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Merging Electronic Commerce Technologies for Competitive Advantage

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Abstract

Internet commerce has, in recent years, been promoted as the essential way of doing business. The Internet (using www technology) is however primarily a retail medium. Organisations that establish successful Internet selling operations will need effective backroom systems and slick logistics on the supply side of their operations. In many cases these logistics will also be co-ordinated using electronic commerce (EC); not the technologies spawned from the popularisation of the Internet but the rather older technologies of Electronic Markets (EM) and Electronic Data Interchange (EDI). It is argued that that the merging of Internet EC with EMs and, in particular, with EDI gives new opportunities for Competitive Advantage.

Introduction

Electronic Commerce (EC) is a term coined, or at least brought into common usage, to coincide with the popularisation of the Internet. Some authors see the phenomenon as being largely or entirely associated with the Internet. Seddon (1997), for example, analyses the evolution of IT into three eras and suggests that *'the world has just entered a third new phase in the evolution of IT capabilities: the Internet era'*. In this context he then defines EC as:

'Electronic Commerce is commerce enabled by Internet-era technologies.'

Other authors, while usually concentrating on Internet commerce, will draw the boundaries of EC rather broader than this. Wigland (1997) claims that *'there are upward of 30 different technologies that individually or mutually enable EC'*. That said, this paper suggests that there are three 'technologies' that are at the core of EC. The three technologies are:

- Electronic Markets (EM)
- Electronic Data Interchange (EDI)
- Internet Commerce (IC) (and analogous public ICT systems)

These technologies are, in some senses, not precisely defined and they have their overlaps. They can be represented on a Venn diagram, see *Figure 1*.

Each of these technologies has its strengths and weaknesses - they are appropriate to some trade cycles and to some trading exchanges but not to all.

Electronic Data Interchange (EDI)

EDI goes back a long way. It has not become the *lingua franca* of commerce that was predicted in the 1980's (see for example: Sokol, 1989 and Sokol, 1995) and neither has it been a vital tool for strategic competitive advantage (see for example: Benjamin, *et. al.*, 1990). EDI has however become *the way that business is done* in important sectors of the economy, most notably the large retail groups and the vehicle assemblers.

EDI is appropriate to the execution and settlement phases of the *regular, repeated trade cycle* transactions of large organisations that have a close and interdependent relationship with their suppliers. (The applicability of the three EC technologies to classes of the trade cycle is discussed in Whiteley (1998)).

Electronic Markets (EM)

EMs, like EDI, predates the commercial use of the Internet. In the 1980s they were seen as the instrument that would expand the role of effective market mechanisms in the economy, see Malone, *et. al.* (1987). As with EDI, EMs play a vital role in a number of market segments but their adoption has been limited. It is the customer that stands to benefit but *'more efficient distribution of information causes decreasing profit possibilities for sellers.'* (Bean, *et. al.*, 1995). In these circumstances, suppliers can be reluctant to provide the information that the EM needs to operate, see for the example the case of Reuters failed attempt to establish an EM in air-cargo space (Bean, *et.*

Figure 1. The Three Categories of EC

al., 1995).

EMs operate in a number of financial and commodity markets and notably as airline booking systems. Their primary purpose is in the search phase of the trade cycle but they often include facilities for the execution and settlement of transaction. To date their primary customers have been organisations rather than retail customers; access by retail customers has typically been through an intermediary such as a travel agent or a share shop.

Internet Commerce (IC)

IC, over the last few years, has been announced with great fanfares and has been portrayed as the dawning of a new electronic age. Numerous experts have supported this view, one such example is the McKinsey consultancy which has predicted a home shopping market in the USA of US\$ 4-5 billion by 2003 (quoted in: Bloch, *et. al*, 1996; Wigland, 1997).

The use of the Internet and the world wide web (www) for EC is appropriate to the *irregular transaction trade cycles*. This may be inter company transactions for secondary supplies (computer and office supplies being good examples) or it may be used for retail transactions. In the former case there is often a prior arrangement, the network is closed (an Intranet) and credit facilities will typically be offered. In the later case payment is typically at the time of purchase (albeit by credit card) and the execution and settlement phases of the trade cycle are coincident.

(This discussion of EC on the Internet excludes the use of the Internet network as one of a number of alternative post and forward network for the communication of EDI messages).

Internet and Electronic Markets

The use of IC in the field of EMs is an interesting and developing case.

In theory at least, the use of the Internet should give the consumer the opportunity to bypass the intermediary and, with appropriate interfaces (supplied by a new class of intermediary), directly access the EM. There are sites that do provide this facility to access airline booking systems but provision of such access has been resisted by (many) financial markets. In the case of the airlines, each company is setting up its own site with access to only the flights of that airline and the partner airlines; arguably an attempt to move away from the price competitive market in air-travel that has been facilitated by the airline booking EMs.

It is noted that the Internet search facilities can be used in a similar way to the search facility of an EM. However the available information is more defuse and the search mechanism less specific than in a specialised trade sector EM. Excepting for the dedicated surfer, the search costs (search time) limits the effectiveness of the IC as an EM.

Integration IC and EDI for Competitive Advantage

Organisations trading on the Internet, if they are to build up a substantial business operation and a satisfied consumer base, will need to be slick in all aspects of their business. Raman (1996) observes:

'... if an [consumer] order can be placed electronically in a split second, it will be unacceptable that processing and delivery take several days.'

For operations supplying a limited range of goods this may not be a great problem. Organisations with wider ambitions will have to rely on their supply chain in order to ensure a quick efficient response to their customers; this implies a just-in-time supply chain co-ordinated by the mature use of EDI (Whiteley, 1996). Examples of organisations that are using consumer EC supported by an EDI infrastructure are:

- Rover Cars where the use of EDI has reduced the planning/production cycle time from seven weeks to two. Customers at the Rover showroom can specify the model / trim / option package they want on workstations using the *Discus* system and the car, if not in stock, is built to order (Computing, 1992; Coopers and Lybrand, 1996).
- Internet bookshops (one of the more dramatic case studies of successful consumer EC) are able to order books they do not stock for rapid delivery using the book trade's EDI infrastructure.
- Tesco (the UK's largest supermarket chain) is rolling out a program to take orders over the Internet for delivery of groceries to the customer's home (Revel, 1997).

Of these cases the Internet bookshop is in the happy position of being able to build on the electronic infrastructure created by established players in the sector. Quick response by the automobile manufacturer relies on the shortened manufacturing cycle times and flexible production planning enabled by EDI. This electronic trading, whilst currently based in the showroom, adds to the questioning of the traditional dealer network which is already been challenged on competition (anti-trust) grounds and by third party EC developments. Finally the supermarket is able to offer the EC service because of its nation-wide chain of superstores and its highly developed EDI and logistics network. In doing so it is able to enhance its image and possibly steal some customers from its rivals but it is in danger of attacking its own massive investment in retail facilities.

Conclusions

Internet commerce is often seen as the great leveller. A small outfit with a warehouse and a few PCs can have an Internet presence that compares well with that of the large corporation. However, if business is to grow, the consumer oriented EC will need to be backed up by an efficient and fast supply chain. A mature, efficient and electronically co-ordinated supply chain is a long term investment. Organisations (and trade sectors) that have invested in EDI, if they use that infrastructure imaginatively,

and take risks with their established patterns of trade, have an opportunity for competitive advantage in the developing world of Internet commerce.

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