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E-commerce and the retail process: a review

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Abstract

Views abound on the impact of the Internet and e-commerce on traditional forms of retailing. Scenarios range from on the one hand, the almost total devastation of existing physical retailing to, on the other, limited if any impact upon "real" retailing.

Despite excessive hype, spectacular failures and the myriad of conflicting views and crystal-ball gazing, e-commerce processes and procedures provide the potential for a fundamental reassessment of how retailing operates and how retailers behave. Without doubt, the existing ways of operating and the associated cost structures within retailing will be reassessed under the onslaught of new technology and new retail structures.

This paper reviews the published evidence on the impact of e-commerce on the retail process. It reviews the situation rather than introducing new evidence. The focus is on the process as it supports B2C activity and how retail processes and procedures could be affected by e-commerce, rather than a pre-occupation with sales impact through traditional merchandise and product sector typologies.

Three conclusions are drawn. First, the largest retailers are now pursuing Internet-enabled advantages and cost reductions in operations, which could translate to an enhanced competitive position in process, structure and relationship terms. Secondly, consumer reactions to the new real and virtual offers will be fundamental to their success and failure, but as yet consumer reactions are not fully understood. Thirdly, existing retail floorspace will need enhancement in quality and presentation if it is to continue to provide retail functions.

Keywords: Internet; E-commerce; Retail; Processes; Review

1. Introduction

E-Commerce is big money—certainly for consultants, if no one else! It is virtually impossible to read a newspaper or trade magazine without being confronted with at least one article on the success or failure of an e-commerce venture. Log onto the website of any major consultancy firm such as KPMG or Ernst & Young and it is possible to download the current edition of their latest e-commerce survey and to follow up with their nominated e-commerce specialists. In the press, every championed success seems to be matched by a high-profile failure. Tesco's successful (store-based picking) on-line shopping service and the transfer of its expertise to Safeway in the USA can be contrasted with Somerfield's closure of 24-7, Budgens withdrawal from the Internet and the struggles of Peapod and others. Probably the best known e-commerce brand, Amazon, has had financial difficulties and has laid off staff to cut costs, yet at the same time has the capacity to take over Toys "R" Us problematic e-commerce operation. For every VictoriasSecret.com there is a Boo.com. Whilst commentators may not agree on the eventual shape or outcome of the "e-revolution" it is clear that the arrival of e-commerce, in its many forms, has the capability to fundamentally alter the established "rules of the game" as far as the retail and distribution industry is concerned.

This paper focuses upon reviewing the impact of e-commerce upon fixed store locations. It concentrates on the business to end-consumer (B2C) view of e-commerce, often termed e-retailing, rather than the wider, more holistic, perspectives which would incorporate the business-to-business (B2B) market or even broader conceptualisations of 'new commerce' (Dawson, 2001). It is, however, inappropriate to separate these perspectives totally (as some commentators do), as e-commerce initiated changes in networks, relationships and

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behaviour of upstream elements in the distribution channel are integral to the downstream impacts most evident to the consumer. As distribution channels move away from dyad-based transactional behaviours towards administered vertical marketing systems (Dawson and Shaw, 1989), the emphasis on supply chain management, and the integration of up- and down-stream activities increase. Various e-commerce applications reinforce this relationship. Some limited discussion of aspects of the B2B market is therefore included.

In a world dominated by jargon, we should remember that e-commerce is shorthand for *electronic* commerce. What is being considered is process innovation, whereby technology provides the capability for a reconfiguration of existing business and channel relationships, and the scope for introductions of new operations. Dussart (2000) e.g., argues that the Internet will engender eight concomitant and interrelated "*re*-volutions" in the business world—defined as *re*-vamping management, *re*-storing control, *re*-launching the economy, *re*-configuring offers, *re*-structuring markets, *re*-distributing power, *re*-defining relationships and *re*-organising channels.

This process innovation arises from the ability of the Internet to provide electronic links between dispersed sources of information, the enhanced collection and use of real-time data, the replacement of inventory with information, and the changing of traditional tasks and roles in the distribution channel. The UK Foresight Electronic Commerce Task Force (2000) consultative report goes as far as to suggest that "the critical features of the Internet, from a business perspective, are that it reduces almost to zero the marginal costs of information, communication and distribution". This however has to be seen as an over-statement. Whilst some marginal costs do become almost zero, there is no doubt that other costs increase to take their place. Whilst it is product-dependent to some extent, distribution costs do *not* necessarily approach zero in an Internet channel. Brynjolfsson and Smith (2000) point out that the idea of "frictionless commerce" being introduced by the Internet is really not accurate.

As with much of the Internet hype therefore, it is important to go back and re-think the business and consumer processes that are being altered. In conceptual terms this process innovation can be considered as the business scope redefinition stage of Venkatraman's (1994) model of technology use within business. It is process innovation which provides the scope for new business models (see e.g., those given in the Foresight Electronic Commerce Task Force (2000) report) and the potential for fundamental change in the distribution system (Younger, 1998).

This paper aims therefore to consider the impact of the Internet on the retail structure through a reexamination of the processes of retailing. It has to be emphasised that the approach taken here is to review the literature and published evidence for trends and tendencies and to comment on the probable directions of change. The paper is a review that does not introduce new evidence itself. It is structured into four sections. First, to complete the introduction on e-commerce, some market projections are considered and discussed. Secondly, the processes of retailing affected by e-commerce are outlined and the balance of effects is considered. Thirdly, the implications of the "new" methods on physical retailing and its use of land and space are presented. Finally, some concluding remarks are provided.

2. Market projections: the end of the [shopping] world as we know it?

As with most innovations that are in their introduction phase there is a plethora of views of the long-term success (or failure) and impact of the innovation, many of which project a highly optimistic future (e.g., Birch et al., 2000). Indeed, the short history of consumer Internet purchasing is littered with spectacular overestimates of the rate of take-up by consumers. To some extent we are observing the classic stages of the conflict–response model outlined by Fink et al. (1971). The arrival of e-commerce causes at first shock, and defensive retreat (denial, etc.), which is in turn followed by phases of acknowledgement, and adaptation and change as the larger and more established traders bring forward a more considered strategic response. This response often embraces activities they previously derided (e.g., the convergent models reported in Chen and Leteney (2000) and Enders and Jelassi (2000)). As Katros (2000, p. 75) puts it "Retailers have worked through the stages of shock, denial, anger, grief and acceptance in coping with the Internet, and are now rushing to identify and secure ways to protect their customer relationship franchise". Projections of future impact vary widely. The report produced by the Centre for Research on Innovation and Competition at UMIST for the UK Foresight Panel provides projections for UK e-commerce, from widely respected commentators (Table 1). These range from around £2 billion to £7 billion sales by 2003, i.e., a rather substantial error margin. Updated estimates from a range of sources are provided regularly at http://www.marketspace.org.uk and again confirm considerable variations in estimates of sales and market size. Other figures on this website show however, continued uptake of e-commerce technology in the UK.

Most projections of market share are based on a sectoral analysis of impact. For the USA, in a paper which outlines a number of key considerations in e-retailing, Stern (1999) identifies high-, moderate- and low-impact sectors. The high-impact sectors (e-retailing

Table 1
Estimates of the UK market for e-commerce (£ million)

Source	1998	2001	2003
Datamonitor	37.0	490.0	1207.0[a]
Optimedia	400.0	4700.0	7200.0
Forrester	N/A	N/A	3000.0
Jupiter	101.0	730.0	2580.0
Fletcher	230.0	N/A	3000.0

[a] 2002.
Source: Adapted from Foresight Retail E-Commerce Task Force (2000).

Table 2
Projections of market growth (UK)

Sector	1999		2005	
	£ million	%	£ million	%
All retail	581.0	0.29	12533.0	5.0
Grocery	165.0	0.20	4690.0	4.9
Clothing and footwear	5.0	0.01	1843.0	4.0
Computer software	122.0	9.97	1502.0	51.9
Electricals	18.0	0.17	993.0	7.6
Music and video	85.0	2.87	782.0	20.4
Books	106.0	5.15	473.0	18.3
Health and beauty	1.0	0.01	355.0	2.5
Other	79.0	0.17	1625.0	2.4

Source: Verdict (2000).

taking between 10% and 20% of the market) include books, music, office products, toys, computers; the moderate impact sectors (3–5%) include sports goods, clothing, home furnishings, and auto spares; and the limited impact sectors (0–2%) are seen as DIY, grocery, shoes, furniture. Rosen and Howard (2000), focusing on those products which 'lend themselves' to shopping by computer take a similar approach. Other projections from Forrester for the USA in 2004 have the highest penetration levels in computer software (50%) and computer hardware (40%), followed by music (25%), books (16%) and video (15%), whilst food and beverages (3%) furniture (5%) and tools and garden (5%) are the least affected. Projections for the UK from Verdict (Table 2) suggest a similar split in impact amongst sectors, although the UK grocery projection provided by Verdict is notably higher than that suggested for the USA. This possibly reflects not only differences in market conditions and in the structure of the grocery market between the two countries, but also different approaches to fulfilment.

Academic papers which provide overviews of e-retailing developments similarly tend to follow a sector-by-sector framework for reporting (see e.g., Rowley, 1996; Pavitt, 1997; Morganosky, 1997; Morganosky and Cude, 2000; Doherty et al., 1999; Hart et al., 2000; Zott et al., 2000). Such sector-based projections are intuitively appealing. They fit with traditional product-based segmentations of the market. Basic product characteristics such as physical size, weight, perishability and fashionability allow some explanation for the varied uptake and interest shown by specific retailers within sectors. There is also a clear link to changing product characteristics and, in particular, the capacity for digitisation and electronic capture and transmission. As with traditional store-based retailing, however, sectoral projections disguise the range of approaches undertaken, and may ultimately limit our understanding of the potential of e-retailing. In "bricks" retailing we recognise a wide range of positioning options undertaken by operators based upon consumer motivations and values. Yet to date in "clicks" retailing, the focus appears to remain primarily upon macro-level evaluations based upon product sectors, although there is emerging work on branding (e.g., Davis et al., 2000; Degeratu et al., 2000).

In assessing the future uptake of e-retailing, the acceptability of the concept to consumers, and how they interact with this new retail medium is crucial. E-retailing requires a change in some of the traditional shopping behaviour processes (e.g., information search, purchase method, product possession). Some academic work has examined the motivations and reactions of consumers to computer-mediated environments. In particular, the work of Hoffman and Novak (e.g., 1996, 1997, 2000a) provides a valuable insight into marketing and consuming interactions with computers. Similarly, the work of Peterson et al. (1997) is a sensible examination of some of the important issues. Reynolds (2000) provides a very useful critical appraisal of many aspects of e-commerce, including consumer reaction. Brynjolfsson and Smith (2000) use a detailed examination of pricing and purchasing in the book and CD markets to explore a number of key consumer and market-related issues. Bakos (2001) similarly looks at the impacts of "digital markets".

Although the work noted above explores the consumer shopping process, it is questionable, however, how much of the *process of retailing* and the positioning of retailers has been fully analysed. From the retail perspective a growing distinction is now being made based upon shopping modes, with a line being drawn between, e.g., mundane/repetitive shopping and fun shopping. Sparks and Findlay (2000) identify three different approaches, which they note are commonly recognised in "traditional" retailing. First "price driven" offers, with the focus on price transparency and sourcing the lowest price for a product or service. A second option is "service delivery", which provides a breadth and depth of product/service options to satisfy the desire for uniqueness or distinctiveness. Finally, "time saving" offers, perhaps better defined as "provisioning", where routine basic components of shopping could be home delivered. Further perspectives on

e-retailing, as noted above, can be derived from the content of the role performed within the shopping process, be it simply information gathering or purchasing and delivery. There is also the recognition by some authors of the potential within e-retailing to create a unique or value-added feature through the establishment of communities (e.g., Armstrong and Hagel, 1996; Kotha, 1998), although the depth and cohesiveness of these "communities" and the demands placed upon their members is unclear.

However interpreted, ultimately the success of e-retailing will depend upon consumer use and acceptance. Those who play down the long-term impact or who emphasise possible adverse social impacts, point to issues of access and potential social division (the "surfs" vs. the "serfs"—see Scase (1999), Foresight Retail and Consumer Services Panel (2000) or on an international basis, OECD (1999)). Early surveys in the UK suggested that access was limited with the stereotypical Internet user being a degree level educated, single male, aged between 22 and 30 years and in a professional employment with a personal income of £40,000 plus. More recent surveys show that the gender divide is less pronounced amongst younger groups and that certain older communities are increasing their involvement. The standard innovation–adoption curve of early adopters, laggards, etc. appears relevant. A crucial feature of these surveys are that they are usually of PC-based Internet users. Whilst the PC is currently the prime source of access to the Internet, domestic PC ownership levels remain fragmented, and in the future other access points will dominate—particularly, interactive digital TV if the analogue signal is switched off in the UK in 2006/2010. By 2010 access to the Internet could be almost universal in the UK. The issue then becomes one not of physical access but of economic access and ability and willingness to use the medium to shop. Delivery issues will also need to be overcome. Similar concerns exist in the USA with an overlay of a racial divide as well (Hoffman and Novak, 2000b).

The media is quick to report any problems based upon the Internet shopping experience. Table 3 provides a summary of common problems with on-line shopping experienced in the USA and is typical of many such reactions. On a more strategic level, others recognise a number of core challenges for e-retailing. Reynolds (1997) identifies four major issues: the transferability of retail brands; the appropriateness and availability of distribution networks; the market share practicalities of extending market reach; and supplier relationships. He concludes "a truly profitable, transactional presence on the Internet appears somewhat more problematic than many of its proponents would have retailers believe". This is a theme he pursues in his more recent view of the market (Reynolds, 2000). Other hurdles suggested by Stern (1999) include: an unproven financial model; high-merchandise return rates; establishing customer trust; distribution costs; bounded rationality and the different cognitive process between fun and routine purchases. Recent high-profile withdrawals from Internet selling have obviously emphasised the problems in some commercial applications, but there are quite long-running success stories and new developments are still being launched.

Table 3
Reported problems with e-commerce (USA)

Problems experienced over the holiday period	%
Gift wanted to purchase was out of stock	64
Product was not delivered in time	40
Paid too much for delivery of product	38
Connection or download problems	36
Did not receive confirmation or status report on purchase	28
Selections were limited	27
Website too difficult to navigate	26
Website did not provide information needed to purchase	25
Prices were not competitive	22
Website did not offer enough gift ideas for me	16

Source: Anderson Consulting reported in Ody (2000).

3. E-commerce mechanics: a process innovation in retailing

A common debate in assessing the impact of e-commerce is the extent to which it complements existing fixed store retailing, as an alternative channel, or replaces existing channels—the "clicks *and* bricks"/"clicks *or* bricks" scenarios prevalent in the jargon. The outcome of this debate in the form of consumer purchases and spending diversion or addition will, to large extent, determine the impact upon physical stores.

As stated earlier, the threat to established retail and distribution channels, systems and behaviours arises because of the process innovation inherent in e-retailing. Dawson (2001) points to "new commerce" as being comprised of an innovative force, laden with information, enabling companies to speed up activities and increase their scope. Table 4 summarises what he defines as new commerce. The table illustrates clearly that processes are altered both inside and outside the business and that companies can differentially obtain advantages depending on their ability to effectively conduct their activities in this new era. Conversely, a failure to operate in these ways could lead to competitors moving ahead. Such are the potential impacts of the changes that there is little choice but to embrace them.

As a process innovation e-commerce provides the capability to transform traditional tasks and activities, and the associated costs, within the retail channel. The retail channel is traditionally viewed as a series of tasks

and flows (information, inventory, payment, etc.) with specific actors taking responsibility for these. We suggest that any assessment of e-commerce requires an exploration of how these activities, processes and ownership may change. For example, disintermediation has been identified as a possible outcome as channel members are displaced or removed as traditional activities transfer from one channel member to another. Others have pointed to the ease of entry to the market as allowing reintermediation in some channels, as more intermediaries set up as entry points to provide services, goods or information. In some cases, new activities emerge, but as in much channel change, many tasks and activities remain, although the process innovation alters the ownership, costs, efficiency and practice of these functions. These potential changes are, we argue, the key to understanding the impact of e-commerce upon fixed stores.

Table 4
Characteristics of the new commerce

1	New commerce companies operate through multiple marketing channels.
2	Channel structures in new commerce are intermediated in new ways.
3	New commerce retailers operate internationally.
4	New commerce uses new forms of nonprice competition.
5	In new commerce, organisational scale and scope economies become more important than establishment scale and scope economies.
6	New commerce companies do not subscribe to a traditional view of a difference between goods and services.
7	New commerce companies are using the convergence of information and communications technologies as a primary source of innovation.
8	New managerial ideas support innovation processes.
9	Customer loyalty is a central concept in new commerce.
10	Public sector policies relate to old commerce not new commerce.

Source: Adapted from Dawson (2001).

E-commerce has a number of implications for the retail process and how and where the tasks are performed. Here we consider the retail process as comprising the sourcing of products; stockholding, inventory and store merchandising; the marketing effort including branding; customer selection, picking and payment; and distribution of goods by or to the consumer. Each of these is now discussed in turn (see Table 5).

3.1. The sourcing of products

Retailers have always worked in partnership with selected suppliers in product sourcing and the lessons

Table 5
Rethinking the retail process

	Activity/process	Ownership	Costs	Efficiency
Sourcing of products	Electronic linkages, on-line relationships	Unchanged, though retailer dominance of supply chains possibly enhanced	Potentially reduced for all parties	Efficiency gains, arguably to all parties
Stockholding, inventory and store merchandising	On-line activity, Information and not product more important, more QR and JIT type activity	Probably unchanged, though in some categories potential to transfer stock to supplier	Potential to reduce costs of stockholding through less stock, but to increase costs of transport	Some on-line replenishment benefits and possible stock reduction
The marketing effort including branding	Corporate branding may become more important, multi-channel retailing will grow, clearer view of customer loyalty	Brand ownership become more critical including retailer brands, but also key manufacturer brands (of which there will be fewer)	More spend on the brand, but unclear about the returns	Reduced efficiency for retailers, but less clear for manufacturers, potential for gains from loyal customers
Customer selection, picking and payment	Menus and scripts will help customers, possibilities of automated replenishment for some	Consumers taking ownership but retailers left to do the process, e.g. picking and delivery	Retailers may see costs rise	Reduced retailer efficiency
Distribution of goods, by, or to the customer	Outsourced and/or consolidated	Currently done by consumers but moving to retailers	Costs will be incurred, for some retailers the consumer may be persuaded to pay	Reduced efficiency for retailers

learnt from key relationships have often been extended across the supply chain for that retailer. The Internet has opened up the possibilities for retailers to share such techniques with their suppliers and/or to force them to use business practices that help the retailer. As such the ownership and management of the sourcing activities changes. The most extensive retail example would be Wal-Mart's Retail Link. Wal-Mart defines this as:

> Information and an array of products that allow a supplier to impact all aspects of their business. By using the information available in Retail Link suppliers can plan, execute and analyze their businesses—thus providing better service to our common customers. Retail Link is a website that is accessible to any area within your company. Wal-Mart requires all suppliers to participate in Retail Link because of the benefits it provides (Wal-Mart Stores, Supplier Proposal Guide, p. 14).

The benefits would appear to be common systems and tools, supplier use of advanced systems, faster and more reliable communications, and enhancement of planning, forecasting and replenishment. In the UK we can see a number of retailers moving the same way, most publicly Tesco with its Information Exchange. These closed communities offer the advantages of simplification, automation and elimination of problem areas. The sharing of information produces the scope to manage sourcing activities more efficiently and cost effectively.

Going beyond this single retailer approach, however, two major global retail exchanges have recently been developed: Global NetXchange initiated by Carrefour and Sears Roebuck (see http://www.globalnetxchange.com) and WorldWide Retail Exchange operated by a large consortium of retailers (see http://www.worldwideretailexchange.org). These exchanges are aiming to be globally integrated retail supply chain networks, leveraging the Internet to seamlessly connect trading partners across extended retail supply chains, and have recruited many leading retailers as members. Exchanges have the potential to alter trading relations through the creation of open systems in which firms can form short- or long-term relationships with one or many partners. Buyers and suppliers that have previously had trouble reaching each other can connect. Suppliers can gain access to more buyers. Buyers can participate easily and view items from multiple suppliers. The electronic interface should lower transaction costs for both buyer and seller, and this transparency will likely drive down prices as well.

Whilst exchanges are currently in their initial stages and are basically unproven, though some auctions and purchasing have taken place, the potential to reduce cost and to streamline supply is clear. Whether organisational issues that restrict potential activities can be overcome is a bigger issue.

3.2. Stockholding, inventory and store merchandising

Following on from the sourcing of products, it is possible to see a number of time and cost benefits to retailers from changes brought about by the use of e-commerce and Internet-based systems in stock allocation and inventory control. For years, this area has been technically complex and amenable to computer-based solutions and current developments extend this approach. There are potential gains in terms of the volume and location of inventory held and opportunities to better use data to improve availability. These issues may also encompass the ownership of inventory.

It is also important to appreciate that as in some physical retail stores, the product displayed for sale may not be owned by the retailer, nor indeed may it be physically available at the time of purchase. Whilst consumers may accept this in some "real" stores, will they perceive "virtual" stores in the same way? It is possible that one key here is the consistency and reliability of fulfilment systems. Home delivery (if that is the solution) requires a different inventory and distribution system, though as some are showing (e.g., Tesco) there may be an opportunity to utilise existing assets. An ancillary component of this area of stockholding and replenishment is that of changing needs for, and from, physical space and retail property.

Rather differently perhaps, merchandising becomes a considerable issue with e-commerce. How should virtual stores look? Can catalogues be replicated directly on-line, or are there other, better ways to present the same products? There are many potential opportunities and difficulties in virtual retailing product representation and information. There may also be synergies, however (e.g., digital photography), between virtual (computer), virtual (catalogue) and physical shop product presentations.

3.3. The marketing effort including branding

One fundamental impact upon retail processes is that of customer access and the marketing effort, in general. E-retailing and the virtual store provides a 24 h shopping opportunity (making a potential nonsense of opening hours laws in the process—e.g., Tesco's operation in England) and in theory widens the "store" catchment area from the local to global level. Thus the traditional retail boundaries of "store reach" are changed both temporally and geographically. Customer access issues then become the ability to get "on-line" and the ability to pay rather than mobility, i.e., it is a more "pure" marketing requirement in that spatial (trading) issues become reduced in importance, although *access* issues remain. Whilst the current debate surrounding the payment process has concentrated upon security issues and consumer perceptions of on-line

payment risks, most now see this as a short-term barrier. In the longer term, and in respect to social exclusion issues, access to a payment card is more likely to determine usage rates. Whilst not minimising this social issue, it would appear that e-retailing does provide a bigger potential market for companies, though one that has many more potential competitors.

A second dimension of customer access is the access point itself. Most retailing occurs through fixed stores, with existing operators having "sunk" investments in physical fabric. The importance of "location, location, location" has been stressed in traditional retailing. The physical location of a store is seen as a source of competitive advantage, provides crucial entry barriers to competitors and is in most cases an expensive asset—yet the use of these access points and their commercial value may require major reassessment in an e-retailing context. We have already seen the power of e-commerce to remove entry barriers through the appearance of e-retailers such as Amazon, who have no history (and legacy) of fixed store retailing. However, the brand power of existing retailers should not be underestimated as a draw in the virtual world.

There are also changes that the Internet brings to the property market itself (Miller, 2000). There are changes in the demand for property and particular forms of property. This encompasses both store and distribution facilities. As a recent report has stated, this area is unclear at the moment, but it is likely that commercial risks in this area will increase (BCSC, 2000).

In-store marketing activities (such as merchandising discussed earlier) are only one dimension of the marketing effort. E-retailing again provides the scope for significant changes in the way the retail marketing function is performed. Many commentators argue that as there is an issue of consumer trust to be overcome when dealing with a virtual (unseen, unfelt, unsmelt) retailer, brand building is crucial—yet a range of alternative strategies also appear to be in place. Questions concerning the transferability of a brand based upon a fixed store environment arise, and perhaps more importantly over the maintenance and development of an on-line brand either in isolation or in tandem with a store-based operation (Davis et al., 2000; Degeratu et al., 2000).

Other marketing issues revolve around micro-level activities. On the one hand the more individualised data collection generated by these systems provides the opportunity for more refined segmentation and targeting of activities. Yet on the other the established mechanisms built around in-store ambience such as sight, smell, touch and human contact (how many times are we told that retailing is a people business?) are lost. Whilst some skills and activities may be easily transferred to the virtual shop it is clear that new skills, systems and activities will be required to support the marketing activity. In some cases, the activities will be required amongst computers and involving, e.g., intelligent agents (e.g., Rowley, 2000).

It is possible that different marketing skills will be needed in a virtual store. Retailers are concerned to get consumers to visit their physical stores and to extend, in many cases, the time they spend in the store. Repeat visits and long stays are also desirable in the virtual world. The techniques to improve the "stickiness" of virtual stores may, however, have to be different to those in the real world (Zott et al., 2000). What is the virtual equivalent of a café in a Borders bookshop or a crèche in Safeway? However, some techniques from the virtual world may find their way into physical shops, as data is better used to understand product cross-relationships.

3.4. Customer selection, picking and payment

Once the customer has "reached" the virtual store, e-retailing processes change traditional selection and picking activities. The introduction of self-service saw cost efficiency gains for retailers as the effort (and costs) of selection and physically picking product, along with certain process associated with payment in some retail sectors, i.e., bag packing, were transferred from the retailer to customers. E-retailing separates more clearly "order capture" (or selection) from "order fulfilment" and diverts physical tasks and their associated costs back to the retailer. The costs of these tasks and the way they are performed becomes an issue for the retailer, and indeed is one of the major cost implications of the new business model. In addition, self-service allowing the customer to select goods themselves, provided the opportunity for activities to ease selection, make instant replacement or substitution decisions, increase choice and purchase opportunities and created the scope for impulse lines and add-ons, all of which generated additional sales. The way in which such opportunities are realised via e-retailing is certainly different, and arguably less effective, although "l-click" type buying operations are one-way forward to improving the situation from a retailers' perspective.

As noted previously, the decision making of consumers in "real" and "virtual" stores can not be assumed to be the same and thus will have to be researched very carefully. Similarly, however, retailers may be able to adjust their activities to try to affect demand in different ways. Brynjolfsson and Smith (2000) show how on-line prices were lower but had a wider variation than equivalent product physical store prices, but that the incremental change in prices on-line was much smaller than in physical stores. There will be the development of new learning and possibly new skills in this regard.

3.5. Distribution of goods by or to the consumer

The greatest debate in e-retailing, however, probably revolves around the fulfilment and distribution processes. Supply chain developments have focused upon reducing inventory within the channel and improving service levels. E-retailing again requires existing processes and systems to be reassessed—will existing supply chain processes be appropriate or will new ones be required? The role of intermediary institutions and facilities are questioned, and from a total channel perspective the possibilities of disintermediation, with consumers dealing directly with suppliers or, reintermediation through new types of intermediary being developed, arise. Fundamental issues such as where (manufacturer, depot or store) stock is held and in what volume arise. In grocery, there is considerable debate over whether product should be held and picked in central distribution centres or in stores. The scope for replication of tasks, inefficient stock levels and reduced (or changed) labour efficiency exists. Split systems with some products supplied direct from the manufacturer or depot and others from the store may be appropriate, as may be shared consolidation centres for certain product groups and retail sectors.

On the logistics front, many argue that e-retailing will raise customer delivery expectations. The nature of the product (bulk, fragility, perishability, etc.) will play some role in the delivery process, as will delivery scheduling issues. In most sectors the logistics process and associated activities have moved towards fewer large consolidated drops whether to a centralised depot or store. The in-built inefficiencies in terms of cost and service levels of a large number of direct deliveries (to store) are recognised. However, e-retailing would appear to reverse or add to this process, requiring a large number of small drops (to the home). In reality these journeys currently take place but the scheduling and cost of this activity is borne by the customer. In an e-retailing system, the *management* of this process (and possibly the cost) will now be passed on to the retailer. Current business practice suggests that these activities can be outsourced and it is argued that courier company skills rather than "pure" logistics skills will be required. Systems adaptation may involve the creation of a pick-up facility either at a store or at some other point such as the workplace (e.g., Waitrose@work) that would allow order consolidation and ensure that some of the logistics transportation cost is borne by the customer.

This transference of activity from the consumer to the retailer has many problems and remains the subject of much experimentation and concern. Different models are being implemented by different businesses. No one approach may be right. The cost and congestion implications are considerable as are the ability to meet (or not) expectations of service quality (Retail Logistics Task Force, 2000; Foresight Retail and Consumer Services Panel, 2000).

The five process issues discussed above provide a broad indication of how some established business processes and the associated activities may change or at the very least will require examination. Whilst all these processes and activities take place in existing retail businesses in some form, the diversity of the sector means that some of the "new" processes, configurations, systems and skills may be in place. For example, mail order operations will already have knowledge and experience of home delivery. For others, however, a new way of operating and new networks and relationships may be appropriate. The outcome of these activity and process changes are new business models for retailing which could have significant impacts upon existing structures. With regard to cost structures, Table 6 illustrates one attempt to highlight the cost structure implications of e-retailing operations. Whilst the model appears simplistic it provides an indication of the level of impact upon some crucial cost functions and emphasises the potentially difficult issues for many businesses.

We can summarise the discussion of the process issues above in the context of activity/process, ownership, cost and efficiency (see Table 5). It illustrates the changing balance of activities that retailers have to perform. On the one hand there are potential gains to be made from the enhancements in the supply chain, but these could be off-set by cost implications arising at the consumer end of the channel. In the same way as the development of vertical marketing channels had implications for ownership and efficiency of established channel activities, so too e-commerce will alter the processes, practices and costs.

At a more detailed level the ability of individual retailers to meet these new process challenges becomes

Table 6
Retail vs e-tail hypothetical cost comparisons

	Traditional retailer	E-tailer—to achieve same absolute profit	E-tailer—to achieve same return on sales
Sales	100	78	76
Cost of sales	60	60	60
Gross profit	40	18	16
As % sales	*40*	*23*	*21*
Operating costs	32	10	10
rent	9	1	1
labour	15	5	5
other	8	4	4
Operating profit	8	8	6
As % of sales	*8*	*10*	*8*

Source: Credit Suisse First Boston (2000).

key to understanding the future possibilities. It would seem that retailers need two components of process change to be right to make e-commerce work for them. First, they need to be able to leverage their scale to gain cost and/or time efficiencies in supply. This would seem to give an advantage to big retailers or effective small retailers or product specialist exchanges. When customers are prepared to pay the full cost of delivery, this may not be a problem, but in other cases there will be a scale advantage to supply. Secondly, they have to convince consumers of their viability and effectiveness. Strong brand names or category killer depth appear to be the most successful strategies in this regard, although quality of fulfilment will eventually drive repeat buying. The conclusion from this is that e-commerce does not derail existing retail structural change processes and may indeed exacerbate them. Whilst there will be some new opportunities for smaller entrants, as there is now, the processes discussed here as inherent to e-commerce or new commerce, benefit the larger companies in the sector.

4. Issues for the "High Street": new challenges or the same old threats?

As far as retail property and land use are concerned (see BCSC, 2000) the impact, to a large degree, will depend upon the extent to which e-retailing is an additional/complimentary channel or a replacement channel. After a relatively slow start in some cases, many existing retailers have added e-retailing activities to their portfolio; although they may now be requiring harder financial performance criteria. As with any change in the retail landscape, developments in technology do not occur within a vacuum. Other environmental pressures—demographic, social and lifestyle trends, economic and political pressures and other commercial developments all influence the future scope and use of e-retailing. E-commerce and e-retailing cannot be divorced from the wider contextual pressures shaping the retail sector. Technology, after all, is only an enabler, which leads to process innovation, and as noted earlier the basic retail process for most products remains essentially the same.

Sparks and Findlay (2000) developed three scenarios for the long-term future of shopping and the subsequent impact upon urban and retail space for the Royal Institution of Chartered Surveyors' "20:20 Visions of the Future" project. These emphasised the impact of e-commerce alongside other pressures on the retail environment. The resulting scenarios were based primarily upon the role of technology and the desire for social equality, and provide alternative views of the future of retailing. The "wired wonderland" scenario, where technology is rapidly adopted by society at large, sees e-retailing as a replacement channel and which leads to radical changes in shopping. In this vision of the future e-retailing dominates and existing retail locations, such as the High Street, will not be needed in their current form. As the authors comment "Their use will have been removed and their purpose would no longer fundamentally exist. Other locations would change their dominant use to reflect the make-up of the local area and the purpose of the centre". The outcome is projected to be a downsized core, which would be refocused upon retailtainment, and leisure activities, which would require constant renovation and reinvention to remain attractive, with a demand for investment in local facilities in residential areas providing an emergency and top-up function.

The "social security" scenario envisages the expansion of e-retailing as an additional channel with current trends continuing particularly the leisure element of shopping. Access to the Internet will increase but disparities will remain. The overall impact on the urban environment is seen as close to neutral but not static—demand for town centre uses will continue to change and differential growth of centres will ensue, with released retail space taken up by leisure-related uses. Finally, the "compound calamity" scenario is based upon growing social disparity between the haves and have-nots which is reflected in retailing. Shopping provision and High Street offers polarise with some allowed to decline. E-retailing remains the domain of the privileged. These scenarios were deliberately proposed as extremes over a long 20-year time horizon. Others, working on shorter time scales have developed alternative scenarios (BCSC, 2000) but agree that change in retail property is inevitable.

Aside from the longer-term implications of the additional vs. replacement channel debate, the immediate impact for town centres takes two obvious forms. First, the scope of e-retailing to alter the purpose, use and ultimately demand, for existing retail facilities with a consequent impact upon property values and rates; second, the implications for transport networks and traffic flows.

It has been argued in the previous section that the mechanics of e-retailing change the retail and distribution process and, in particular, the role and activities performed by different elements of the channel. The business economics of "High Street" retailing are based upon ease of access, complementary attraction, high footfall and a level of transaction and sales density which supports a particular cost structure (currently one with high property costs). The process innovation which is allowed by e-commerce provides the capacity to theoretically compete with the benefits provided by the "High Street" in respect of most of these characteristics. In such circumstances, the role performed by the "shop"

will inevitably change. As Sparks and Findlay (2000) comment "If all that a store provides is a location for a transaction, then it would seem likely that there will be major effects (of e-retailing) if the issues of pricing and home delivery can be solved". It is not difficult to envisage a changing role with the fixed store acting as a display and marketing vehicle, providing theatre and excitement to stimulate interest and with human contact and advice reassuring customers in the selection stage of the shopping process. The final selection, ordering and fulfilment may then take place through the virtual store. Such a switch in the role of the store may have implications for the nature and type of property occupied and the price that companies are willing (and able) to pay.

While the role of some stores may change, other outlets may not be needed. If one thinks of retail sectors where a location for a transaction to take place is the only rationale for possessing a physical asset, a number of quasi-retail sectors spring to mind. Banks and financial services, travel agents, and estate agents all essentially retail "virtual" products or services that are not purchased and physically taken away from the location. Outlets associated with these activities would seem to be most at threat, as the core business can be undertaken off-site.

The big question mark hanging over e-retailing, in all the literature, is that of fulfilment and home delivery. The change that e-retailing implies in this element of the shopping process will have implications for traffic management in and around towns and cities, and may also provide further pressures for a change in "use" for retail locations. It may possibly change the role of some stores/outlets from a selection and collection point to a collection point only, although it is not hard to envision "emergency" or "impulse" purchases being available in some form (Foresight Retail Logistics Task Force, 2000).

The traditional product/merchandise way of viewing retailing is, as noted above, one that has been readily applied to e-retailing. Those sectors perceived as being most at risk (e.g., books and music) are amongst those which have been investing heavily in opening large in-town stores on British High Streets, so the direct or immediate threat to the High Street is highly visible. However, as suggested earlier there is perhaps a need to move away (yet again) from viewing retailing in comfortable frameworks based simply upon location (town v in-town) and product/merchandise category. Whilst these characteristics contribute to the structure and performance of the retail sector, the focus must remain on how retailing responds to consumer shopping activity and how the shop or store fits into the shopping process. This interpretation will provide the basis for understanding the e-retailing threat and the potential response.

There are numerous authors, working in different fields, who recognise that shopping activity is multi-faceted, is need- or value-driven, and leads to different shopping motives (e.g., Shields, 1992; Bowlby, 1993, 2000; Falk and Campbell, 1997; Miller, 1987, 1998; Miller et al., 1998; Crewe, 2000). Categorisations such as essential shopping, purposive shopping, leisure (fun) shopping, convenience shopping and experimental shopping have been recognised and within single retail product markets a range of different formats and locations have evolved to meet these needs (Dawson and Sparks, 1985). The logic is that the response of fixed store retailing in the High Street must be to provide added value unavailable in a virtual context, which meets particular shopping motive(s). Most immediately this might be sought through emphasising the sociable aspects of shopping usually attributed to the leisure (fun) motivated shopper, but also through ways of supporting and supplementing purposive and experimental shopping. It is not a case of a single position being adopted. Town centres, in particular, have the potential to position themselves in a multiplicity of ways. Out-of-centre retailing may find this transformation more difficult.

5. Concluding remarks

This paper has argued that whilst there is a great deal of uncertainty and a range of conflicting views over the future of e-commerce and e-retailing and their impact upon urban form and the town centre, assessments based upon product/merchandise sectors limit an understanding of the future. E-commerce is a process innovation, therefore an approach which explores the processes in retailing and how these differ between fixed store and virtual store retailing provides a clearer view of the nature of the "threat" (or opportunity) to existing retail locations and operations.

Ultimately, the real benefits of e-commerce arise from how tasks and activities are performed within the retail channel, and how changes impact upon ownership, costs and efficiency.

The process evaluation undertaken here suggests that we are already witnessing the harnessing of the Internet to enhance business efficiencies. This is particularly the case for the world's largest retailers and it can be argued that they have begun to leverage their scale effectively in the first instance. If this provides them with cheaper product and better supply adaptation, then there will be enormous pressures placed on existing retailers. These competitive pressures may be the lasting legacy of e-commerce. However, new business models and formats can be envisaged with retailers emerging with an unrivalled product offer in niche opportunities. Such depth assortment may provide a sustainable business if

consumers can be convinced to trust these new operators.

Either way, retail locations will need enhancement to attract consumers to patronise them. The opportunities for electronic commerce are such that without reasons to "go physical shopping" in a location, then they could become lonely places. Those able to attract consumers on the other hand are likely to exhibit enhanced activity of all sorts. If e-commerce helps make our town centres more interesting, exciting and dynamic places (even if out of necessity to compete) for retailing and other activities then we may all be better off. The increasingly standardised High Street of 20th century Britain may not survive the early decades of the 21st century, but this may be to our advantage.

It is clear from this review that there is much *potential* to change business practices in retail and its supply system. The dimensions of such changes are not clear however. They will vary geographically, corporately and over time. It is essential therefore that as well as conceptualising the potential dimensions of change, detailed research is undertaken into actual change (including causality and dimensions) at all levels of the retail channel. Such research will become increasingly important to understanding the impact of process innovation.

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