CHANGING PARADIGMS FOR EUROPEAN E-COMMERCE

ISSUE:

A new paradigm for e-commerce is being created not only around Internet and the Web but also around smart household technologies. However, the diffusion of new consumer technologies (such as digital TV and mobile telephones) and persistence of EDI systems suggest the importance of other access paradigms.

RELEVANCE:

As Internet and e-commerce use has largely been led by the United States it is tempting to assume a "catch-up" model for both business-to-business and business-to-consumer e-commerce. In order to address the ramifications of these changes, policymakers and entrepreneurs needs to be informed on their socio-economic impacts. Furthermore, even if the technological frameworks are roughly similar in the US and Europe, the socio-economic implications of the emergence of e-commerce may be very different, given the divergent business, market, and policy contexts.

ANALYSIS:

Electronic commerce involves the mediated purchases of goods, services, or other financial transactions, by digital information technology at both ends of the interchange. These two ends of the interchange are, furthermore, locationally separate. In ***Business to Consumer E-commerce*** the client is a member of the public; though this has attracted considerable media attention, currently the largest volume of activity by far is believed to be accounted for by ***Business to Business E-commerce***. While there have long been experiments with teleshopping, and a steady growth of business interchanges using EDI (Electronic Data Interchange), it is the explosive growth of the World Wide Web that has finally opened the floodgates for e-commerce. Despite security and speed concerns with the Internet the Web has proved more amenable to use by new entrants, small firms and consumers than were earlier e-commerce formats like videotext and EDI.

In the late 1990s a remarkable explosion of stock market interest in Internet-related companies excited the US financial community (mirrored to a lesser extent in stock markets elsewhere). E-commerce was at the heart of this. On the one hand companies like Amazon, the online bookseller, had come, apparently from nowhere, to seize sizeable portions of (in their case) the book market. On the other hand, some established companies were reporting surges of transactions through their Websites - for example Land's End (the mail order clothing company) and computer hardware companies such as

Dell and the network specialists Cisco. Market forecasters also responded by predicting that huge volumes of consumer and business purchasing would be transacted online within a very few years. However, these forecasts are largely based on extrapolating the recent Web successes, and we must be cautious about assuming that Web-based e-commerce will provide the universal, or even the dominant, framework, for future e-commerce.

EDI and the Internet

Businesses have for some time been proceeding with a range of efforts to institute inter-firm communications. In the US there was automated transfer of large routine transactions in the automobile industry as early as the 1960s. A number of bodies were established to deal with issues of exchanging trade data – e.g. the TDCC (Transportation Data Co-ordinating Committee), and the well-known SWIFT (the Society for Worldwide Interbank Financial Telecommunication). As business use of computer-communications grew, there was an emergence from the 1970s of Value Added Networks (VANs), offering sophisticated computing and data transmission services. In the early 1980s Videotex services, like the UK's Prestel and the much more widely diffused French Minitel system - were already being used for not just to access information or chat to like-minded people, but also to make bookings and reservations, ordering goods and services, and the like. Indeed, the tour operator Thompsons increased their share of the UK travel agents' business substantially by being the first to offer videotex rather than telephone booking. At the time this was held up as an example of the need to consider

> EDI is computer-to-computer exchange of structured data between two or more companies, sent in a form that allows automatic processing, with no manual intervention. It is relevant to any business that regularly exchanges information such as client or company records, but is especially relevant when they send and receive orders, invoices, statements and payments.
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> EDI remains the dominant term in the UK for electronic trading, although some people consider the term electronic data interchange to be too narrow to describe the full potential of electronic trading. Electronic Commerce (EC) encompasses techniques such as PC- based fax and e- mail, as well as EDI.
>
> (Department of Trade and Industry, 1997, p3)

how new IT could be used to revolutionise business. Likewise, in France, Minitel achieved considerable popularity for business-to-business as well as for business-to-consumer services (OECD, 1998). This period also saw the first major expansion of EDI, with government promotion and intergovernmental standardisation efforts underway in many industrial countries.

The diffusion of EDI, has however, been considerably slower than most of its proponents ever anticipated, even in those sectors for which the technology seems to be particularly suitable. The number of companies using EDI has risen steadily over two decades: estimates diverge, but suggest that the number of world-wide users in 1996 probably falls between 80,000 (source: Fletcher, 1997) and 150,000 (source: Gartner Group). In business-to-business transactions, EDI is likely to retain significant importance, not least because of the scope for standardised messaging and compatibility of database architectures. However, for business-to-business electronic commerce, Internet and

related technologies may well be the key infrastructure of the future EDI, and the driving force for the further (and more rapid?) diffusion of that technology.

At present, there are two main forms of 'Internet EDI' (Senn, 1998):

- **Mail-based EDI**. Here, the functions of the traditional VANs are substituted by Internet email, reducing the need of 'intermediaries' for EDI communication, and allowing for more flexible solutions which could move toward the concept of an 'open' EDI to which much more users could have access (ISO, 1994). In practice, for new users ISPs may be substituting for established VANs - and they are often far cheaper.
- **Web EDI**. This represents a more novel approach to EDI communication. It is particularly suitable for connecting a (large) partner to small firms which cannot (or do not wish) to integrate the EDI application into their internal systems, and for outreach to consumers. In such applications of the Web, EDI "documents" (typically orders) are manually entered onto user-friendly Web forms, and then directly translated into EDI messages.

The major benefit of Web EDI is improved flexibility and user-friendliness but its development is likely to be accompanied by the diffusion of other new Web services (e.g. electronic catalogues and other applications integrated into the EDI transaction system). We can expect Internet and Web EDI to be more thoroughly integrated with other e-commerce and traditional EDI, implying development of more completely computerised transactions using Web pages or their analogues, though this will remain incomplete for a long time for a variety of practical reasons.

E-commerce Users and User Technologies

The emergence of the Web as a common platform for presenting and exchanging information, has had a major impact on practically all telematics services. Online databases and news services, computer conferences and groupware systems, bulletin boards and messaging services, have widely recognised and "migrated to" Web formats. Even information services like Reuters, which only a few years ago was content to rely on its proprietary system and to argue that the Internet was an insecure playground for techno-freaks, is now offering Web-based services (and in the process developing new lines of business). The new media are even having an impact on electronic services more generally, as Internet telephony, music downloads, along with video and radio broadcasts and narrowcasts demonstrate.

To date, a major factor in the success of Web-based commerce and information supply has been the fact that only part of the process is automated - that at the service supplier's end. At the consumer end, the PC effectively serves as a text-entry mouthpiece for a human agent, who is almost always acting in real time (or at best, preparing inputs offline that will be transmitted rapidly). Thus, the common language interface is familiar and organised in ways that draw on familiar experiences (like the "shopping basket" metaphor used in several Web sites). Neither party has to reorganise their knowledge of the product area to any great extent. This makes uptake of the services that much easier; and means that the retailer is free to use their own frameworks for classifying and describing products, rather than having to use a standard scheme or protocol as in conventional EDI.

Despite the transformative importance of the Web, with its demonstrated potential for revolutionising both business-to-consumer and business-to-business transactions, it may well be short sighted to see this Web-based paradigm for e-commerce as a stable one. Even before the eventual emergence of virtual reality systems, e-commerce could be revolutionised by the emergence of other, perhaps non-computer based, modes of access. Among these contenders are developments centred on already existing household technologies: the advent of WAP (Wireless Applications Protocol) standards for mobile telephony, and the rapid diffusion of digital TV, indicate paths available for the uptake and use of *e-commerce media*. Figure 1 shows the levels of mobile phone dissemination among Europe top adotping countries. These levels of diffusion contrast sharply with Datamonitor's predictions that it will be 2003 before one in three households in Europe have internet access via a PC.
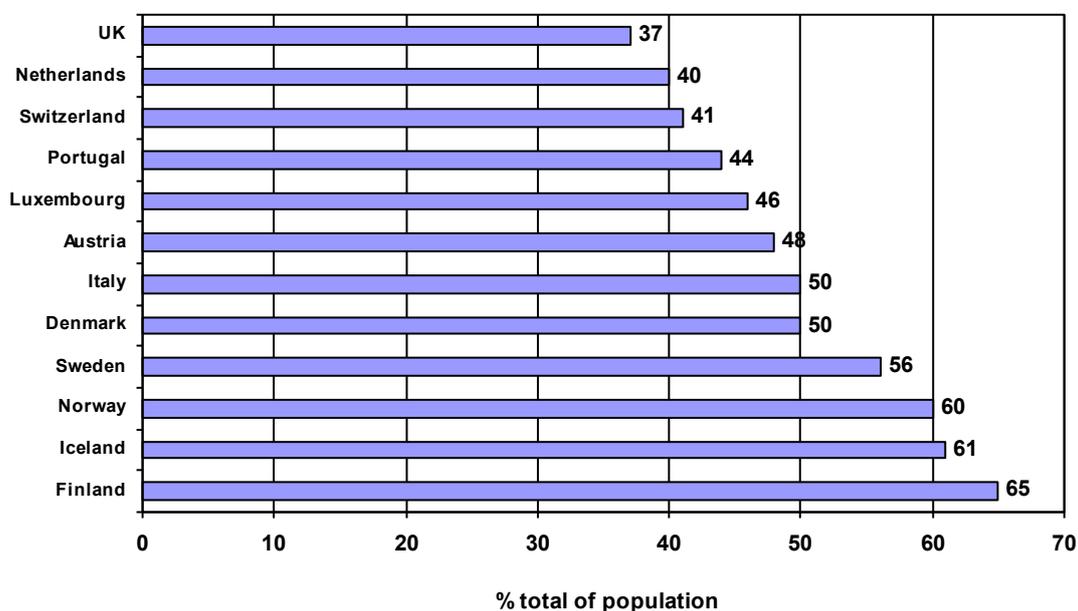

Figure 1: Top European Mobile Phone Users: Dec 99

Source: FT Mobile Communications

The non-PC media may use Web or Web-type interfaces. However, this is not the case for early developments in mobile phone e-commerce and digital TV (DTV) "Internet" services. Neither the handheld device nor the TV set is ideal for displaying Web pages *à la* PC. Further, increases in compression technology and bandwidth along with direct connection services point towards competing front ends for e-commerce access. In short, consumers and businesses are liable to have a range of choices about the interfaces to use to take part in e-commerce.

Now, decisions about whether to buy and from whom are based not solely on rational, technologically supported discourse. Factors like trust, status, and aesthetic and social sensibilities are involved in decisions about what technology to use, alongside considerations of access, convenience, usability and cost. Further, the integration of e-commerce facilities into existing household technologies will affect the relationship users

have with the technology and the firms they buy from. For example, the continued development of e-commerce relies not only on the development of technology and production of information but the facilitation of online relationships. This has been recognised by the more successful online retailers (and Internet Service Providers), who have developed a range of added-value attractions to encourage consumer involvement and attract people to frequently visit their sites.

Discussions of trust often slip into arguments about security. The decentralised and open structure of the Internet means that it has been notorious for security breaches, ranging from computer viruses to hacking. Such problems are of obvious concern for e-commerce users, and there are thus major efforts to develop security mechanisms. Some of these mechanisms operate at the level of communication protocols, based for instance on encryption and return receipts. Others directly operate at the level of specific applications, such as specific systems for credit card payments. In addition to worries about the security of the Internet, there are concerns about its performance (especially its speed, but also its vulnerability to "crashes" and outages).

However, there are profound differences between security seen as a predominantly technical issue, and the more social dimensions of trust. It is arguable that digital television will (in the short term at least) have the advantage when compared to the management of trust in Web-based e-commerce. DTV providers are creating "walled gardens" for their users – essentially large Intranets with little or no breakout to the larger Internet. These they are populating with well known and largely trusted retail organisations such as large high street retails outlets and banks. This brand recognition, together with the familiarity of the television and the assurances implied by their DTV provider, is intended help build a shopping environment which is more like a mall rather than the perceived chaos of broad Web-based e-commerce. The diffusion of e-commerce will also be driven by word of mouth as individuals share experiences (both positive and negative) with one another. In consequence it is also likely that social networks will provide a basis through which trust and confidence are improved. In other words, whilst access to the networked hardware is essential for e-commerce participation, it is not sufficient, without trust and confidence spread through interaction between consumers. This will be particularly important for sections of society with little or no experience in using information and communication technologies.

E-commerce: Beyond the US Model

Many commentators and research studies assume (whether implicitly or explicitly) that European countries will follow the US-model in e-commerce diffusion. This is particularly argued to be the case for the UK, which exhibits greater similarities to the US than the rest of Europe. The apparent received wisdom is that the USA is typically a few years ahead of Europe and that as our economic growth continues we should "catch up" with the US. For example:

The UK has been experiencing growth rates comparable to growth rates in the US. With 15% of the UK adult population having ever accessed the Web, penetration in the UK is at the same level now as in the US two years ago. The UK's Web penetration is growing at a faster rate than [both France and Germany].

Lisbet Sherlock, European Marketing Services Director, Ziff-Davies

However, numerous differences between US and European economies make identical take-up patterns unlikely. These include:

- different demographics
- different geographies
- different economic structures, including divergent retail sectors
- different historical experiences with other distance shopping modes, such as mail order, telephone-based commerce, the persistence of Minitel in France, etc.
- different systems of regulation of retail,
- telecommunications and broadcasting systems, and infrastructures

The assumption of similar growth patterns for e-commerce also implicitly assumes that e-commerce in Europe will involve similar media to the US, especially the use of PCs and the Internet. However, European patterns of technological uptake can differ from those in the US, and not always in ways suggesting a European lag behind the US. For instance, several European countries are well in advance where it comes to the use of mobile phones. There are good reasons to believe that Europe's DTV markets will develop more rapidly than those in the US – and, as suggested above, this will ultimately be a greater driver of e-commerce than the Internet alone. Already, according to Market Tracking International (1998), more Europeans than Americans use interactive e-commerce applications specifically developed for digital TV.

Conclusions

Dynamic change is underway, and there is no reason to assume that this will rapidly halt. A new paradigm for e-commerce may have been rapidly forged around the Internet and Web, but this could well be challenged by alternative technological platforms. The ramifications of these changes are yet to be thoroughly explored although scenarios can be constructed which help focus the issues raised here (including issues of social exclusion as well as those of technological adoption – see McMeekin, Miles & Rutter: 1999). What can be confidently predicted is that there will be continued demand for a wide and expanding array of supporting services, and that the rate and sophistication of their use will remain very uneven across sectors, regions and applications. Given this state of affairs the following encapsulates main issues that will effect changing paradigms for European e-commerce.

- Web presence and active e-commerce strategy are essential in most markets, and specific programmes may be necessary to raise awareness in lagging sectors and regions. Given the limited time and resources of many small firms, novel forms of business support may be needed if they are to participate actively in e-commerce, or respond to the challenges posed by larger firms that already have a foothold here.

- DTV, mobile telephony and other non-Web methods of access will become increasingly important, offering opportunities for European technology and service entrants.   There are liable to be continuing flurries of acquisitions and mergers here, across sectoral and national boundaries, which may pose challenges to industry and competition policy.
- Action and investment must be made on *Europe specific* data rather than assuming patterns of development similar to the US
- There may be entry barriers in the new media (especially DTV with its "walled gardens") which are very different from those confronted in the free-for-all Internet environment, and competition and media policy will have roles to play here.
- A variety of consumer policy issues will become prominent, including data protection and confidentiality concerns, product liability, fair trading and advertising regulation. At present, there is wide divergence across EU members regarding consumer policy, which runs the risk of confusing potential consumers and retailers.
- There are opportunities for public services, voluntary organisations, and supporters of social inclusion and international development to make an impact on the world of e-commerce.
- It is likely that policy action will be required for organizational innovation aimed at providing training and other infrastructural support for SMEs and the socially excluded. For example, small traders and less affluent, disabled, elderly or geographically remote consumers that could benefit most from e-commerce, may miss out without such organisational innovation.

KEYWORDS:

E-commerce, EDI, e-business, digital television, Internet, WAP

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