transaction functions, involving taking customer orders, accepting customer payments electronically, and enabling customers to track their order status.

Internal Communication: Internal communication refers to use of e-business to facilitate internal communication between employees in different departments and different locations, manage projects and coordinate new product development teams in the focal firm.

Procurement: Procurement refers to use of e-business to link with suppliers for purchasing input materials (Zhu 2004). E-business capability involves the ability to enable firms to search and locate potential suppliers online, to place and track orders with suppliers electronically, and to employ online marketplaces to source suppliers.

Communication with Partners: Firms need to work and communicate effectively with their suppliers/business partners to fulfil customer orders. E-business capability can enable firms to work closely with suppliers/business partners to develop, coordinate, fulfil, and to deliver products and services on time, meeting customers’ specifications.

Figure 1 depicts a hypothesized model of antecedent resources, e-business capability, and e-business value, environmental turbulence, and is followed by discussion and formulation of testable hypotheses.

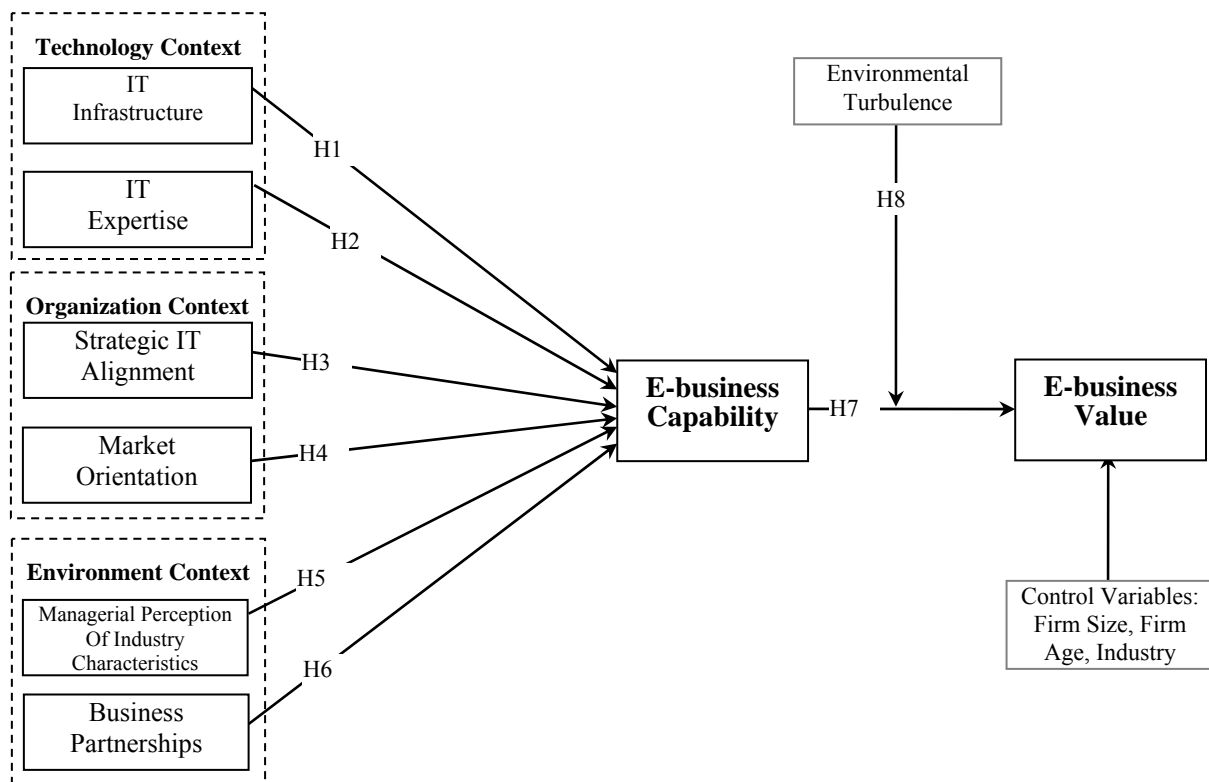


Figure 1. Hypothesized Model

Technology Context

E-business is enabled by the existing technology base in use by an organization. IT infrastructure provides a reliable technological platform on which e-business capability can be built, helping organizations to communicate internally and also with business partners along value chains, to take customer orders online, and to speed up transaction processes (Zhu 2004). IT infrastructure fosters strong links between focal firms and their trading partners, enabling firms to share information, coordinate, innovate, and exploiting business opportunities, and facilitating adaptation to changes in business environments (Rai et al. 2006). Solid and flexible IT infrastructure helps firms to innovate and to make continuous improvement to products/services so as to attain business advantage (Zhu and Kraemer 2005). A reliable and flexible IT infrastructure fosters strong links between fast growth SMEs and their suppliers/business partners and customers, leading to the development of robust e-business capability (Bi et al. 2011). Thus, we hypothesize that:

H1. IT infrastructure impacts positively on e-business capability.

IT technical skills contain employees' knowledge of programming, system analysis and design, and competencies in emerging technologies (Bharadwaj 2000). Fink and Neumann (2007) posited that IT employees with extensive business experience and skills in IS development enable firms to integrate IT strategy and business strategy, to develop reliable and cost-effective systems for businesses, and to anticipate business needs sooner than competitors. In regard to e-business innovation, researchers (Lin and Lin 2008; Zhu and Kraemer 2005) suggest that IT expertise increases the propensity for firms to successfully develop e-business capability. Not surprisingly, fast growth SMEs that have IT employees holding necessary technical skills and knowledge about e-business tend to develop e-business applications effectively and enable these firms to use e-business to conduct business activities along the value chain efficiently (Bi et al. 2013). Thus, we hypothesize that:

H2. IT expertise impacts positively on e-business capability.

Organization Context

Organizational factors can constrain, facilitate, or even enhance the implementation and use of e-business (Teo et al. 2003). Previous IT innovation research has emphasized that the success of IT adoption and use requires top managers' support (Armstrong and Sambamurthy 1999). Nevertheless, Purvis et al. (2001) cautioned against proposing direct relationships between top management commitment and IT use, suggesting that this effect can be mediated by other organizational factors. Entrepreneurial SMEs are typically characterized by the centrality of their founders/CEOs, which influences firm culture, strategy, and behaviors (Zahra et al. 2004). Thus, rather than investigating direct links between top management support and e-business use, we examine the mediated variables such as strategic planning (i.e., strategic IT alignment) and culture (i.e., market orientation). These factors are the key determinants for SMEs to use IT innovations (Oh and Pinsonneault 2007; Raymond and Bergeron 2008).

Strategic IT alignment is a strategic planning resource, ensuring that firms use IT and implement IT-based strategies successfully (Powell and Dent-Micallef 1997). Strategic IT alignment represents patterns of deployment of IT applications to support business strategies geared towards reducing costs and increasing revenue (Tallon et al. 2000). IS research (Kearns and Lederer 2003) demonstrates that firms capable of creating symbiotic IT-planning relationships tend to effectively align IT resources and organizational resources with strategic purposes and market positions in order to reduce cost and increase productivity, and to achieve sustainable IT-based competitive advantage. Recent IS research (Cragg et al. 2011; Raymond and Bergeron 2008) also highlights that aligning IT strategy with business objectives leads to SME business success. Strategic IT alignment links firm performance by providing a basis for focal firms to integrate different business processes within value chain members, permitting members to codify jointly valuable market knowledge into explicit strategies, and coordinating strategic planning processes that are critical for organizing and allocating resources effectively (Tallon and Pinsonneault 2011). Thus, we hypothesize that:

H3. Strategic IT alignment impacts positively on e-business capability.

Market orientation is a firm's culture that "most effectively creates the necessary behaviors for the creation of superior value for buyers and, thus, continuous superior performance for the business" (Narver and Slater 1990, p.21). Market orientation consists of competitor orientation and customer orientation, which is a valuable cultural resource. Fast-growth SME research (Tan 2007) highlights that market-oriented behavior is a key determinant of business advantage. Competitor orientation involves an ability and willingness to identify, analyse, and respond to competitors' actions (Narver and Slater 1990). Using target rivals as benchmarks, competitor-oriented businesses identify their own strengths and weaknesses on an ongoing basis (Han et al. 1998). Attention to competitive factors provides businesses with a proactive disposition to shape their competitive environments and strategies (Jaworski and Kohli 1993). Businesses engaged in environmental scanning and adaptation are highly likely to lead their industry, implementing e-business practices and exhibiting robust levels of e-business capability (Li et al. 2010). Competitor-oriented enterprises understand how to use e-business technology to enhance communication internally and externally; and to coordinate processes, appreciate their current market position, and to be prepared to take on new challenges (Wu et al. 2003). Furthermore, businesses with heightened sensitive to competitors' initiatives tend to invest intensively in order fulfilment processes and are prepared to take advantage of timely investments (Hurley and Hult 1998). Customer orientation involves an organization's ability to understand target buyers in order to create superior value, to take proactive actions towards meeting customer needs, and to predict future market requirements (Narver and Slater 1990). Customer-oriented firms tend to build innovation capabilities and improve customer value through technologies (Hurley and Hult 1998). Customer-orientated businesses are likely to be proactively disposed towards technological innovations that facilitate efficient customer transactions and robust customer relationships (Li et al. 2010). Moreover, customer orientation leads to boundary spanning and collaborative activities across firms to handle customer needs efficiently and to develop responsive value chains that are attuned to

market changes (Han et al. 1998). Accordingly, customer-oriented businesses are more likely to adopt proactive approaches that enhance e-business capability in operational processes. Based on the above arguments, we hypothesize that:

H4. Market orientation impacts positively on e-business capability.

Environment Context

In the digital business environment, e-business use is influenced by environmental factors related to industrial characteristics (Dong et al. 2009). Organizational researchers (Gerloff et al. 1991) suggest that an environmental factor can be constructed as a perceived variable. Because an environment is enacted through managerial perception, this awareness might be more effectively related to strategies, actions, and performance than the objective attributes of an environment (Sharma 2000). An underlying assumption is that perception influences the ways firms observe, interpret, and learn about their environment, make strategic choices, and take actions (Jackson and Dutton 1988). These arguments are supported by Penrose (1959), who posited that managerial perception of environment shape a firm's opportunity set, enabling companies to detect opportunities and then act on them.

Managerial perception of industrial characteristics includes perceived threats from competitors and perceived demands from customers (Lin and Lin 2008; Wu et al. 2003). Wu et al. (2003) suggested the imperative role of powerful external constituencies in pushing firms to adopt and use e-business. Managerial perception of competitive pressure and customer power influences e-business practices in a number of ways. Innovations in the adoption and use of e-business can change industry structures and competition rules, exerting pressure on firms to adopt new technologies and associated business processes (Zhu and Kraemer 2005). First-movers of e-business technology can be advantaged by streamlined communication channels and transaction processes, intra- and inter-firm collaborations, and new market opportunities (Dong et al. 2009). Christensen and Bower (1996) posited the effect of customer power in forcing businesses to invest in improved technologies. Wu et al. (2003) found that when customers wield substantial power, they will leverage this power to pressure firms to adopt and use new technologies in improving business processes. With the popularity of e-business, customers can control their interaction with companies. Customers have grown accustomed to features such as online customer service, order tracking, and updates via email. Correspondingly, increased customer power will force firms to adopt and use e-business that enable streamlined communications along the value chain. Building on these arguments, we argue that as entrepreneurial SMEs are customer-oriented, these companies tend to be forward-looking, proactively responding to and even shaping customer needs (Zahra et al. 2004). Accordingly, both managerial perception of competitive pressure and managerial perception of customer power play a central role in forcing fast-growth SMEs to enhance their e-business capability. Thus, we hypothesize that:

H5. Managerial perception of industrial characteristics impacts positively on e-business capability.

Business partnerships are strategic associations between independent firms, acknowledging a high level of inter-dependence to achieve mutual benefits (Lee and Lim 2005). Open and trusting business partnerships are often associated with mutually compatible benefits (Powell and Dent-Micallef 1997). Rapid growth SMEs tend to engage proactively in inter-organizational partnerships to build resources during rapid growth phases (Raymond et al. 2005). Close partnerships reflect the degree to which firms coordinate their strategic activities such as collaborative planning, forecasting, and replenishment. Within the digital business context, strategic business relationships facilitate sharing and integration of planning, resources, and competencies (Kim et al. 2006). Close business relationships enable firms to use e-business successfully along value chain processes, facilitating communications, strategic integration processes, and leveraging IT strategically (Dong et al. 2009; Rai and Tang 2010). Thus, we hypothesize that:

H6. Business partnerships impact positively on e-business capability.

Linkage between E-business Capability and E-business Value

Drawing upon the RBV, we explain the interconnectivity between antecedent resources, e-business capability, and e-business value. Penrose (1959) argued that firms can be regarded as a bundle of resources and firm growth is facilitated by management's search for the best usage of available resources. Following this logic, we posit that e-business capability is built upon and enhanced by resources within and across organizations. The greater the extent of e-business use, the more likely firms will create e-business value (Zhu and Kraemer 2005). E-business extends a firm's boundaries and links integrated business processes among value chain members; firms with high levels of e-business capability tend to leverage internal and external resources effectively and efficiently, to enhance strategic collaboration and coordination within and across firms (Kim et al. 2006). E-business provides SMEs with new ways to outperform their rivals and to create new business opportunities by identifying activities that contribute directly to performance and looking outside operational boundaries (Raymond et al. 2005). E-business capability involves internal and external resources, helping SMEs to respond to market requirements, to establish relationships with business partners and understand competitors (Wade and Hulland 2004). Empirical studies (Johnston et al. 2007; Raymond and Bergeron 2008) find that e-business has positive effects on SME performance, enabling growth and internationalization strategies. Thus, we hypothesize that:

H7. E-business capability impacts positively on e-business value.

Environmental turbulence represents market uncertainty and unpredictability and is a key factor influencing organizational strategies, capabilities, and competitive performance (Rai and Tang 2010). Turbulent environments lead to obsolescence of firms' capabilities, affecting innovation-related performance, and sustainability of business value (Eisenhardt and Martin 2000). In addition, turbulent environments impact on organizations' abilities to manage inter-organizational relationships. Beckman et al. (2004) contended that firms are likely to employ alliance reinforcing strategies (i.e., exploiting relationships with existing business partners) rather than using alliance broadening approach (i.e., exploring relationships with new partners) when market uncertainties are high. Miller and Shamsie (1996) argued that business advantage can be sustained over an extended period of time in relatively stable business environments, but short-lived during turbulent periods. Although e-business capability provides firms with new opportunities, sustaining business value in high velocity markets can be a challenge (Eisenhardt and Martin 2000). Accordingly, environmental turbulence attenuates relationship between e-business capability and e-business value. Thus, we hypothesize that:

H8. Environment turbulence moderates negatively relationship between e-business capability and e-business value.

3 RESEARCH METHODOLOGY

3.1 Target Population and Survey Sample

The data used for testing our hypothesized model was collected through an online survey of 1,335 Australian fast-growth SMEs compiled by Business Review Weekly (BRW). The BRW Fast Growth enterprises are similar to Fortune's FSB 100 annual list of North America's fastest growing small companies. Key inclusion criteria for SMEs to enter the BRW fast-growth project are that their previous year's turnover must exceed AUD\$500,000; they must have fewer than 200 full-time employees; they cannot be a subsidiary of an Australian or overseas corporation; and they must not receive more than 50% of their revenue from a single client. Except for the turnover criterion, which is subject to indexing, the other criteria have remained constant. Fast-growth companies from this sample fall within Ghobadian and O'Regan's (2000) definition of SMEs.

3.2 Data Collection Procedures

A personalized email highlighting the academic nature of the study was sent to either the founder or CEO of all 1,335 fast-growth SMEs. In our emails, we emphasized the importance of having

respondents with a good understanding and overview of their firm's e-business activities to participate in our survey, urging the founder or CEO to personally complete the online questionnaire, where possible. A follow-up email was sent three weeks after the initial one, and a second reminder email another two weeks later. Respondents were assured of confidentiality. A total of 310 responses were obtained, which gave a gross response rate of 28.1%, after discounting 195 incorrect email addresses and 32 SMEs which declined to participate. All responses were filled by either the company founder or its CEO. We first tested the sample for non-response bias, using the approach suggested by Armstrong and Overton (1977). Differences in responses to all the constructs between early respondents (i.e., those that completed the survey upon the first invitation) and late respondents (i.e., those who replied to follow-up emails) were compared. Independent sample *t*-tests on each construct failed to reveal significant differences between early and late respondents (all *p*-values >.05), suggesting that non-response bias was not an issue. The profile of the responding firms in our study (Table 1) shows that they represent all major industry sectors. There is also equal distribution of companies in terms of their age (or years of establishment). All responding firms had achieved a growth rate in excess of 20%.

3.3 Common Methods Bias

As our study used a self-administered questionnaire and respondents were in a senior management position qualified to assess firm performance, measurement was subject to cognitive biases due to participants "seeking to present themselves in a favorable manner" (Thompson and Phua 2005, p.541). Anticipating such a possibility, we incorporated Marlowe and Crowne's (1961) Social Desirability Scale in our online questionnaire, inviting participants to complete this section as part of the survey. The incorporation of Marlowe and Crowne's (1961) Social Desirability Scale enabled us to assess all study items for social desirability response bias in order to address internal validity and psychometric aspects of instruments. Marlowe and Crowne's (1961) Social Desirability Scale has been used widely for checking cognitive biases (Ballard 1992). In this study, we tested common method bias using structural equation modeling (SEM) procedures recommended by Podsakoff et al. (2003) to examine the influence of social desirability on the research constructs. We found no significant relationships between the social desirability construct and the research constructs (all *p*-values >.05). Accordingly, social desirability does not contribute significantly to the model, suggesting that there is no common method bias.

Demographic	% (n=310)
Industry	
Information Technology	18.8
Property & Business Services	18.1
Personal & Other Services	9.6
Finance & Insurance	8.9
Communications	6.6
Other ^a	38
Company Age	
Less than 5 years	49
More than 5 years	51
Previous Year Growth Rate	21.9-759.5
CEO/Founder's Education Level	
Tertiary	53.9
MBA	16.6
Year 12	13.7
PhD or Doctorate	1.8
Other	14.0

Note. ^a Other industry sectors include Construction, Retail Trade, Manufacturing, Health & Community services, Wholesale Trade, Education, Transport & Storage, Accommodation, café, restaurants, Mining, Cultural & recreational services.

Table 1. Profile of Responding Firms

3.4 Constructs

Measurement items were developed based on a comprehensive review of the literature. Adapting from Zhu and Kraemer (2005), we used three items to measure IT infrastructure reflecting a company's overall telecommunication facilities, IT infrastructure, and their capable functionalities to measure IT infrastructure. Following Lin and Lin (2008), we used three items to measure IT expertise reflecting organizational compatibility of e-business with existing operating practices, beliefs and value systems, and IT infrastructure. Adapted from Kearns and Sabherwal (2006), strategic IT alignment was measured by three items assessing the extent to which IT plans align with a company's mission, goals, objectives, and strategies, and the extent to which IT and business plans reflect each other. We adapted two first order factors: competitor orientation and customer orientation (Narver and Slater 1990) to form the second-order construct of market orientation. Following Lin and Lin (2008), and Wu et al. (2003), we used measures of (a) managerial perception of competitive pressure and (b) managerial perception of customer power to form the second-order formative model of managerial perception of industrial characteristics. Adapting from Dong et al. (2009), we measured business partnership with the degree of strategic planning and collaboration between a company and its business partners. We adapted five first-order factors: communication with customers, Order taking, internal communication, procurement, and communication with partners (Wu et al. 2003) to form the second-order construct of e-business capability. Adapting from Wu et al. (2003), we used the measures of (a) sales performance, (b) operational efficiency, (c) relationship development, (d) customer satisfaction to form the second-order formative model of e-business value. Following Rai et al. (2010), environmental turbulence was measured by four items, reflecting general market conditions of uncertainty or unpredictability associated with changes in consumer preferences, competitive intensity, and technological turbulence. As control variables, we used number of employees to measure firm size, employed number of years since business start-up to measure firm age, and used a series of industry dummies to control for exogenous factors at the industry level.

3.5 Data Analysis

We employed Smart-PLS (Ringle et al. 2005) for data analysis. We used the bootstrapping resampling method with 500 samples and $n=310$ cases per sample in the full model. We first used SPSS for verifying construct validity and reliability for the reflective first-order factors. Convergent and discriminant validity are confirmed by exploratory factor analysis: (1) all items loaded on the expected factors with a loading score greater than 0.50. Moreover, the own factor loading scores are higher than all cross loading scores. (2) all eigenvalues of the first-order constructs are larger than the suggested value of 1.0; (3) the communality scores are all higher than the suggested value of 0.50. These results indicate adequate reliability (Hair et al. 2006). Second, construct reliability was assessed by identifying the composite reliability scores of the first-order constructs generated from PLS, all of which are above 0.89, suggesting acceptable internal consistency. The square roots of the Average Variance Extracted are greater than all other cross correlations. This shows that all first-order constructs capture more construct-related variance than error variance. These results demonstrate adequate convergent and discriminant validity for all first-order constructs. To test for multicollinearity, collinearity diagnostics for all constructs were also conducted. The analysis shows that the tolerance values and their inverse VIFs (as shown in Table 2) are all less than the acceptable cut-off points 3.33 (Cenfetelli and Bassellier 2009). These findings imply no major multicollinearity problems.

	Mean (STD)	α	VIF	1	2	3	4	4a	4b	5	5a	5b	6	7	7a	7b	7c	7d	7e	8	8a	8b	8c	8d	9
1. ITIF	5.53 (1.08)	.83	1.57	--																					
2. ITEP	4.65 (1.69)	.86	1.69	.49	.79																				
3.SITA	5.27 (1.49)	.91	1.92	.42	.50	.85																			
4. MO	--	--	--	.22	.32	.41	--																		
4a. COMO	5.12 (1.36)	.88	1.44	.13	.21	.29	.77	--																	
4b. CUSO	6.23 (0.84)	.80	1.57	.23	.31	.38	.89	.39	.65																
5. MPIC	--	--	--	.28	.41	.49	.25	.25	.18	--															
5a. CMPR	4.96 (1.45)	.85	2.78	.31	.41	.45	.25	.24	.19	.93	--														
5b. CUSP	4.41 (1.72)	.91	2.66	.23	.36	.48	.22	.24	.15	.95	.65	--													
6.BP	4.29 (1.61)	.95	1.81	.27	.30	.35	.28	.24	.23	.29	.23	.31	.87												
7.EBC	--	--	--	.44	.49	.51	.36	.25	.33	.49	.46	.47	.49	--											
7a. COMC	5.45 (1.35)	.78	2.21	.35	.43	.50	.31	.16	.32	.50	.46	.48	.27	.78	.66										
7b. ORDT	4.41 (1.77)	.77	1.61	.28	.34	.36	.26	.17	.25	.38	.32	.38	.26	.67	.43	--									
7c. INCM	5.37 (1.59)	.93	1.49	.37	.34	.34	.28	.18	.27	.35	.37	.30	.34	.68	.47	.24	--								
7d. PROC	4.17 (1.51)	.72	1.58	.32	.34	.31	.23	.15	.22	.27	.27	.24	.33	.67	.36	.44	.28	.65							
7e. COMP	4.18 (1.78)	.89	2.11	.28	.33	.33	.23	.23	.17	.30	.25	.31	.50	.80	.55	.45	.35	.44	.82						
8. EBV	--	--	--	.29	.31	.38	.48	.37	.43	.33	.30	.32	.44	.47	.34	.35	.32	.36	.34	--					
8a.SP	5.48 (1.25)	.89	1.96	.22	.28	.37	.37	.35	.28	.34	.31	.32	.37	.37	.28	.31	.24	.26	.27	.82	.75				
8b.OE	4.26 (1.31)	.78	1.54	.21	.23	.32	.22	.27	.12	.31	.27	.32	.31	.43	.29	.32	.32	.31	.31	.76	.30	.65			
8c. RD	5.42 (1.11)	.87	1.94	.25	.21	.19	.34	.23	.33	.20	.18	.19	.41	.37	.23	.24	.24	.29	.31	.80	.44	.29	.80		
8d. CS	5.67 (0.98)	.86	2.06	.21	.21	.28	.48	.26	.50	.16	.15	.16	.23	.31	.26	.22	.23	.27	.18	.81	.50	.19	.60	.78	
9. ET	4.53 (1.34)	.74	1.03	0	0	.10	0	.01	.01	0	.02	.01	0	.01	.08	.05	.07	.00	.05	.10	.11	.01	.03	.09	.65

Note: (1) Correlations among formative constructs are shown in highlighted gray. (2) Constructs 4, 5, 7, and 8 are second-order constructs that are formatively measured. All other constructs are reflectively measured first-order constructs.(3) The diagonal elements are the square root of the AVE.

Table 2. Descriptive Statistics, Correlation Matrix, and AVEs of Constructs

4 RESULTS AND FINDINGS

The results indicate that the overall research model was supported. IT infrastructure has a positive effect on e-business capability, supporting H1 ($\beta=.19$, $p<.001$). IT expertise has a positive effect on e-business capability, supporting H2 ($\beta=.19$, $p<.001$). Strategic IT alignment positively facilitates e-business capability, supporting H3 ($\beta=.20$, $p <.001$). Market orientation significantly enhance e-business capability supporting H4 ($\beta =.12$, $p<.05$). Managerial perception of industry characteristics impact positively on e-business capability, supporting H5 ($\beta=.27$, $p<.001$). Business partnerships impact positively on e-business capability, supporting H6 ($\beta=.22$, $p<.001$). E-business capability has a significant impact on e-business value, supporting H7 ($\beta=.51$, $p<.001$). This model accounts for 50% of the variance in e-business capability and 27% of the variance in e-business value. Among control variables, none of them showed significant effects in the research model. Tests of moderating effect of environmental turbulence on linkage between e-business capability and e-business value show that environmental turbulence has no significant impact on the hypothesized relationship.

These results culminates in seven significant findings. First, our results suggest that both IT infrastructure and IT expertise help fast-growth firms to enhance e-business capability through the effective application of e-business technology in value chain processes. Second, our findings indicate that strategic IT alignment is associated positively with e-business capability, providing empirical support for the argument that strategic IT planning plays a prominent role in IT business value creation for SMEs. Third, the results demonstrate a positive relationship between market orientation

and e-business capability, highlighting how rapid growing companies exhibiting a market-oriented culture can capitalize on market opportunities by employing e-business innovation in the value chain processes, and thus achieve business value. Fourth, beyond IT resources and internal organizational resources, we find that business partnerships, as an external firm resource, are associated positively with fast-growth SME performance, suggesting that external relational resources involving knowledge, strategic planning, and collaboration are critical, valuable, and idiosyncratic for entrepreneurial firms to gain business value in today's highly competitive market. Fifth, our results show that fast growth SMEs achieving and sustaining competitive advantage depends partly on how entrepreneurs exhibit their risk-taking and innovative behaviors to manage firms in order to maintain optimal positioning in markets. Sixth, we find that e-business capability is related positively to e-business value in terms of sales performance, operational efficiency, relationship development, and customer satisfaction. This finding confirms the notion that e-business use can be regarded as a missing link to IT payoff. Finally, our results suggest that the positive performance of rapidly growing enterprises appears to be associated with tight fit not only internally among strategies, structures, and management processes, but also externally with their environments.

5 DISCUSSION

We extend extant knowledge in five salient ways. First, we contribute to IS research by incorporating resources and order fulfillment business processes into conceptualization of e-business capability. Utilizing resource-picking and capability-building mechanisms, we explain how and why e-business capability, enabled by complementary resources and process-embeddedness, are more valuable for firms when creating advantage than just adoption and application of IT per se. By demarcating specific type of firm capabilities, we provide an enhanced understanding of the sources of IT-based competitive advantage. Second, we inform an enduring debate about the business value of IT. We suggest that IT alone might not hold an answer to IT value creation, but rather technology works in tandem with other intra- and inter-organizational resources to build specific organizational capabilities embedded within business processes, helping firms to create value. Specifically, IT business value depends on how firms use IT to improve value chain operations. We investigate intermediate IT-enabled processes and the specific ways in which IT is employed by firms to enhance their core business processes by conceptualizing IT-enabled organizational capability. Third, we provide initial empirical evidence supporting the positive relationship between strategic IT alignment and fast growth SME performance. While extensive empirical research has found that IT strategy alignment is positively associated with business performance, the strategic use of IT in the SME context still remains uncertain. Our results demonstrate that strategic IT alignment is a valuable planning resource, helping entrepreneurial SMEs to create value by virtue of how IT is employed to support core process activities. Fourth, we expand extant IS literature and demonstrate that market orientation, as a valuable organizational culture resource, is an important antecedent for firms to embrace IT innovation. We also contribute to the extant literature by delineating how market orientation when bundled with other organizational resources to create IT-enabled organizational capability, can help firms to achieve business advantage, helping to fill this gap by demonstrating the competitive value of market orientation and its relationship to specific capability-building processes. Finally, we contribute to the fast growth company literature by investigating how entrepreneurial SMEs align their IT investments with complementary business practices and organizational structures to create business advantage. Our study explores the nature of the relationship between IT and entrepreneurship, suggesting that "IT is the magic ingredient that inspires and most often enables contemporary entrepreneurial endeavors" (Del Giudice and Straub 2011, p.vi).

We provide four important insights for management, particularly for highly entrepreneurial firms. First, we provide a theoretical framework for managers to understand how IT investments help firms to create strategic advantage and achieve financial performance in the digital business environments. Managers should be aware that superior business advantage depends on the ways how firms combine resource qualities to develop unique organizational capabilities and competences that contribute to business success. Second, IT strategy is an integral and tightly woven part of business strategy within innovative firms, enabling them to achieve competitive advantage. Strategic IT alignment plays a

prominent role in IT success and is therefore a key concern for top management. In today's fast changing environments, managers are advised to develop their managerial skills not only to seek out, find, and recognize strategic opportunities, but also to effectively adjust IS plans in accordance with changes in corporate strategy so as to sustain their businesses particularly in turbulent markets. Third, market orientation is a valuable firm resource. The synergy of combining market orientation with other organizational resources helps firms to create dynamic business competences that can lead to superior competitive advantage. Business success largely hinges on how managers balance market orientation and innovativeness to promote cooperative activities with value chain members, to enhance new product development, and to increase customer value. Therefore, managers need to be cognizant of the potential limitations of investing in market orientation alone. Finally, we highlight the importance of characteristics such as IT resources, strategic planning, firm culture, and business partnerships on heightened levels of organizational capabilities. These findings exemplify the collective responsibility of senior management, and business and IT executives in heightening e-business success, providing empirical support for the principle of normative collective responsibility.

6 LIMITATIONS AND FUTURE RESEARCH

This study has a number of methodological and conceptual limitations. First, the present research adopts a static cross-sectional research design with data collected at a single point in time. This approach is limited in addressing processes-oriented issues or causal relationships. Future research might consider using longitudinal designs to address themes relating to the causal dynamics of processes. Second, utilizing a single-informant (CEO and/or founder) data collection technique presents problems of data credibility. Single informant studies are well-known for their susceptibility to reporting bias. Future research might consider obtaining data from managers across the IT, production and operations functions. A third limitation relates to sample characteristics upon which the present hypotheses are tested. The current investigation is drawn from a relatively small proportion of self-selected fast-growth SMEs in a specific geographic region. While the present hypothesized model might be applicable to larger firms as well as firms in other geographic locales, further research is needed to extend generalizability of the findings.

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