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ABSTRACT

The research, based on an interdisciplinary literature review, highlights the strategic choices, various profiles and salient factors of electronic procurement (e-procurement). The authors identify some factors which are important when adopting a strategic, rather than a tactical e-procurement perspective. The article proposes a broad framework for assessing the e-procurement performance relationship and provides an understanding of the impact of e-procurement on organizational performance. The proposed research framework suggests that alignment among business strategy, e-procurement strategy, e-procurement tool, strategic IT capability and strategic typology have a positive influence on a company's strategic performance.

Keywords: Supply chain management; information technology; e-commerce; implementation; purchasing; operations strategy; measurement

INTRODUCTION

The procurement process has traditionally involved slow manual procedures and even slower systematic processes for handling procurement transactions (Hawking et al. 2004). E-procurement has had an increasingly important role in business-to-business (B2B) commerce. Web-enabled B2B e-commerce enhances inter-organizational coordination resulting in transaction cost savings and competitive sourcing opportunities for the buyer organization (Subramaniam and Shaw 2002). Nevertheless, despite the proliferation of literature dedicated to theory and practice, most of the contribution delivers only partial solutions regarding general rules of behavior. Supply managers now need to understand the impact of technology and gain competency in making a business case for e-procurement (Presutti 2003).

In recent years organizations are becoming more discerning about e-procurement decisions that need to be made and how they respond to the multitude of pressures and influences. However, despite the continued e-procurement discussion, there has been a paucity of research that has incorporated strategic choice theory. This is surprising as, Child (1997) noted the increased debate about the notion of strategy and strategic choice in organizational theory. If e-procurement is to obtain a strategic rather than an operational level of influence within the organizational hierarchy, consideration needs to be given to, as how actors can be strategically, operationally and technologically integrated. Hult et al. (2004) state that supply chain predictability should be sought, but not at the expense of creating inflexibility. Organizations operating in the new economy need to align themselves internally with the demands that the dynamic environment imposes on strategic behavior (Phillips 2003). A good example of this is the need for a new mindset that must be instilled both in procurement and across the firm (Cousins and Spekman 2003).

The use of inter-organizational systems, such as electronic data interchange (EDI) and Internet-based extranets, enable new types of collaborative alliances between separate trading partners (Phillips 2003). These new relationships could change from hierarchical to market (Malone et al. 1987). Understanding how to best leverage the benefits from these IT-enabled alliances may mean the difference between industry dominance and industry exit.

The original contribution of this paper is to highlight the strategic choices, various profiles and salient factors of electronic procurement (e-procurement). This article will also enhance the understanding of the impact of e-procurement on strategic performance. By conducting an interdisciplinary literature review, the authors identify some factors which are important when adopting a strategic rather than a tactical e-procurement perspective. The article proposes a broad framework for assessing the e-procurement performance relationship. This is considered timely as Melnyk et al. (2004) conveyed the importance and need for metrics-related research together with the need for the development of integrative systems.

The remainder of this paper is organized as follows. First, the relationship between e-procurement and performance is discussed. Given, the apparent tenuous link between e-procurement and performance, the concern here is to explore e-procurement's power to sustain and enhance strategic performance. Next, the hypotheses are developed by incorporating literature drawn from: electronic procurement, Miles and Snow strategic typology, strategic IT capability and alignment. We conclude that it is possible to show how e-procurement can be aligned with strategic performance. This paper contends that instead of focusing on the question whether e-procurement affects firm performance; identifying the conditions performance is enhanced is a more pertinent business objective.

THE RELATIONSHIP BETWEEN E-PROCUREMENT AND PERFORMANCE

E-business has radically altered the ways in which firms interact with their suppliers (Phillips 2003). Continued improvements in Internet technology connectivity provide an opportunity to make procurement for goods and services more transparent and efficient (Carayannis and Popescu 2005). Knudsen (2003) reminds researchers that e-procurement is not a single application but consists of many different tools. As organizations seek to enhance market efficiencies six forms of e-procurement applications have been noted. Knudsen cites; e-sourcing, e-tendering, e-informing, e-reverse auctions, e-MRO and web-based enterprise resource planning. In addition, e-collaboration is an important enabler (Knudsen 2003). Hawking and Stein (2004) view e-procurement not only as a strategic player in the value chain but as a major driver in the extended supply chain.

Over the last decade e-procurement has emerged as a major component in the Supply Chain Management field. At its most basic level, e-procurement has changed the ways businesses purchase goods. At a strategic level it is anticipated that e-procurement will free purchasing resources from transaction processes to strategic sourcing activities (Rajkumar 2001). How the performance of a purchasing department can improve remains uncertain (Cheng et al. 2004). In many commercial organizations the business case for e-procurement is predicated on being able to delivery a variety of benefits, which include: lower prices, lower transactional costs, better compliance and speedier processing and delivery. However, recent research has questioned whether e-procurement is really an ugly duckling (Hawking et al. 2004). In one of the first empirical studies, Carr and Pearson (1999) confirmed that strategic purchasing has positive effect on company's financial performance. Encouragingly, firms that do

long-term planning and consider purchasing to be strategic are also likely to build long-term cooperative relationships with their key suppliers (Carr and Pearson 1999).

Electronic commerce (e-commerce) tools provide the opportunity to enhance two elements of procurement process: communication and transaction aspects (Oslomobekov et al. 2002). Surveys have confirmed that e-commerce tools and IT solutions have an influence on procurement-related processes. Companies have reported:

- cost reduction (Croom and Johnston 2003, Davila et al. 2003, Lin and Hsieh 2000, Radovilsky and Hegde 2004, Subramaniam and Shaw 2002)
- reduction in purchasing cycle time or order time (Davila et al. 2003, Lin and Hsieh 2000, Radovilsky and Hegde 2004),
- reduction in number of suppliers (Davila et al. 2003),
- increase in the number of products supplied by main suppliers (Muffatto and Payaro 2004),
- inventory savings (Subramaniam and Shaw 2002)
- reduction of purchasing prices (Davila et al. 2003).

Surprisingly very few papers have considered the internal customer. An exception can be found in Croom and Johnston (2003) who noted an increase in internal customer service levels, achieved as a result of cost reduction, process compliance and customer satisfaction.

Some companies have created very close links with their suppliers, closer than just long-term cooperation. Companies have taken an interest in improving their suppliers' performance by exchanging staff, providing the necessary training, tools, technologies

and performance evaluation. The key roles in business relations provide two-way communication, cross-functional teams and larger purchasing power. These factors were analyzed by Humphreys et al. (2004) who highlighted that supplier development is associated with buyer-supplier performance improvement. Carr and Pearson (1999), reported links between supplier-buyer relationship and firm's financial performance. According to their research results, firms may achieve competitive advantage from long-term relationships rather than merely short-term.

Strategic performance measurement

The operations management literature has advocated the need for research to address infrastructural issues such as performance measurement (Marucheck et al. 1990). Evans (2004) asserts that the design of effective performance measurement systems, which includes the selection of appropriate measures and results, is central to aligning an organization's operations with strategic direction.

Companies are increasingly using strategic performance measurement systems (SPMS) to implement strategy and drive performance improvements (Webb 2004). Strategic performance measurement is a set of causally linked nonfinancial and financial objectives, performance measures and goals designed to align managers' actions with a firm's strategy (Webb 2004). Its concept evolved out of researchers noting the need for the fusion of strategic planning with performance measurement. Advocated approaches include: performance pyramid and hierarchies (Dixon 1990); balanced scorecard (1992) and the intangible asset scorecard (Sveiby 1997). The moving away from total reliance on quantitative financial data is not new, but the purported uniqueness of an SPMS is that the nonfinancial and financial objectives and performance measures represent a chain of cause-effect links. These cause-effect links can articulate manager's thoughts about the drivers of business performance.

Nevertheless, despite new frameworks emerging, that extend organizational perspectives beyond traditional financial measures, many organizations still fail to identify, analyse and act on the non-financial measures (Ittner and Larcker 2003).

Proponents of strategic performance measurement advocate two general approaches, measurement diversity and a contingency approach (Ittner and Larcker 2003). A measurement diversity approach can enhance economic performance, as managers place emphasis on a broad set of financial and non-financial performance measures (Lingle and Schiemann 1996). A contingency approach can also improve economic performance, as measurement gaps between the firm's strategic priorities and measurement practices are minimized (Langfield-Smith 1997). From an empirical standpoint, Chenhall (2005) identified integrative information as being instrumental in assisting managers deliver positive strategic outcomes. The study found three information components that describe integrative SPMS. First, the extent to which formal SPMS provide information linking operations to goals and strategies and to link activities across sub units. Also, varying measures were linked with a customer and supplier component of the SPMS. Webb (2004) extends the performance measurement literature by demonstrating that a potential behavioral benefit of developing an SPMS containing strongly perceived cause-effect linkages is the positive impact on goal commitment.

THEORECTICAL GROUNDING AND HYPOTHESES DEVELOPMENT

The academic literature is now replete with empirical and conceptual studies which have assessed the benefits of e-procurement. To-date, research remains nascent as it has not developed firm links with the strategic management literature and has relied heavily on trying to confirm the benefits of e-procurement. The firm's ability to integrate, build, and reconfigure internal information technology (IT) competences to

address the rapidly changing external environment will affect the e-procurement-performance relationship. We argue here that while some cost (tactical) benefits may accrue from e-procurement, sustainable benefits will only accrue from the adoption of a strategic management perspective.

The field of e-procurement research mainly has concentrated on assessing the role of e–procurement tools, delivered benefits and risks associated with the implementation. Table 1 provides a summary of theoretical and empirical research papers. Despite the growth in applications of e-procurement tools, paucity of empirical research exists which examines precisely how e-procurement adds business value. E-procurement business value research examines the organizational benefits and impacts of new digitized processes. Researchers have adopted myriad approaches to assessing e-procurement and the buyer-supplier interface. Previous research has shown that e-procurement may indeed contribute to improved operational performance (Croom and Johnston 2003, Hawking et al. 2004, Mukhopadhyay and Kekre 2002, Radovilsky and Hegde 2004). However e-procurement influence on strategic performance still remains uncertain. Moreover there is a lack of an academic literature (see table 1) which present the theoretical concepts or provide the empirical evidence how to measure e-procurement implementation. Table 1, which based on approach of Webster and Watson (2002), who recommend to use instead of author-centric literature review the presentations of main identified concepts areas. The table shows how the existing e-procurement literature covers areas such as e-procurement tools, risks and benefits, links with strategy, impact on the organizational structure and performance measurement.

Theoretical framework

E-procurement has been advocated as a tool that can improve competence and

performance. Despite the increasing pace of the e-procurement phenomenon, there remains a lack of theoretical underpinning linking e-procurement and performance, especially on the strategic level. In an attempt to advance theory research hypotheses were developed based on a review of the e-procurement literature. We propose four research hypotheses to present how e-procurement alignment can lead to enhance levels of strategic performance. The relationships among the constructs hypothesized are depicted in Figure 1.

Figure 1

ELECTRONIC PROCUREMENT STRATEGY

Reported e-procurement benefits should be contrasted with the results of supplier relationships surveys. Some researchers have found positive changes in relationships (Lin and Hsieh 2000, Davila et al. 2003), but in other cases new technologies could be seen as the source of additional risk for suppliers. Issues such as enhanced transparency and lack of trust between companies have been noted (Kersten et al. 2004). Bartezzaghi and Ronchi (2003), reported that e-procurement impregnation can lead to a destruction of established collaboration, which leads to loss of flexibility and reliability, as a result of changes in procurement strategies. To successfully use e-procurement Rajkumar (2001) proposed critical success factors such as: e-procurement strategy definition, procurement process reengineering, key stakeholders involvement, focus on product segments, definition of measurement system and expectation management of users and stakeholders. Strategic alignment has been identified as a key enabler to higher levels of economic rents (Knudsen 2003). Research conducted by Knudsen (2003), using three types of rents: monopoly; Ricardian and entrepreneurial, and assessing a variety of e-procurement tools indicate some relationships. E-procurement tools were fully viable for creating monopoly rents, moderately viable for Ricardian rents and only somewhat viable for creating

entrepreneurial rents. This clearly highlights the needs to establish some understanding about how the organization generates rents before procurement strategy and e-procurement tools are implemented. Thus, we predict

H1 Organizations that adopt a strategic perspective to electronic procurement achieve higher levels of strategic performance.

STRATEGIC TYPOLOGY

The strategy literature is replete with typologies, research methodologies and theories on the strategy-performance relationship. In the turbulent external environment, together with market competition and more discerning customers, it a necessity that organizations constantly re-appraise their competitive actions. The Porterian view of strategy posits that strategy selection is conditional on how closely a business is aligned with its environment (Porter 1980). Based on field studies conducted in four industries (health care, textbook publishing, electronics, and food processing) Miles and Snow (1978) postulated the existence of a relationship across the strategic types of: prospectors; analyzers, defenders and reactors. Prospectors are normally characterized by being highly innovative, leading change and bringing new products to their industries. Defenders find and seek niche areas in stable product domains with an overall emphasis on efficiency. Analyzers are caught between a prospector and defender strategy. They tend to be a fast follower but resource constraints dictate that both prospector and defender strategies cannot be pursued simultaneously. Reactors tend to be out-performed by prospectors, defenders and analyzers as they lack a consistent strategy and react to environmental pressures as they arise.

There has been a paucity of empirical studies that have applied the Miles and Snow typology in an e-commerce environment. Exceptions can be found in Croteau and

Bergeron (2001) and Kearns (2005). Based on a survey of 223 organizations, Croteau and Bergeron (2001) found that different profiles of technological deployment were associated with various types of business strategy. Prospectors were found to enhance their organizational performance, while reactor strategic activities were found to be negatively associated with performance. At the same time there was a link between prospectors, strategic activities and technical deployment with emphasis on the strategic impact of IT department, technological architecture and information system performance evaluation. The differences in the e-procurement implementation patterns have been noted with some companies identified as aggressive adopters and other with "wait and see" strategy (Davila et al. 2003).

After observing the impact of e-commerce alignment on organizational profitability through twelve companies, Kearns (2005) found that the most profitable companies belonged to the analyzers and prospectors groups. Three analyzers and one company with a defender characteristic had high e-commerce strategic alignment connected with high return on assets. Reactors were the last profitable companies. The study confirmed that e-commerce strategic alignment was positively associated with organizational profitability. Stated formally:

H2 Organizations that link supporting e-procurement tools with their strategic typology will achieve higher levels of strategic performance.

STRATEGIC IT CAPABILITY

If the development of strategic capabilities require deliberate and sustained investment of financial and managerial resources, it is important to understand the cost and benefits. Strategic capabilities have been defined as complex bundles of

skills and accumulated knowledge that enable firms to coordinate activities and make use of their assets (Day 1990).

An organizations ability to apply its capabilities in the form knowledge resources to perform important activities is increasingly viewed as a source of competitive advantage. As information technology (IT) has evolved from a productive tool to a more pervasive and strategic business tool the measurement of its value has become more challenging (Subramaniam and Shaw 2002). The resource based view (RBV) of the firm has been increasingly used by strategy researchers to explain the differences in firm performance. Barney's (1991) seminal article notes that resources which are: (i) valuable; (ii) rare; (iii) inimitable and (iv) nonsubstitutable, can provide sources of sustainable competitive advantage. Wade and Hulland (2004) suggest that RBV could provide a way for information systems (IS) researchers to understand the role of IS within the firm. According to Wade and Hulland (2004) RBV makes a useful distinction between information technology and information systems. They state that the former is asset-based, while the latter comprises of a mixture of assets and capabilities centered on the productive use of information technology. The RBV has been used to assess the impact of information technology investments on firm performance (Santhanam and Hartono 2003).

Capabilities in IT help the firm diffuse marketing information effectively across all relevant functional areas that it can exploit to direct the new product development process (Desarbo et al. 2005). In addition to finding that superior IT capability exhibit superior current and sustained firm performance; Santhanam and Hartono (2003) found it critical to develop theoretically derived multidimensional measures of IT capability.

Thus, we expect:

H3 An increase in an organization's level of strategic IT capability, will positively affect the e-procurement- strategic performance relationship.

ORGANISATIONAL ALIGNMENT

Internet enabled B2B e-procurement enhances inter-organizational coordination, resulting in transaction cost savings and competitive sourcing opportunities for the buyer firm (Subramaniam and Shaw 2002). Against the backdrop of demand and supply-side economics, e-procurement is able to support increased and more complex coordination. Unstructured and complex purchases involve a higher level of coordination and require more human interaction, within the organization as well as with business partners.

Neilson et al. (2000) state that instead of bureaucratic, hierarchical structure, organizations should form more flexible, decentralized team and alliance based networks that allow employees to react to market shifts. This paper assumes that e-procurement involves a network of actors that operate both inter and intra-organization processes.

Firms are making significant investments in their e-business strategies and IT; yet some managers remain unclear about how to adapt their organization to new strategies and processes. Advancements in procurement technology create the opportunities for new forms of arranging work, such as collapsing boundaries between suppliers and customers make it imperative for management to identify the key attributes and processes required for competitive advantage. Handfield and Nichols (2002) assert that access to memory is vital because a chain lacks many of the formal and informal mechanisms that guide decisions in established firms, such as hierarchy (formal) and strong vales, traditions and beliefs (informal).

When embarking on an e-procurement project, the organization needs to be prepared to replace traditional bureaucratic purchasing processes and hierarchical structures with flexible, decentralized processes and alliance based structures. If e-procurement is successful then actors are able to respond instantaneously to threats and opportunities. Long-term collaboration can deliver benefits for both the supplier and buyer (Cousins and Spekman 2003). Partnership and cooperation such as information sharing is also considered as one of the pillars of Value Chain Management (Al-Mudimigh et al. 2004)

Thus we predict:

H4 An increase in a level of organizational alignment will positively affect the e-procurement- strategic performance relationships

CONCLUSION

Consideration of the components of Figure 1 allows us to map the interplay between strategic choice and e-procurement. The study identifies the decisions which have to be made in order for e-procurement to deliver enhanced levels of strategic performance. The proposed research framework suggests that alignment among business strategy, e-procurement strategy, e-procurement tool, strategic IT capability and strategic typology have a positive influence on a company's strategic performance

Purchasing continues to assume a pivotal strategic role, which has evolved from buying (operational) into a value added (strategic) activity. Hence organizations who focus solely on more efficient and cost-effective e-procurement processes may not gain a sustainable competitive advantage over rivals. E-procurement systems need to: respond to short-term changes in demand or supply (flexibility), adjust to meet

structural shifts in the ever changing geo-political environment (agility) and create the appropriate incentives for enhanced levels of performance. By using the Miles and Snow typology (1978) it is possible to explore the existence of a relationship across the strategic types of: prospectors; analyzers, defenders and reactors.

Prospectors are normally characterized by being highly innovative, leading change and bringing new products to their industries. Thus prospectors will be continually re-evaluating their make or buy decision, which will lead to the procurement of more complex subcontract items. They will integrate suppliers at the early stage of product development; to increase design-to-market time. The e-procurement system could be used as a platform to facilitate supplier's involvement in the new product development. In addition, the ability to integrate orders from different business units and branches will further complicate the e-procurement process. We assume that prospectors are the first group which implements e-procurement systems with built-in advanced cooperation modules.

Conversely, reactors will lack a consistent strategy and react to structural changes in demand as they arise, which will result in usage of e-procurement applications mainly for operational purchasing, rather than as a tool for extended cooperation and integration with suppliers.

Defenders that operate in niche markets will use narrowly specialized e-procurement tools, such as e-marketplaces dedicated for the specific industry, or e-procurement tools with emphasis on process efficiency. Analyzers which are located between prospectors and defenders tend to follow innovations adopted and used by prospectors.

Organizations that select appropriate e-procurement tools relating to their strategic typology enhance alignment. It is anticipated that high levels of strategic IT capability will deliver higher levels of strategic performance. However, the application of the proposed framework may not be simple since other, interrelated factors also need to be included. The first factor to consider is e-business strategy. If an organization has not articulated its e-business strategy and the e-procurement strategy is acting as a surrogate, then this could be damaging to strategic performance. Thus e-procurement strategy should be an integrated part of company's e-business strategy.

The second interrelated factor to consider is internal communication between staff as well as between managers of company's divisions. Staff can easily get discouraged by the gulf between e-procurement promises and actual experience. So it is imperative that there is two-way communication, which should be established from the earliest stage of e-procurement implementation.

Third, the importance of the change management concept, which includes the processes, tools and techniques used by organizations to manage the human side of the necessary changes during implementation. E-procurement in this sense changes the way people work and interconnect, regarding new structures to form to support such new processes. Furthermore uncertainty, fear of staff reduction, changes in everyday work and relationships, create resistance against such a change, so it is necessary to identify champions that act as individual change agents in teams and throughout the organization.

Creation of the links between a strategic performance system and e-procurement give the possibility to measure and analyze e-procurement benefits not only on an operational level, but also to observe the e-procurement impact on strategic performance. In the situation where a gap between operational and strategic

managerial levels exists, companies might achieve short term, operational e-procurement benefits, but the effect on overall performance might be negative. A set of financial and non-financial measures help to evaluate e-procurement results and improve decision making process, as well as respond faster to customer demand and changes in the business environment.

Links between operational and strategic performance levels are necessary to reflect e-procurement influence on strategic performance. A strategic performance measurement system could indicate latent costs which may occur due to some e-procurement operational decisions or strategy. As strategic performance includes metrics and factors relating to customer needs and satisfaction, it also incorporates a customer perspective into the procurement process. Lack of connections between the e-procurement buy-side and the sell-side, might result in strategic disadvantages, even if e-procurement on an operational level reduce costs. Alignment between e-procurement and strategic performance helps companies to successfully use the advantages of e-procurement technology and in return achieve a strategic advantage in the market, in which they operate.

In the lack of models that incorporates a strategic perspective. Future research should test the hypotheses presented in this paper, which will provide the opportunity to better understand the e-procurement phenomenon.

Type	Articles	E-procurement issues				
		Tools	**Benefits and risks**	**Links with strategy**	**Organizational Structure**	**Measurement**
T/C	**(Attaran 2001)**	**X**	**X**		**X**	
T/C	**(Baron et al. 2000)**	**X**	**X**		**X**	**X**
M-CS	**(Bartezzaghi and Ronchi 2003)**	**X**	**X**	**X**		
SV	**(Bartezzaghi and Ronchi 2004)**	**X**	**X**			
T/C M-CS	**(Bendoly and Schroenherr 2005)**	**X**	**X**		**X**	
T/C	**(Brenner and Hamm 1996)**	**X**	**X**	**X**	**X**	
T/C S-CS	**(Cheung et al. 2004)**	**X**	**X**			**X**
T/C	**(Chieu et al. 2003)**	**X**				
R	**(Chong et al. 2002)**	**X**	**X**			**X**
M-CS	**(Croom 2000)**	**X**	**X**	**X**	**X**	
SV	**(Croom and Johnston 2003)**	**X**	**X**			
SV	**(Davila et al. 2003)**	**X**	**X**	**X**		
T/C	**(De Boer et al. 2002)**	**X**	**X**	**X**		
T/C	**(Eakin 2002)**	**X**	**X**			**X**
S-CS	**(Gebauer and Shaw 2004)**	**X**	**X**		**X**	
SV	**(Hawking et al. 2004)**	**X**	**X**			

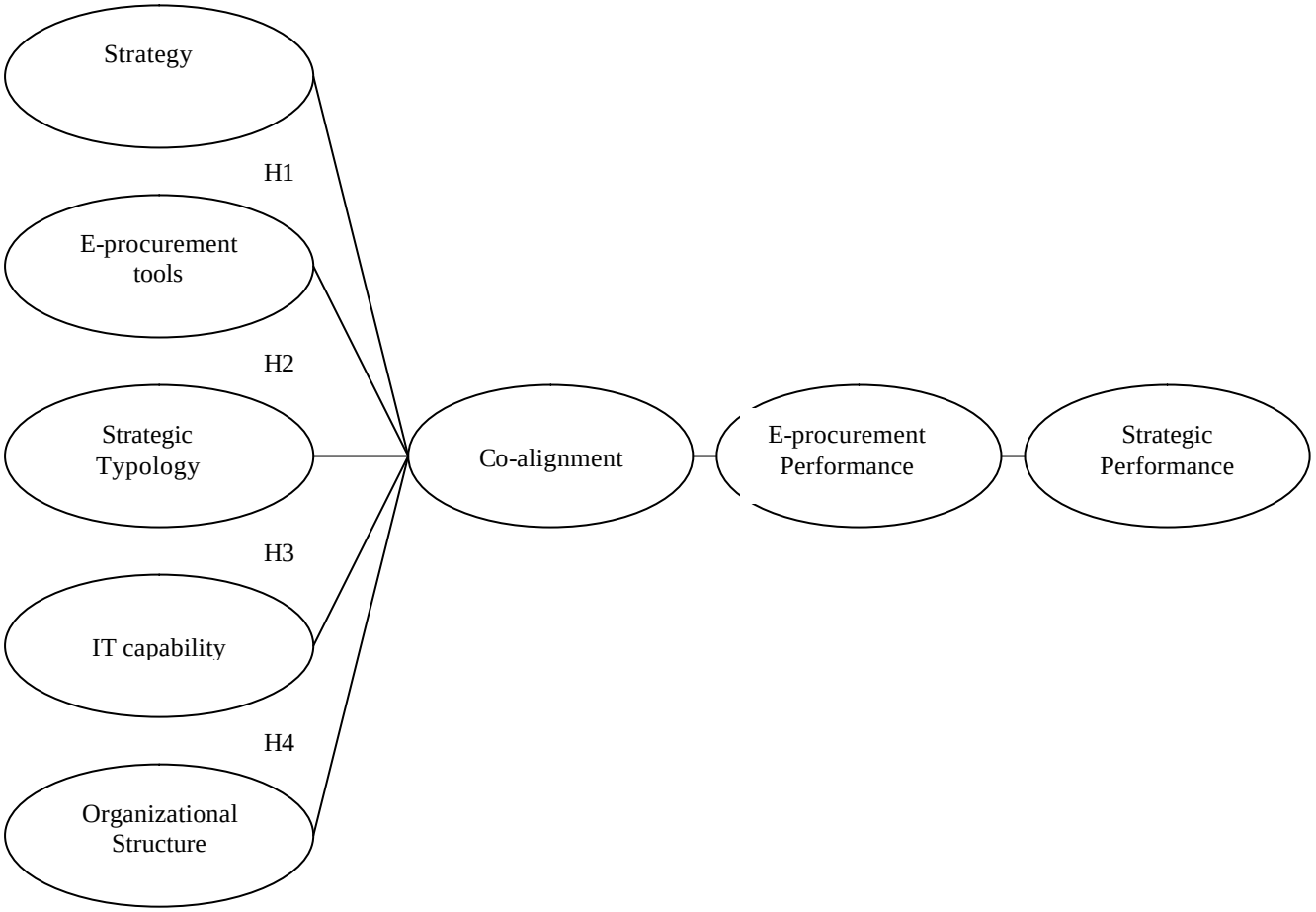
M	**(Jiang 2005)**	**X**	**X**				
M	**(Kaufmann and Mohtadi 2004)**	**X**	**X**				
SV	**(Kersten et al. 2004)**	**X**	**X**	**X**			
T/C	**(Knudsen 2003)**	**X**	**X**	**X**			
S-CS	**(Lin and Hsieh 2000)**	**X**	**X**		**X**		
M	**(Mahadevan and Hazra In press 2005)**		**X**				
M-CS	**(Muffatto and Payaro 2004)**	**X**	**X**				**X**
M-CS	**(Muffatto and Payaro 2004)**	**X**	**X**		**X**		**X**
SV	**(Mukhopadhyay and Kekre 2002)**	**X**	**X**	**X**			
SV	**(Olson and Boyer 2003)**	**X**	**X**	**X**			
T/C	**(Oslomobekov et al. 2002)**	**X**	**X**		**X**		
T/C	**(Peleg et al. 2002)**	**X**	**X**	**X**			
T/C	**(Presutti 2003)**	**X**		**X**			**X**
SV M-CS	**(Puschmann and Alt 2005)**	**X**	**X**	**X**	**X**		
SV	**(Rai et al. 2005)**	**X**		**X**	**X**		**X**
T/C	**(Rajkumar 2001)**	**X**	**X**	**X**	**X**		**X**

M	**(Seifert et al. 2004)**	**X**	**X**				
T/C	**(Smeltzer and Carter 2001)**	**X**	**X**		**X**	**X**	
SV	**(Sriram and Stump 2004)**	**X**	**X**				
S-CS	**(Subramaniam and Shaw 2002)**	**X**	**X**			**X**	**X**
M	**(Thomson 2005)**	**X**	**X**				
T/C	**(Tucker and Jones 2000)**	**X**	**X**				
M-CS	**(Yen and Ng 2003)**	**X**				**X**	

Table 1 E-procurement literature review

S-CS – single case study
M-CS- multiple case study
SV – survey
T/C – theoretical/conceptual
M – modeling
R - review

Figure 1 Links between e-procurement and strategic performance.



REFERENCES

Al-Mudimigh, A.S., Zairi, M. and Ahmed, A.M.A., 2004. Extending the concept of supply chain: The effective management of value chains. International Journal of Production Economics, vol. 87, no. 3, February, pp. 309-320.

Attaran, M., 2001. The coming age of online procurement. Industrial Management & Data Systems, vol. 101, no. 3-4, pp. 177-180.

Barney, J., 1991. Firm resources and sustained competitive advantage. Journal of Management, vol. 17, no. 1, March, pp. 99-120.

Baron, J.P., Shaw, J.M. and Bailey, A.D., 2000. Web-based E-catalog systems in B2B procurement. Communication of the ACM, vol. 43, no. 5, May, pp. 93-100.

Bartezzaghi, E. and Ronchi, S., 2003. Internet supporting the procurement process: lesson from four case studies. Integrated Manufacturing Systems, vol. 14, no. 8, pp. 632-641.

Bartezzaghi, E. and Ronchi, S., 2004. A portfolio approach in the e-purchasing materials. Journal of Purchasing and Supply Management, vol. 10, no. 3, pp. 117-126.

Bendoly, E. and Schroenherr, T., 2005. ERP systems and implementation-process benefits. Implication for B2B e-procurement. International Journal of Operations and Production Management, vol. 25, no. 4, pp. 304-319.

Brenner, W. and Hamm, V., 1996. Information Technology for purchasing in process environment. European Journal of Purchasing and Supply Management, vol. 2, no. 4, pp. 211-219.

Carayannis, E.G. and Popescu, D., 2005. Profiling a methodology for economic growth and convergence: learning from the EU e-procurement experience for central and eastern European countries. Technovation, vol. 25, no. 1, January, pp. 1-14.

Carr, A.S. and Pearson, J.N., 1999. Strategically managed buyer-supplier relationships and performance outcomes. Journal of Operations Management, vol. 17, no. 5, August, pp. 497-519.

Cheng, C.F., Wang, W.M., Lo, V. and Lee, W.B., 2004. An agent-orientated and knowledge-based systems for strategic e-procurement. Expert Systems, vol. 21, no. 1, February, pp. 11-21.

Chenhall, R.H., 2005. Integrative strategic performance measurement systems, strategic alignment of manufacturing, learning and strategic outcomes: an exploratory study. Accounting, Organizations and Society, vol. 30, no. 5, July, pp. 395-422.

Cheung, C.F., Wang, W.M. and Lo, V., 2004. An agent oriented and knowledge-based system for strategic e-procurement. Expert Systems, vol. 21, no. 1, February, pp. 11-19.

Chieu, T.C., Fu, S.S., Pinel, F. and Yih, J.S., 2003. Unified solution for procurement integration and B2B stores. ACM International Conference Proceeding Series, 5th International Conference on Electronic Commerce ICEC 2003, vol. 50, pp. 61-67.

Child, J., 1997. Strategic choice in the analysis of action, structure, organizations and environment: Retrospect and prospect. Organization Studies, vol. 18, no. 1, pp. 43-76.

Chong, P.P., Chen, E.T. and Chen, J.C.H., 2002. E-procurement in Taiwan: Issues and viewpoints. Review of Pacific Basin Financial Markets and Policies, vol. 5, no. 4, December, pp. 521-531.

Cousins, P.D. and Spekman, R., 2003. Strategic supply and the management of inter- and intra-organisational relationships. Journal of Purchasing and Supply Management, vol. 9, no. 1, July - September, pp. 19-29.

Croom, S., 2000. The impact of the web-based procurement on the management of operating resources supply. The Journal of Supply Chain Management, vol. 36, no. 1, Winter, pp. 4-13.

Croom, S. and Johnston, R., 2003. E-service: enhancing internal customer service through e-procurement. International Journal of Service Industry Management, vol. 14, no. 5, pp. 539-555.

Croteau, A.-M. and Bergeron, F., 2001. An information technology trilogy: business strategy, technical deployment and organizational performance. Journal of Strategic Information Systems, vol. 10, no. 2, June, pp. 77-99.

Davila, A., Gupta, M. and Palmer, R., 2003. Moving procurement systems to the Internet: The adoption and use of e-procurement technology models. European Management Journal, vol. 21, no. 1, February, pp. 11-23.

Day, G.S., 1990. Market Driven Strategy: Processes for Creating Value, Free Press, New York.

De Boer, L., Harink, J. and Heijboer, G., 2002. A conceptual model for assessing the impact of electronic procurement. European Journal of Purchasing and Supply Management, vol. 8, no. 1, pp. 25-33.

Desarbo, W.S., Di Benedetto, C.A., Song, M. and Sinha, I., 2005. Revisiting the Miles and Snow strategic framework: uncovering interrelationships between strategic types, capabilities, environmental uncertainty and firm performance. Strategic Management Journal, vol. 26, no. 1, January, pp. 47-74.

Dixon, J.R., Nanni, A J, and Vollmann, T E, 1990. The new performance challenge: measuring operations for world-class competition, IL: Dow Jones-Irwin, Homewood.

Eakin, D., 2002. Measuring e-procurement benefits. Government procurement, vol. 16, no. 8, August, pp. 6-12.

Evans, J.R., 2004. An exploratory study of performance measurement systems and relationships with performance results. Journal of Operations Management, vol. 22, no. 3, June, pp. 219-232.

Gebauer, J. and Shaw, J.M., 2004. Success factors and impacts of mobile business applications: Results from mobile e-procurement study. International Journal of Electronic Commerce, vol. 8, no. 3, Spring, pp. 19-41.

Handfield, R.B. and Nichols, E.L., 2002. Supply Chain redesign: transforming supply chains into integrated value systems, NJ: Prentice Hall, Upper saddle River.

Hawking, P., Stein, A., Wyld, C.D. and Foster, S., 2004. E-procurement: Is the ugly duckling actually a swan down under. Asia Pacific Journal of Marketing and Logistics, vol. 16, no. 1, pp. 3-26.

Hult, G.T.M., Ketchen, D.J. and Slater, S.F., 2004. Information processing, knowledge development and strategic supply chain performance. Academy of Management Journal, vol. 47, no. 2, April, pp. 241-253.

Humphreys, P.K., Li, W.L. and Chan, L.Y., 2004. The impact of supplier development on buyer-supplier performance. The International Journal of Management Science, vol. 32, no. 2, April, pp. 131-143.

Ittner, C.D. and Larcker, D.F., 2003. Coming up short on non-financial performance measurement. Harvard Business Review, vol. 28, November, pp. 88-95.

Jiang, W., 2005. E-procurement and market evolution: an evolutionary game approach. Proceedings of the 7th international conference on Electronic commerce ICEC '05, 15-17 August 2005, pp. 423-428.

Kaplan, R.S. and Norton, D.P., 1992. The balanced scorecard - measures that drive performance. Harvard Business Review, vol. 70, no. 1, January - February, pp. 71-79.

Kaufmann, R.J. and Mohtadi, H., 2004. Proprietary and open systems adoption in e-procurement: A risk-augmented transaction cost perspective. Journal of Management Information Systems, vol. 21, no. 1, Summer, pp. 137-166.

Kearns, G.S., 2005. An electronic commerce strategic typology: insight from case studies. Information & Management, vol. 42, no. 7, October, pp. 1023-1036.

Kersten, W., Schroeder, K.A. and Schulte-Bisping, A., 2004. Internet-supported sourcing of complex materials. Business Process Management Journal, vol. 10, no. 1, pp. 101-114.

Knudsen, D., 2003. Aligning corporate strategy, procurement strategy and e-procurement tools. International Journal of Physical Distribution and Logistics Management, vol. 33, no. 8, pp. 720-734.

Langfield-Smith, K., 1997. Management control systems and strategy: a critical review. Accounting Organisations and Society, vol. 22, no. 2, pp. 207-232.

Lin, B. and Hsieh, C.-t., 2000. Online procurement: implementation and managerial implications. Human System Management, vol. 19, no. 2, pp. 105-110.

Lingle, J. and Schiemann, W., 1996. From balanced scorecard to strategic gauges: is measurement worth it? Management Review, vol. 85, no. 3, March, pp. 56-61.

Mahadevan, B. and Hazra, J., In press 2005. Impact of supply base heterogeneity in electronics markets. European Journal of Operational Research, vol. no. pp.

Malone, T., Yates, J. and Benjamin, R., 1987. Electronic markets and electronic hierarchies: effects of information technology on market structure and corporate strategies. Communications of the ACM, vol. 30, no. 6, June, pp. 484-497.

Marucheck, A., Pannesi, R. and Anderson, C., 1990. An exploratory study of the manufacturing strategy process in practice. Journal of Operations Management, vol. 9, no. 1, January, pp. 101-123.

Melnyk, A.S., Steward, D.M. and Swink, M., 2004. Metrics and performance measurement in operations management: dealing with the metrics maze. Journal of Operations Management, vol. 22, no. 3, June, pp. 209-217.

Miles, R.E. and Snow, C.C., 1978. Organizational Strategy, Structure, and Process, McGraw-Hill, New York, NY.

Muffatto, M. and Payaro, A., 2004. Implementation of e-procurement and e-fulfilment process: A comparison of cases in the motorcycle industry. International Journal of Production Economics, vol. 89, no. 3, June, pp. 339-351.

Muffatto, M. and Payaro, A., 2004. Integration of web-based procurement and fulfillment: A comparison of case studies. International Journal of Information Management, vol. 24, no. 4, pp. 295-311.

Mukhopadhyay, T. and Kekre, S., 2002. Strategic and operational benefits of electronic integration in B2B procurement processes. Management Science, vol. 48, no. 10, October, pp. 1301-1313.

Neilson, G.L., Pasternack, B.A. and Visco, A.J., 2000. Up (E)organization! A seven-dimensional model for the centerless enterprise. Strategy and Business,no. 18, January, pp. 52-57.

Olson, J.R. and Boyer, K.K., 2003. Factors influencing the utilisation of Internet purchasing in small organizations. Journal of Operations Management, vol. 21, no. 2, 2003, pp. 225-245.

Oslomobekov, T., Bello, D.C. and Gilliland, D.I., 2002. Adoption of electronic commerce tools in business procurement: Enhanced buying center structure and processes. The Journal of Business & Industrial Marketing, vol. 17, no. 2/3, pp. 151-166.

Peleg, B., Lee, H.L. and Hausman, W.H., 2002. Short-term e-procurement strategies versus long-term contracts. Productions and Operations Management Society, vol. 11, no. 4, Winter, pp. 458-497.

Phillips, P.A., 2003. E-Business Strategy: Text and Cases, McGraw-Hill, Maidenhead, England.

Porter, M.E., 1980. Competitive Strategy, Free Press, New York.

Presutti, W.D., 2003. Supply management and e-procurement: creating value added in the supply chain. Industrial Marketing Management, vol. 32, no. 3, April, pp. 219-226.

Puschmann, T. and Alt, R., 2005. Successful use of e-procurement in supply chains. Supply Chain Management: An International Journal, vol. 10, no. 2, pp. 122-133.

Radovilsky, Z. and Hegde, G.V., 2004. Factors influencing e-commerce implementation: analysis of survey results. Journal of Academy of Business and Economics, vol. 4, no. 1, March, pp. 29-37.

Rai, A., Tang, X., Brown, P. and Keil, M., 2005. Assimilation patterns in the use of electronic procurement innovations: A cluster analysis. Information & Management, vol. In press, no. pp.

Rajkumar, T.M., 2001. E-procurement: business and technical issues. Information System Management, vol. 18, no. 4, Fall, pp. 52-60.

Santhanam, M.R. and Hartono, E., 2003. Issues in linking information technology capability to firm performance. MIS Quarterly, vol. 27, no. 1, March, pp. 125-153.

Seifert, R.W., Thonemann, U.W. and Hausman, W.H., 2004. Optimal procurement strategies for online spot markets. European Journal of Operational Research, vol. 152, no. 3, pp. 781-799.

Smeltzer, L.R. and Carter, J.R., 2001. How to build an e-procurement strategy. Supply Chain Management Review, vol. 5, no. 2, March/April, pp. 76-83.

Sriram, V. and Stump, R., 2004. Information technology investments in purchasing: an empirical investigation of communications, relationship and performance outcomes. Omega-International Journal Of Management Science, vol. 32, no. 1, February, pp. 41-55.

Subramaniam, C. and Shaw, M.J., 2002. A Study of the Value and Impact of B2B E-commerce: The Case of Web-Based Procurement. International Journal of Electronic Commerce, vol. 6, no. 4, Summer, pp. 19-40.

Sveiby, K.E., 1997. The New Organisational Wealth, Berrett-Koehler Publishers, San Francisco.

Thomson, J.D., 2005. Innovative perspectives: Value creation and electronic procurement. Proceedings of the 7th international conference on Electronic commerce ICEC '05, 15-17 August 2005, pp. 417-421.

Tucker, D. and Jones, L., 2000. Leveraging the power of the Internet for optimal supplier sourcing. International Journal of Physical Distribution and Logistics Management, vol. 30, no. 3/4, pp. 255-267.

Wade, M. and Hulland, J., 2004. Review: The Resource-Based View and Information systems Research: Review, Extensions, and Suggestions for Future Research. MIS Quarterly, vol. 28, no. 1, March, pp. 107-142.

Webb, A.R., 2004. Manager's Commitment to the Goals Contained in a Strategic Performance System. Contemporary Accounting Review, vol. 21, no. 4, Winter, pp. 925-58.

Webster, J. and Watson, R.T., 2002. Analysing the past to prepare for the future: Writing a literature review. MIS Quarterly, vol. 25, no. 2, June, pp. xiii-xxiii.

Yen, B.P.-C. and Ng, E.O.S., 2003. The impact of electronic commerce on procurement. Journal of Organizational Computing and Electronic Commerce, vol. 13, no. 3-4, December, pp. 167-189.

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