IMPACT OF E-COMMERCE ON BUSINESS STRATEGY

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Abstract

Businesses have been traditionally advised to adopt information and communication technologies (ICT) so as to support the achievement of their objectives. However, entry into business-to-business e-commerce may require the concurrent adoption of new business strategies. This paper argues, therefore, that ICT analysis needs to be considered at the same time, and at the same strategic level, as internal, competitor and market analysis. This is because the source of the competitive advantage brought by ICT has changed, to be largely obtained through increase in customers' perceived value. The literature presents a confused picture of the likely consequences to a firm of its adoption of e-commerce. This paper concludes that any such adoption must be evaluated in the environment of the individual firm.

Introduction

Digital technology, particularly the Internet, is described as an enabler of a new, quasi economically efficient marketplace, only limited by consumers' unpredictable behaviour and characterised by "*perfect information for all*", or at least, "*equal access to information about products, prices, and distribution*" (Strauss and Frost 2001, pp. 157-63). However, how ICT impacts on business remains uncertain. Moderating environmental and circumstantial constraints include, *inter alia*, the variable rate of business representation on-line, inefficient logistics, imperfect information search capabilities, political boundaries, and the black-box that business relationships are still today. If a firm adopts ICT based innovations without understanding their scope and implications, realigning business' strategy may be overlooked and resources needed to achieve competitive advantage from the ICT investment may not be made available (Weber 1997). The investment may be wasted or even detrimental to the pre-adoption competitive position.

Internal, competitor and customer analyses precede the formulation of strategies for market segmentation, targeting and positioning. Within this process, ICT is mostly considered either as (a) an environmental influence, along with economic, political and competitive influences (Hutt and Speh 1998, p. 31), or (b) as an element of internal analysis, under the potentially misleading label of "technological environment analysis" (p. 168). The conventional wisdom is that '*technology strategy must reinforce the competitive advantage a firm is seeking to achieve and sustain*' (Porter 1985, p.78). This paper argues that decisions about potential adoption of business-to-business e-commerce affect internal, competitor and market analyses and, therefore, e-commerce adoption may require the concurrent adoption of new business strategies. Here, e-commerce is interpreted generally as "*the use of electronic means and technologies to conduct commerce*" (Whinston *et al*. 1997).

Competitive Advantage And The Adoption Of ICT

The impact of ICT innovation on business can be viewed as a succession of stages over time. Decisions about ICT adoption were initially made in the framework of production theory, in which adoption creates benefits in the form of lower production costs for a given level of output (Capon and Glazer 1987). Technology adoption by a firm led to competitive advantage through productivity based efficiency, provided there were effective barriers to entry (Hitt and Brynjolfsson 1996; Stair 1992; Erickson *et al*. 1990; Porter 1980 and 1985). Porter's barriers to entry prerequisite for achieving competitive advantage was tested as ICT became more affordable and accessible, and the idea of ICT-based, production related, competitive advantage became less sustainable during the 1980s and 1990s, when ICT penetration increased rapidly. By the late 1990s technology was increasingly forcing business operations to follow standardised models of behaviour and terminology required by off-the-shelf business software (Durbin 1987; Chau 1995; Kumar and van Hillegersberg 2000).

Given wide diffusion of production technology and a market increasingly perceived as global, firms needed to differentiate themselves and/or their products to establish or maintain competitive advantage (Brown 1999). This advantage was seen to reside in supplementary benefits provided to customers, leading to the creation of sustainable customer perceived value (Faes *et al*. 2000). As well as high perceived quality, control over costs and product innovation, a firm has to have excellent service and a market-driven learning-oriented culture and speed, that is, the ability to deliver quickly and to quickly solve customer problems (Slater, 1996). In business markets, speed also involves time to market (Dumaine 1989), because being first to the market is usually associated with competitive advantage (Stalk and Hout 1990). Managerial attention refocussed on ICT, not for production, but for management of procedures associated with sales and business administration (Capon and Glazer, 1987), because "*in order to be competitive, marketing executives must employ technology to develop low-cost customer-prospecting methods, establish close relationships with customers, and develop customer loyalty*" (Kalakota and Whinston 1997, p. 9).

Competition based on customer's perceived value has two consequences for business. One, it renews dependence on ICT systems that facilitate the efficient use of resources to meet customers' needs and support delineation of positioning strategies that gain their preference and loyalty. Two, it shifts business orientation towards the market, focusing strategy on customer loyalty and the development of long-term relationships with good customers (Wren *et al*. 2000; Slater 1996). This focus requires a business to know what actual and potential customers consider in their valuations in order to position itself as their best provider of satisfaction, and to closely control and allocate resources. Focussing on supplementary benefits for creating value requires the identification of *which* supplementary benefits provide competitive advantage.

The difficulty of knowing what to expect from adopting e-commerce

The subjectivity in the interpretation of the term 'e-commerce' has been noted in the literature (Banaghan and Bryant 1998; Peterson 1997) and is reflected in widely varying statistics on current and predicted e-commerce activity (e.g. OECD 2000). Still, a firm cannot evaluate the need for e-commerce strategies or for associated changes in business strategy without a clear notion of what e-commerce is. Schneider and Perry (2000) argue that "*electronic commerce includes so many activities that it can be difficult for managers to decide where and how to* *use it in their businesses*" (p. 23). This difficulty is complicated by many authors' failure to define their usage of the term 'e-commerce' (Plant 2000; Maddox 1998). Some times the term is described rather than defined (e.g. "*e-commerce covers the range of online business activities for products and services, both business-to-business and business-to-consumer, through the Internet*" (Rosen 2000, p. 5)) and there are also instances of the use of the terms 'e-commerce' and 'Internet' being so confused that the advantages of the latter are appropriated by the former (Evans and King 1999), and instances of the term 'e-commerce' being used where the emphasis is really on a particular Internet characteristic such as 'electronic interactivity' (Hodkinson and Keil 1996).

The definitional lacuna around e-commerce inevitably blurs understanding of the advantages and disadvantages of its adoption for individual firms. A review of a cross-section of fourteen papers in the business and academic literature yielded over forty advantages and thirty disadvantages that may impact on firms when they adopt e-commerce in business-to business operations. These possible impacts are reported in tables 1-3, respectively concerned with internal, market or competitive factors. Thus, table 1 lists advantages and disadvantages concerning internal factors important for aligning resources to the market environment.

Table 1: Implications For Business From Adopting E-Commerce: Internal Factors

ADVANTAGES	DISADVANTAGES
Increased revenue [1], sales and profits [2]	Need to account for critical mass [2] and costs in staying on top of ICT [4]. Specific skills required [2] [7] [9] may require re-skilling [5];
Reduced inventories [12]	Small businesses have to carry more stock [4]
Possible economies of scale [1]. Reduced costs: material, transaction, operation, marketing, distribution [1] [2] [3] [4] [5] [6] [7] [8] [12]; Reduced start up capital needs, lower overheads [9] [13]. Disintermediation [5] [13].	Resistance to payment for services offered via the web [7]. Unreliability and risk [8] [14]. Disintermediation [5] [9] [11]. Difficulty in integrating existing databases and software designed for traditional commerce into the software that enables e-commerce [2]
More diverse business activities and economies of scope [1]. Shorter product development cycles [12]. Increased flexibility and responsiveness [2] [3] [5] [7]. Access to commercial research [7] [8]	Long access and search times for information [7] [9]; traffic congestion [7] [8]. Time and expense in setting up new processes for handling orders, dispatch and freight [4].
Better control over supply chains [1] [4]	Loss of control through loss of relationships [4]
Improved sales tracking [12] and marketing [7] Faster transactions and cash generation [3]; automated buying processes [12]	Measurement challenges: difficult to determine the audience reached, costs and benefits [2] [7]. Confusing and anarchic information [9]
Key: [1] Kalakota and Whinston 1997 [2] Schneider and Perry 2000 [3] Levy 2000 [4] Gome 2000 [5] Hannen 2000 [6] Skeffington 2000 [7] Evans and King 1999 [8] Honeycutt *et al*. 1998 [9] Hodkinson and Kiel 1996 [10] Rosen 2000 [11] Spalter 1995 [12] Banaghan and Bryant 1998 [13] Chircu and Kauffman 2000 [14] Shroder and Yin 2000.	

The table shows that advantages from economies of scale may be negated by critical mass needs, and that the wide agreement about benefits from reduced costs needs to account for new costs. Although e-commerce is usually viewed as leading to reduced inventories, small businesses may need to carry more stock. Assumptions of improvement in operational efficiency and supply chain management are apparently challenged by loss of control due to disruption of existing relationships, by measurement difficulties, and by limitations in the integration of existing databases and transaction-processing software into the software that enables automation of the buying process in particular, and e-commerce in general.

Table 2 shows that the impact of e-commerce is similarly ambiguous for market factors such as definition of markets, relationships, customer service, customer value, delivery channels and new products. For example, e-commerce is claimed to lead to a more accurate distribution of service information by reducing human involvement. However, a firm's inability to accommodate global differences may limit what information is available. Reports of the development of closer customer relationships from e-commerce adoption face the view that existing relationships may be disrupted.

Table 2: Implications To Business From Adopting E-Commerce: Market Factors

ADVANTAGES	DISADVANTAGES
Company location made irrelevant [10]	If unable to accommodate global differences, may justify exclusion of info (e.g. prices) [7]
Closer customer relationships [1] [8]	Disrupts relationships along selling channel [3]
Reaches/creates new markets [1] [8] and virtual communities [2] and alternate sales / delivery channels [1] [7] Widens markets to global level. Marketing efforts may be narrowly targeted [2] [7].	Risk from dealing with shoe-string businesses [9] Sceptical buyers [7] Risk from unknown customers [11] Cultural and legal impediments [2]
Buyers access more suppliers [2] [3] [9]	Together, large buyers have power over prices [4]
Suppliers reach more buyers [2] [3]	Suppliers forced online [4]
Better customer service [1] [5] [7] [8] Increased customer value [6]	Restricts competition: business deals only with suppliers that have e-procurement systems [4]
New info-based products created [1] Buyers can easily compare attributes of competing products [4]	Advantage shifted from seller to the buyer [3]
Service info better distributed [2] [5] and problems solved faster [8]. Feedback increased [10], communication improved [1] [8] [9] Contribution to societal gain [2]	Security problems [2] [7] [8] [9]. Web sites are dull [8]; confusing and anarchic information environment [9] Unwieldy URLs [7]
Key as per table 1.	

Table 3 reports on competitive factors. E-commerce is argued to stimulate non-price competition, although large firms may band together to push down their suppliers' prices. Barriers to entry are variously reported to be created or removed. In addition, the claim that business size is irrelevant appears to contradict the views that online access will give greater power to large businesses and will create more opportunities for small businesses, or, more dramatically, that e-commerce will spell the end for small businesses.

Table 3: Implications To Business From Adopting E-Commerce: Competitive Factors

ADVANTAGES	DISADVANTAGES
Business size is irrelevant [10] Small businesses can compete on a more equal technological footing with multinationals [1]; more opportunities for small businesses [4]	Greater power for large businesses [9]. Spells the end for small businesses [4]
Price convergence at a lower price level. Stimulates non-price competition [4] [9] and competitive intelligence [7]	Reduced competition [4]
Eliminates some national / global barriers to entry (e.g. marketing costs, distribution and shelf-space acquisition) [8]	Creates barriers to entry [9]
Reduced costs for big business, choosing only suppliers that practice JIT delivery [4]	Bad for small business if buyers require JIT delivery [4]
Large businesses may minimise inventory and increase cycle [4]	Risk from dealing with shoe-string businesses [9] [11]
Key as per table 1	

While the allocation of items to tables has an element of subjectivity, the comparatively fewer entries in table 3 suggests that the impact of the adoption of e-commerce on competitive advantage is not well understood and has not been extensively investigated. The apparently contradictory arguments found in the literature beg the conclusion that e-commerce adoption must be evaluated within the environment in which it is to be applied. This means that each business will need to take its unique circumstances into account. In order to emphasise how the potential impacts of e-commerce adoption are more complex than supposed by the "perfect information" philosophy, the cases of disintermediation, market segmentation, and realignment of networks are briefly considered below. These three areas of impact, respectively affecting internal, market and competitor analyses, illustrate why business strategies must be adjusted interdependently with e-commerce adoption strategies.

In terms of *disintermediation*, the business-marketing channel must be designed and managed to ensure that distribution is effectively channelled to customers' needs. Intermediaries' performance is often crucial to the success of the overall strategy. Good intermediaries add value through their knowledge of and relationships with their local markets. Intermediary selection and the development of contractual arrangements are therefore important processes, which may lead to long term relationships (Ford *et al*. 1998, 201-3). E-commerce may facilitate relationships with intermediaries by enabling shared databases and processes that contribute to closer customer relationships (Honeycutt *et al*. 1998) It can also replace traditional intermediaries by process-focused technology, enabling direct contacts between buyers and suppliers -- that is, disintermediation (Chircu and Kauffman 2000). While the adoption of process-focused technology may reduce transaction costs, the analysis should also consider the contribution intermediaries make to value. This contribution may make disintermediation more costly overall (Sarkar *et al*. 1995).

In relation to *market segmentation*, e-commerce potentially widens existing markets to the global level and creates new markets (see table 2). In fact, because electronic access is not universal, the global electronic market is some subset of the global market. To ask whether this subset is larger than the current potential market for a firm is a valid question if the latter includes many businesses without Internet access. If segmentation is based on behaviour, different strategies need to be developed for different segments. Whether a segment will be targeted depends on the firm's ability to influence that segment, and on the segment's contribution (relative to alternative segments) given available resources and corporate objectives. The rate of e-commerce adoption/usage, however, has been proposed as a segmentation factor (Strauss and Frost 2001; Figueiredo 2000). If the use of e-commerce as a segmentation criterion is applied to a market when the firm already segments that market using other criteria, some customers may be allocated to more than one segment. Subjecting the same customer to different strategies risks cognitive dissonance, misallocation of marketing efforts and, ultimately, inefficient use of business resources.

Finally we consider the *realignment of business networks.* Global access to information and ICT, enabling e-commerce, has been pictured as leading to a level and competitive field in which size and location are irrelevant (Rosen, 2000, 9). This scenario, however, is challenged by the development of the e-consortium, "*in which a set of organizations … create an online entity in an area in which their individual strengths can be better leveraged to create value*" (Plant, 2000, p. 23), and of online buyer exchanges or cooperatives (e-procurement). These are created for the purpose of increasing efficiency and streamline purchase systems, while simultaneously gaining better control over industry supply chains. This involves (a) pushing prices down, (b) reducing the number of suppliers able to supply the larger quantities, and (c) forcing suppliers to adopt e-commerce (Gome, 2000; Strauss and Frost, 2001, p. 13). While e-commerce may not spell the end for small business as feared by Gome, firms operating in the industrial market do need to realign to new structures of business networks.

Conclusion

It is no longer credible to claim that e-commerce is just a tool that enhances current ways of doing business (Skeffington 2000), as illustrated by the cases of disintermediation, market segmentation and the realignment of business networks, which involve a reciprocal influence between e-commerce adoption and each of internal, market and competitor strategies. Hence e-commerce must impact on a business' competitive position. At the very least, e-commerce changes consumer and supplier behaviour (Peterson 1997; Hodkinson and Kiel 1996, p. 116) and this, by itself, should justify an overhaul of existing strategies. Determining whether a business should design a new strategy for its participation in the business market post-e-commerce, or retain existing strategies unchanged, or simply augment existing strategies with e-commerce features, is a decision mostly overlooked in the literature. Because e-commerce has the potential to modify the competitive environment, all participants in the business market are likely to be affected by e-commerce, regardless of whether they are proactive about adoption or not. The impacts need to be analysed on a case specific basis.

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