

SOCIETAL IMPLICATIONS OF ELECTRONIC COMMERCE

Although primarily an economic phenomenon, electronic commerce forms part of a broader process of social change, characterised by the globalisation of markets, the shift towards an economy based on knowledge and information, and the growing prominence of all forms of technology in everyday life. These major societal transformations are now under way and will probably continue far into the foreseeable future. As both a product and manifestation of such transformations, electronic commerce is being shaped by, and increasingly will help to shape, modern society as a whole. Societal factors will thus have a profound influence on its future development. They will also merit attention from a public policy standpoint, both to establish the social conditions that allow electronic commerce to reach its full economic potential and to ensure that its benefits are realised by society as a whole. It is therefore vital to understand the social processes that will inevitably influence how electronic commerce evolves and how quickly it can grow, as well as the areas where, through externalities of various kinds, it may profoundly affect society. In the latter category, distributive effects may have direct economic relevance of considerable interest to policy makers.

Analysis of the social dimensions of electronic commerce is hindered, however, both by the rapidity of change, which limits the collection of quantitative data on the growth and implications of new forms of electronic business (see Chapter 1), and by the difficulty of isolating electronic commerce from ICTs more generally. Many of the effects of the latter are well documented in studies and reports on the information society, such as those of the OECD on the GII-GIS (1997*h*), of the High Level Advisory Group of the European Union and of Canada's Information Highway Advisory Council (IHAC). This work illustrates some of the social dimensions of the shift to an information-based economy, but is not designed to isolate the place of electronic commerce *per se* in the information society. Research is also hampered by the pervasiveness of electronic commerce in the economy and the consequently diffuse nature of its linkages to broader social, institutional and cultural factors. Within these limitations, this section reviews literature and evidence from a variety of disciplines to point to areas where a significant relationship appears to exist between social and economic considerations and which consequently may merit attention in terms of public policy.

Social enablers of electronic commerce

It has long been established that social processes of various kinds, including some that are cultural and attitudinal in nature, enable and support efficient markets and economies. Consequently, to understand which environments favour electronic commerce, it is important to identify the social processes that underlie electronic markets and determine their viability. Knowledge of these enabling factors could inform public policies for promoting the growth of electronic commerce nationally and internationally. Two such elements are identified and briefly explored here – first, access and its determinants and constraints and, second, confidence and trust.

Access to the digital economy

The “death of distance” (Cairncross, 1997) that is intrinsic to information networking is probably the single most important economic force shaping society at the dawn of the 21st century. Both for individual

citizens and for businesses, affordable access to the information infrastructure has become a necessity for effective participation in a knowledge-based economy and society (IHAC, 1997). Access to the Internet in particular has become a critical enabler of electronic commerce, since it has emerged as the dominant platform for a wide range of information and transactional services associated with business-to-business as well as business-to-consumer applications (see Chapter 1). As a result, several aspects of access are important: the availability of advanced networks able to support the provision of Internet services; consumers' and businesses' ability to connect to digital networks and services; and the existence of the skills and capabilities necessary to use the information networks.

Network availability

Physical access to a telecommunications network capable of supporting data traffic at an adequate bandwidth, along with access to a computer equipped with a modem and the necessary software, are currently the necessary pre-conditions for accessing the Internet and engaging in Internet-based electronic commerce. In many developed countries, universality has essentially been achieved with respect to off-air broadcast services (*i.e.* radio and television), public network access, and basic telephone service (ITU, 1997; Stentor, 1997). In 1996, teledensities (*i.e.* number of main telephone lines per 100 persons) for developed countries were in the 45-65 range, and 90 per cent or more of households had telephone service. Telecommunications networks are increasingly being digitised and made capable of supporting higher bandwidth access. In addition, wireless networks and cable-TV networks are capable of providing high bandwidth access (high bandwidth, two-way or interactive access is often limited to urban areas, for a variety of technical and economic reasons).

Access to the physical network and high bandwidth capabilities will clearly affect the take-up and implementation of electronic commerce activities, particularly for consumers and small and medium-sized enterprises (SMEs) located outside urban centres in the developed world. Therefore, governments might well look at ways to promote the development and availability of advanced networks, either by means of conventional telecommunications policy measures or through other appropriate policy instruments. These are discussed in greater detail in the OECD background paper, "Infrastructure Requirements for Electronic Commerce".

Connectivity

To participate in electronic commerce as consumers, most people use dial-up access to the Internet from their homes. Access implies the cost of a subscription to an Internet service provider (ISP), the usage cost of a network connection, hardware costs (usually a PC and modem), and skills acquisition and support costs. For many households, such expenses may not be trivial. According to available data, Internet users are well-educated and tend to have above-average household incomes and even ownership of personal computers is highly correlated to income (OECD, 1997c; IDC, 1998; Dickinson and Sciadas, 1997); it is therefore reasonable to assume that the total cost of access will significantly affect consumer involvement in electronic commerce.

Data compiled by the OECD indicate that connectivity costs vary considerably across countries and in some cases within countries as well (OECD, 1997a). Although hardware costs are relatively constant and declining, others, such as charges by ISPs and network providers, may differ widely for different consumers. Local telephone access costs largely account for these variations, but any long-distance charges needed to reach an Internet node can also involve substantial costs. As a result, where circumstances keep these costs fairly low, as in North America and the Nordic countries, the rate of Internet connectivity has generally been high. Pricing trends appear to be moving towards lowering the overall levels and variations in access costs in order to maximise network usage and thus capture network externalities. Telecommunications policy and regulations could favour growth prospects for electronic commerce by encouraging telecommunication supplier prices to move in this direction.

Another set of issues surrounds the connection of businesses and institutions to the Internet. Engaging in electronic commerce as a supplier, either of Web-based information or of services, requires a higher level of connectivity in terms of bandwidth and reliability. The costs of equipment and networking are

therefore more substantial, and may vary even more, depending on location, telecom provider, and the applicable regulatory arrangements. Small businesses and businesses operating in rural and remote areas in particular may be particularly disadvantaged. In terms of policy, connectivity issues may be more crucial to the development of electronic commerce than consumer access since they determine the degree to which a viable and competitive industry can emerge on an economy-wide basis in OECD countries.

Skills and digital literacy

Familiarity with and basic competence in the use of computers and networks like the Internet are necessary for involvement in electronic commerce and in the digital economy in general. Becoming computer literate can be a significant additional cost, one which is likely to vary as a function of age and educational background. A system of education that familiarises young students with the technology of the Internet can greatly reduce skills acquisition costs and decrease differences in participation rates in electronic commerce in the various segments of a society's population (Mansell *et al.*, 1998; Saint Clair-Harvey and Rapp, 1998).

It is widely recognised that emphasis must be placed on ensuring a solid universal base for developing computer skills and Internet awareness among grade school students. In the United States, President Clinton has proposed a far-reaching initiative to close the gap between those with access to Internet technology and those without. He has called on all state governments to require computer literacy of all 12-year-olds as a requirement for entering high school and encouraged the private sector to boost efforts to hook up schools so that every classroom has access to the Internet (Griffith, 1998). These and other national initiatives launched in OECD Member countries are indicative of the paramount importance of digital literacy.

Confidence and trust

Most business relationships, whether between a company and a consumer or among firms, exhibit a strong element of confidence and trust. While both conventional and electronic markets rely on high levels of mutual trust, electronic transactions create specific challenges for both businesses and individuals. Because they are impersonal and remote, these exchanges make mechanisms that reduce or eliminate risk especially important. In particular, the potential for anonymity can pose greater risks of fraud for parties engaged in an electronic transaction than for those involved in more traditional forms of commerce.

A specific form of risk is the possibility that personal or corporate information may be revealed or misused. While such issues are not restricted to electronic commerce, they take on special significance in an environment based on the use of sophisticated computer and communications technologies (for early recognition of these problems, see Government of Canada, 1972). Internet-based technologies make it possible to keep, update, and give third-party access to detailed profiles of individuals. Better information means, for example, that sales promotions can be targeted to those interested in the product, so that those who would find the information intrusive will be spared unnecessary communications. On the other hand, the potential for technological monitoring of personal lives and activities prompts many to resist providing personal information or to supply inaccurate information, for fear of misuse.¹ In a recent World Research Survey, 13 per cent of respondents who said they would not buy over the Internet cited the need to reveal personal information as their reason for not doing so.²

Concerns over the security of transactions are also a barrier to the growth of Internet commerce. Consumers fear that their financial information may be manipulated and misused either by the intended recipient of a credit card number or by a hacker who intercepts the card number before it reaches its final destination. In the World Research Survey mentioned above, 21 per cent of respondents who had not bought on line cited fear of hackers as their reason. Another 12 per cent cited distrust of Internet companies or a fear that money or merchandise would be lost.³ A similar survey found that 15 per cent of respondents feared misuse of information by the intended recipient while 7 per cent feared hackers.⁴

Issues of confidence and trust are also relevant for business-to-business electronic commerce. As discussed in Chapter 2, the creation of extranets to facilitate supplier-seller relationships is largely

seen as a positive development in terms of maximising efficiency, although security concerns remain prevalent. Proprietary information sent over networks, including trade secrets and company strategies, may be stolen. More than 80 per cent of companies say security is the leading barrier to expanding electronic links with customers and suppliers. *Business Week* reports that in 1997, a single group of Texas hackers was able to penetrate the security of the telecommunication companies SBC, GTE, MCI and Sprint. The result was \$500 000 worth of damage and the rerouting of calls from FBI crime centres to international sex lines.⁵

Businesses that expand their internal networks to include linkages with other firms typically need to develop strong trust relationships. Security concerns, as well as the sensitivity of information transmitted over company networks, prompt many firms to forge alliances with partners they trust. Such alliances create co-operation based on personal relationships and mutual confidence which can lead to greater efficiency but may result in closed market structures. These may tend to restrict market entry for competing firms that lack such close relationships (Hawkins, 1998).

Benefits and social impacts

The rapid diffusion of electronic commerce and its growing importance in economic life can dramatically affect social relationships at many levels. Like all other technology-based change, significant social benefits will be counterbalanced by less positive effects brought about by externalities and various spillover effects. Owing to the speed of the information technology revolution, it is impossible to gauge the full range of social impacts and their net effect on the basis of the situation at a single point in time. From developments observed to date, however, the societal outcomes of electronic commerce appear to be of substantial interest to policy makers in several areas. For instance, some electronic commerce applications are emerging as effective means of enhancing the social infrastructure. Moreover, like other aspects of information technology, electronic commerce may affect the individual and society in a more general way. One of the more important of these broader social impacts, the effect on the use and management of time, is discussed below.

Strengthening the social infrastructure

Computer and information technologies have begun to make a significant contribution to strengthening the social infrastructure through improvements in education, health, and other aspects of human resource development, including the sense of community. The technologies and applications associated with electronic commerce, such as “smart cards”, automated payment systems, and electronic information, can play an important role in the organisation and delivery of such services. These tools will increasingly be used by both the public and private sector as a means of improving and expanding services to the public.

Education and training

As shown in Chapter 4, high skill levels are vital in a technology-based and knowledge-intensive economy. Changes associated with rapid technological advances in industry have made continual upgrading of professional and vocational skills an economic necessity, whence the almost universal priority assigned to lifelong learning as a component of national development strategies. This places severe demands on established educational institutions and on traditional professional and vocational training. It is now generally acknowledged that the goal of lifelong learning can only be accomplished by reinforcing and adapting existing systems of learning, both in the public and private sectors.

The demand for education and training concerns the full range of modern technology, including robotics, biotechnology, and communications and computer technologies, which involve virtually all economic sectors. Information technologies are uniquely capable of providing ways to meet this demand. For instance, the Internet is at the centre of a learning revolution that is rapidly being adopted by many business entities. Online training via the Internet ranges from accessing self-study courses at a supplier's Web site to complete electronic classrooms. These computer-based training programmes provide flexibility in skills acquisition and are more affordable and relevant than more traditional seminars and

courses. There is no need to “go away on a course, paying three-figure sums per day, plus accommodation and travel...” (Kavanagh, 1998).

Computer-based training has clear advantages over traditional training programmes in terms of providing information when it is most relevant and immediately applicable. For instance, Oracle, the database software giant, is building a “virtual campus”. This educational application is meant to assist staff in determining which skills are currently needed for particular aspects of their work and how their current capabilities can be most effectively upgraded with courses available on line. This kind of flexibility allows for “just-in-time” learning, which makes it possible to learn the specific characteristics of a particular software product just before using it (Manchester, 1998).

In addition to enhancing the possibilities for lifelong learning, the Internet can make a second important contribution to long-term vocational development. In OECD economies, applications aimed at matching people’s skills more effectively with the needs of the labour market are emerging. They improve the ability of employees and employers to meet the specific needs of a complex, sophisticated economy and labour market (Dyson, 1997).

Health

In 1990, world-wide public and private expenditures on health services amounted to about \$1 700 billion, approximately 8 per cent of total world product. This expenditure is under increasing pressure, owing to government cutbacks and downsizing. At the same time, however, populations are demanding a higher quality and level of health care. It is well established that a population’s overall health is closely related to its economic prosperity. Improved health conditions and access to health information contribute significantly to economic growth, because healthier workers are more productive. Government policies that promote health education help people lead healthier lives by increasing their access to and use of relevant information. When combined with policies to ensure effective and accessible health services and those that generate income growth, a virtuous cycle is created in which economic growth and improvements in health reinforce each other (World Bank, 1993).

Information technologies and electronic commerce health-care applications can play an integral role in the promotion of this virtuous cycle. They can help realise cost savings while broadening the reach of the health-care system (Industry Canada, 1998). In addition, ICTs can assist the overall health system to become “more cost-effective through structural and functional rationalisation of the delivery system, and the wide-scale implementation of ICTs... will result in improved availability and quality of health services” (European Commission, 1996). Information technology can play a positive role in expanding services and service delivery options while creating cost efficiencies in the administration and management of health services and therefore lead to greater economic prosperity. This is particularly true if access to these new and better services is extended to the most disadvantaged segments of society, as they have the most to gain from improved health conditions.

A sense of community

Electronic commerce and ICTs abolish distance and alter the concept of community. Many of these changes are positive – creating links with new people, maintaining closer ties with far-flung friends and family members,⁶ and creating new online communities with potentially global membership. There are potential costs as well, such as those incurred in some countries with the arrival of automobile-dependent suburban shopping malls and the demise of urban pedestrian shopping. Likewise, as firms’ production facilities and customer base become global, their loyalty to a particular area is likely to erode. There are concerns that because of the new technology, people will no longer have to live in built-up regions and urban centres will decline (ActivMedia, 1998). However, as much of the infrastructure for effective high-bandwidth communication is found in the traditional built-up areas, a technology-driven exodus from the city is unlikely in the near future. Cyber-links may allow some rural communities to strengthen their social and economic situation and reverse lower growth trends and shrinking populations. In general, electronic commerce and ICTs tend to reduce the need for direct physical interaction

between people. More time and research will be needed to see to what extent people are willing to forego such interaction and to see the broader economic and social implications.

General social effects: time

Time affects all interactions and activities in the business as well as the social realm. Developments such as shorter product cycles, Moore's Law, and the rise of 24-hour, seven days a week service delivery are transforming business, but they will also affect the behaviour of individuals, communities, governments and social organisations. These changes will improve the competitiveness of global firms and will give consumers greater convenience and flexibility. In many ways, the shrinking of delays brought about by electronic commerce will lead to similar efficiency gains in the management and operations of public sector organisations such as health and educational institutions. The effect of such developments on the individual and on smaller organisations is less clear.

Issues of time concern individuals, organisations and society. Time management has always been a key component of efficient behaviour, but the requirements of modern business, transformed by technology and globalisation, may increase the demands, in terms of time and stress, placed on managers and senior personnel.⁷ While compressed time frames may get products to market quickly and more effectively and may reduce the time spent on mundane, repetitive tasks, these benefits are accompanied by pressures on the decision-making process stemming from the rapid pace of technology change. Articles in magazines and newspapers describe demands for instant information, rapid decisions, and continuous adoption of new, complex technologies. Workers may be expected to be available or on call for longer periods of time, as there may be increased need for shift work outside normal waking hours to co-ordinate activities and keep systems running. This may increase the percentage of the work force required to adapt to non-standard working hours. In addition, the need to upgrade skills to accommodate technological change requires more time from workers, many of whom feel compelled to acquire these skills outside working hours. While e-commerce may help drive this change in the supply of labour, its growth is also in many cases a function of consumer demand, as many e-commerce products (e.g. entertainment) are interactive and require immediate consumption (European Commission, 1997c). In this sense, available time both drives and inhibits the growth of electronic commerce.

Whereas technological development is taking place at an astounding and accelerating speed, reaching understanding and consensus, especially on social issues, is typically time-consuming. The nature of the Internet forces a reconsideration of the most effective way to govern and of whether centralised decision making can keep up with the speed and fluidity of the Internet. This suggests the need to consider decentralised modes of decision making, such as self-regulatory mechanisms. Another option may be to consider methods of controlling speed by "throwing sand into the wheels" (Eichengreen *et al.*, 1995). This idea is the basis for limiting programme-trading on the New York Stock Exchange and has received further attention in light of the recent currency fluctuations associated with the Asian crisis (Stiglitz, 1998; Baker, 1997). Recent work by IBM on the potential impact of e-commerce intelligent agents suggests that e-commerce could increase economic volatility (Ward, 1998). It remains to be seen whether technologies such as e-mail, Internet discussion groups, and other technological aids to communication can assist in the decision-making process. Ultimately, however, biological constraints will allow only so much compression of the process of communication and understanding. This points to the need to develop a deeper understanding of how "cyber time" and biological time will mesh and of what the impact is on individuals, organisations and communities. More narrowly, it is necessary to analyse the net impact of e-commerce, as one of its key features is the compression of response times, while it may also free up time previously spent shopping.

Distributive effects

A central question for research into the societal effects of electronic commerce concerns its short- and longer-term implications for the distribution of income and opportunities in an information society. Currently, there is considerable debate regarding the scope and incidence of market failures in emerging information industries and the nature of biases that might prevail in information markets. Data now being

collected may give some indication of where electronic commerce may have distributive effects that affect individuals, the workplace, and small business, as well as geo-political relationships.

Individuals

Because of the unique nature of information-based products and services, there are specific outcomes for market participants which are without obvious parallels in the conventional commodity or industrial marketplace. The positive externalities that accrue to public telecommunications networks offer one well-documented example of an effect that derives specifically from the informational nature of the activity. Similarly, many other social effects result from the close relationship between information and social, cultural and attitudinal variables. This relationship merits close examination to determine whether there may be a bias that might favour a particular group over others or which might exclude certain segments of society or make it difficult for them to access and benefit from the market.

The possibility of negative externalities has led to considerable speculation and concern regarding the possible creation of “information haves and have nots” and provoked policy discussions in a large number of OECD countries. Speaking of a “digital divide” between poor and wealthy households, President Clinton has pointed to other technology revolutions, such as the mechanisation of agriculture, that have expanded the gap between the rich and the poor and has warned that, in the absence of corrective measures, this could also happen in the information age (Griffith, 1998). Many national leaders in North America, Europe and Japan have also expressed their commitment to addressing these concerns. In this respect, attention is warranted to variables such as income, ethnicity and race, language and disability, which appear to affect individuals’ participation in the information economy and by extension their involvement in electronic commerce.

Income

One consistent finding across many countries is that intensive users of information technology tend to be well-educated and to have higher than average household incomes (IDC, 1998) (Figure 5.1). For every \$10 000 increase in income, the likelihood of a household owning a computer increases by 7 percentage points.

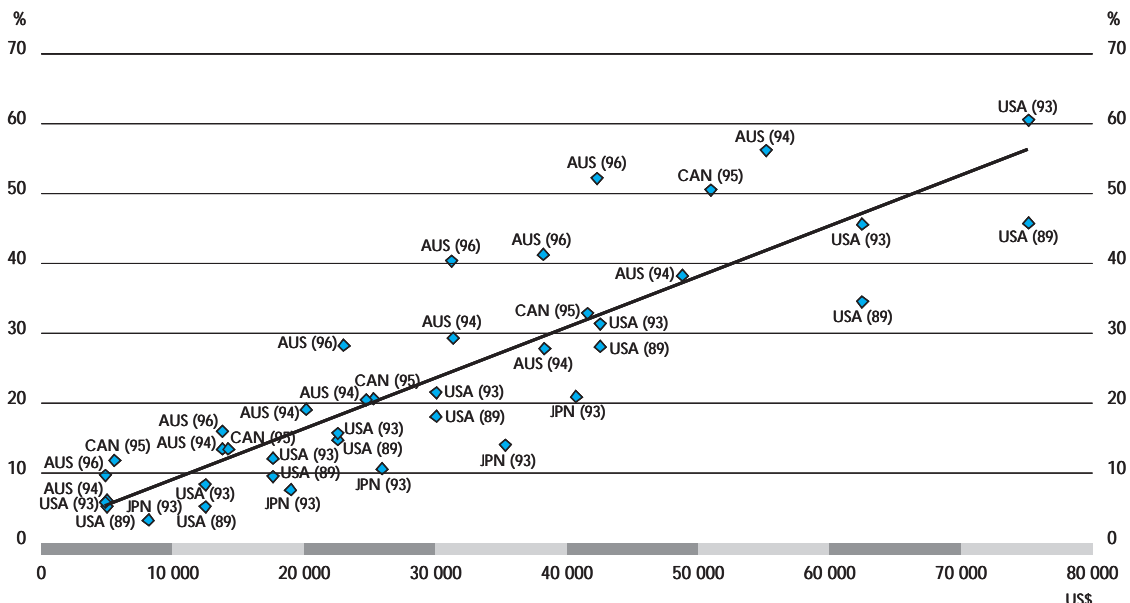
Internet penetration rates show a similar pattern. Canadian figures on households’ access to the Internet segment Internet use by income (Table 5.1). While use is subject to variables other than income, it is apparent that as household income increases, so does the likelihood of Internet access. The data clearly support the view that, at least for now, households with higher incomes have more opportunity to benefit from electronic commerce than those with lower incomes. While this phenomenon is common to the introduction of most new technologies (*e.g.* electricity, telephone, TV), it is certainly of policy interest to OECD countries. There is reason to believe that the correlation between income levels and Internet usage may weaken, as lower-cost alternatives to the traditional personal computer become available, as the price of personal computers continues to fall, and as telecommunications markets are liberalised, although the fact that recent longitudinal work carried out in the United States between 1994 and 1997 reveals a widening gap between upper and lower income groups also needs to be taken into account.⁸ Governments may wish to consider what policies, if any, might encourage the trend towards lower prices and thus accelerate connectivity.

Ethnic and race

Ethnic and racial origin is commonly associated with disparities in income and education, and there appears to be a similar correlation in use of information technology, the Internet and, by extension, electronic commerce. A recent survey comparing Web ownership and use by African Americans and whites in the United States (Hoffman and Novak, 1998) speaks of a “digital divide”. The survey found that while home computer ownership among African Americans and whites is roughly equal at high income levels (over \$40 000), whites were twice as likely to own a computer and six times as likely to have recently used the Web in low-income families. Although the results were found to be significantly related to income and education levels, the study concluded that, even after correcting for income, there were significant

differences between the two groups. Statistical evidence from other countries suggests similar ethnicity-related differences in IT use, although links to factors such as economic status and language are less clear. The implications are obviously important for policy makers. The mutual reinforcement of income, education, and ethnicity/race as determinants of participation in electronic networks represents a serious challenge, both from an economic and social policy perspective.

Figure 5.1. **Computer penetration rates, by household income, in Australia, Canada, Japan and the United States**



1. Household incomes were converted to US\$ using PPPs. Income values were obtained by taking the midpoint of each income bracket except for the upper open-ended ranges where the lower bounds were used.
 Source: OECD, 1997c.

Table 5.1. **Technology penetration rates and income levels of Canadian households, 1996**

	Canadian dollars and percentages				
	< \$22 164	\$22 165-\$40 000	\$40 000-\$64 280	> \$64 280	All
Telephone	96.7%	98.8%	99.6%	99.9%	98.7%
Computer	13.9%	22.2%	35.9%	54.2%	31.6%
Modem	6.1%	9.8%	16.3%	29.8%	15.5%
Internet	2.7%	4.4%	7.3%	15.2%	7.4%

Source: Dickinson and Sciadas, 1996, p. 79.

Language

Owing to its early establishment and current strength in North America, the English language dominates Internet-based electronic commerce. Its dominance reflects its status as the current *lingua franca*, the wealth of American society, and the position of the United States as the originator of Internet technology. A variety of international bodies, including the G7 and the European Union, have stressed the importance of multilingual access to the Web. As the North American share of Internet sites declines, greater multilingualism is likely to appear. Moreover, as world trade barriers are reduced, firms seeking to expand into new markets will offer Web sites in a variety of languages. Combined with innovative translation software, these market developments could well enable a more balanced participation of linguistic communities in global electronic commerce.

Gender

Since recent studies indicate that Internet use by men and by women may soon approach equality,⁹ gender is becoming less of an issue. Electronic commerce in particular has already provided its value from the gender standpoint. E*Trade, an online stock trader, reports that half of its customers are women, far in excess of the average for e-commerce shopping.¹⁰ It attributes this to the fact that women prefer online trading to traditional trading, where they may feel pressured or intimidated by male brokers. A similar dynamic appears to be unfolding at online car sites. NetGrocer, an online grocery delivery service, reports that many of its orders are from stay-at-home or single parents who can therefore better manage time with their children (Tanaka, 1998). However, the dissemination of pornographic material, which remains a significant portion of the electronic marketplace, represents a possible source of negative externalities. Not only may the perceived prominence of such material significantly discourage participation in online activities, it may more generally lower participation by women.

Disability

Both the biases of the Internet market and the capacity of the Internet to reduce these biases are well illustrated by the case of individuals with disabilities. Individuals with special needs could be among the greatest beneficiaries of electronic commerce and information technologies generally. Using advanced computer software, information can be easily translated from one format to another: texts can be converted to the spoken word or to Braille for the visually impaired; closed captioning allows the hearing-impaired to understand television transmissions better. Also, electronic commerce itself promises to allow individuals with restricted mobility to participate more effectively in the economy, both as individual consumers and in the work place. The Web can bring information, contacts, products and services from around the world to their desktops in an accessible form. However, many of these advantages are linked to text-based content. When pages are text-based, software allows the pages to be read or converted to Braille, thereby opening up vast areas of information to the visually impaired. Now, however, Web pages are increasingly graphics-based, and provision of plain text versions of information is falling behind. Even though the technology required to generate parallel text versions is inexpensive and simple, many organisations fail to provide information in this format. Moreover, the technology required to access the Internet, while dropping in price, can still be an expensive burden for groups that tend already to be economically marginalised. In short, the technology has the potential to help many individuals, but these benefits will only be generated if the issues of design and access are explicitly addressed.

The workplace

As the driving force in the knowledge-based economy, electronic commerce will have a variety of effects on the composition and skill mix of employment opportunities, the level of employment and the nature of work. The nature and scope of these impacts are discussed in Chapter 4. For example, through disintermediation, e-commerce has the potential to generate structural changes that will affect current manufacturing and services employment. Apart from the economics of these trends, there would be a significant social dimension to any changes involving substantial employment displacement, even if it is short-term in nature (European Commission, 1996).

In addition to aggregate employment effects, information technologies and electronic commerce have the potential fundamentally to alter the work environment and work experience. Telework and home businesses are two phenomena that are closely tied to the capabilities of information technologies and the growth of electronic commerce. Both result in significant changes in the nature of employment and the workplace. On the positive side, reduced travel time and flexible hours offer personal and environmental benefits, as do the lower costs of office space, a greater ability to avoid workplace distractions, and the ability to co-ordinate work projects over greater distances (Box 5.1). In Canada, nearly a quarter of workers had flexible schedules in 1995, compared to 17 per cent in 1991 (Statistics Canada, 1998). However, work tends to increase as these technologies are introduced. In one large computer firm, where 20 per cent of the staff teleworked, telecommuting resulted in a voluntary 20 to 25 per cent increase in the number of hours worked (cited in Breault, 1997). A recent Harris poll found that in the United States,

the median number of hours worked per week increased between 1973 and 1995; leisure time fell from 26.2 to 19.2 hours over the same period. These data tend to suggest that some of the gains in corporate productivity may come at the expense of personal productivity.

Box 5.1. **Examples of competitive advantages from teleworking**

Costs	<ul style="list-style-type: none"> - Up to 50 per cent savings in office overheads, relocation costs, etc. - Up to 40 per cent improvement in managerial and professional productivity
Business opportunities	<ul style="list-style-type: none"> - Better retention of experienced staff - Extended geographic scope for recruitment - Wider outsourcing opportunities - Access to scarce skills and to high-value people who have opted out of the conventional career environment
Innovation	<ul style="list-style-type: none"> - Refocusing enterprise geography around access to best work forces - Assembly of best know-how in multi-site project teams free of geographic constraints
Organisation and management	<ul style="list-style-type: none"> - Greater flexibility in organising and managing work when, where and how it appears best to do so
Quality	<ul style="list-style-type: none"> - Empowerment of employees to determine optimum work/lifestyle - Reduction of time, costs and frustration of peak-hour travel and the disruption of career relocations - Better access to the skills of excluded groups – disabled, single parents, dispersed communities

Source: EITO, 1998.

Small businesses

The effect of electronic commerce on SMEs has received much attention from policy makers and the media in OECD countries, a sign of the economic importance of small firms. In Canada, for example, 57 per cent of economic output is generated by an SME sector consisting of more than 2.2 million firms. Aside from the economic significance of SMEs, the sector's social significance is widely recognised. In many cases, SMEs reflect the more personal and unique characteristics of a community than larger firms. They also often serve specific market niches, the very presence of which can be a manifestation of special social and cultural characteristics. The greater independence and entrepreneurial nature of SMEs are thought to embody desirable social values and their presence is regarded as an important source of social stability (IHAC, 1997).

The Internet and the transactional tools associated with electronic commerce provide means that allow SMEs to collaborate and to access important information they previously found difficult to acquire. Many Web sites are targeted specifically to SMEs and provide information on venture capital, market information, specialised training, government services, etc. There is evidence that SMEs are rapidly recognising the importance of the Internet as an important aspect of their day-to-day business. Even if all do not set up virtual storefronts, they are gearing up to compete in a more technologically advanced commercial environment. A survey conducted in the first quarter of 1998 by the Canadian Federation of Independent Business (CFIB) shows that 43 per cent of Canadian SME owners have access to the Internet, up from 31 per cent at the same period in 1997. SME Internet access has increased more than four-fold in the two and a half years that CFIB has conducted surveys on the issue (<http://www.cfib.ca/english/research/reports/98internet.htm>, 13 July 1998).

Given the paramount economic importance of SMEs and their intrinsic community value, the role of small businesses in emerging markets based on electronic commerce is a major policy issue for governments. Smaller companies can benefit disproportionately from the opportunities offered by information

technologies and electronic commerce. The Internet can make size irrelevant, because it can level the competitive playing field by allowing small companies to extend their geographical reach and secure new customers in ways formerly restricted to much larger firms. On the other hand, it is conceivable that the dynamics of electronic markets could create conditions that might impede SME involvement, relating to access to networks and connectivity (see the discussion of access above), technical standards, or institutional arrangements that might have anti-competitive effects or pose barriers to entry. This means that both governments and the business community must remain attentive to developments in the electronic marketplace in order to prevent or remove barriers to full SME participation.¹¹

Geo-political impacts

Access to telecommunications networks and the Internet is distinctly unequal, both in developed countries and between them and the developing world. OECD countries accounted for some 512.7 million (69.2 per cent) of the 741 million main telephone access lines in 1996 (ITU, 1997). While tele-densities ranged from 45-65 per 100 population in the developed countries and averaged 47.1 for the OECD as a whole, the average was 5.2 in the major non-OECD economies; and only 4.5 in China and 1.5 in India. Visions of a global knowledge-based economy and universal electronic commerce characterised by the “death of distance” must be tempered by the reality that half the world’s population has never made a telephone call, much less accessed the Internet.

The imbalance of access to communications networks translates easily into an equivalent or even greater disparity in the use of electronic commerce. Currently, 80 to 90 per cent of Web purchases are made in North America. Many online shopping and auction sites limit delivery to the United States. While it is possible to ignore borders in the case of intangibles that can be sent digitally, most goods that can be ordered via the Internet, such as books, CDs, flowers, groceries, and computer peripherals, still face the very real borders represented by international shipping costs, custom duties, and risk of theft or loss. The growth of transborder business-to-business extranets will likely play a strong role in lessening this bias. By 2002, IDC predicts that the North American share of Web purchases will have shrunk to 64 per cent of total sales.

In countries with extremely low teledensities, universal access must be defined in some way other than access from every home; the alternative is access at the level of community or institutions. Public access sites located in schools, post offices, community centres, public libraries or even franchised shops are likely to be the alternative of choice. Such sites have a role in both developing and developed countries, especially in rural/remote areas and poorer urban neighbourhoods. They can be provided with a higher bandwidth connection than the average home and provide access to a variety of electronically delivered government and public sector services. The telecentres concept pioneered in Scandinavian countries, Canada’s Community Access Program (CAP), and UNCTAD’s “Global Trading Point Network” are excellent models of ways to expand access. Once access is gained, e-commerce and the Internet offer certain opportunities to developing countries and regions, as previously inaccessible information becomes codified and internationally available (European Commission, 1997). For example, Bangladesh medical schools can now access medical journals on line for \$2.50 a month. Previously, the main medical school (Dhaka Medical School) could only afford a few subscriptions to published journals (WTO, 1998).

POLICY IMPLICATIONS AND FUTURE WORK AGENDA

The speed with which information technology is transforming the economy and society makes it difficult to determine with absolute confidence the full range of social impacts and the net balance of social benefits and costs. It is clear, however, that fundamental changes are taking place at virtually every level of society, prompted by the growth of the Internet, electronic commerce and other applications of information networks.

- *A question for further investigation is whether the Internet and electronic commerce will contribute to existing distribution inequalities, whether it is essentially neutral or can help mitigate more general social inequalities.*

- *Since gaining access to the network is key for participating in the “Information Society”, work should be conducted that analyses what factors help and hinder access to the Internet such as cost, language and skills and whether these factors can explain differences observed across countries.*

One of the hallmarks of electronic commerce is that, by drastically reducing transaction and search costs, it reduces the distance between buyer and seller, enabling businesses to target very small niches, develop individual customer profiles, and essentially provide a means of marketing on a one-to-one basis. The ability to realise this goal will largely hinge on the climate of confidence businesses are able to create in their relations with their business partners and customers. Assurances about protection of privacy and personal information play an important role in building that confidence. Both the public and private sectors need a fuller understanding of the requirements for fostering confidence in electronic markets, particularly among consumers.

- *Work is needed to better understand the economics associated with the use and protection of private information, and the means to evaluate the costs and benefits of various proposals to protect and expose private information. This might include firm- and industry-level benefits, and related costs of assuring the confidentiality and integrity of personal data; the relative impacts of firm-based, sectoral-based and economy-wide standards for safeguarding personal information; and the effects on trade and investment of divergent levels of privacy protection across economies and jurisdictions.*

E-commerce and other information and communication technologies reduce the importance of time as a factor that dictates the structure of economic and social activity. It both raises the potential of saving time as consumers shop more efficiently, but also could reduce leisure as the technology provides a continuous electronic link to work. Regardless, many find that the pressure to perform tasks quickly is increasing. Linked to this is the broader question of the ability of policy-making apparatuses to accommodate “Internet time”.

- *Research is needed to determine the net impact of electronic commerce on working and leisure time and its broader effects on the economy and society. In particular, it is important to know whether reduced leisure time retards or spurs the demand for new information-based products and services, and under what conditions. Furthermore, the speed it enables should be evaluated in light of the capability of existing governing institutions to keep pace and for the potential volatility it may introduce into economic markets.*

NOTES

1. "In Cyberspace, Nobody Knows Who You Are", *Hamilton Spectator*, July 3 1998, p. E3.
2. "The Internet Economy", *Time*, July 20 1998, p. 19.
3. *Ibid.*
4. ITAA/Wirthlin Survey quoted in "New Electronic Commerce Survey Finds Internet Poised to Become Nation's Cash Register", *Business Wire* (DV), 23 June 1998.
5. "How Safe is the Net?", *Business Week*, 22 June 1998.
6. For example, "E-mail Brings Families Closer. A growing number of parents with children away at college are surprised at the frequency that their children are using e-mail to stay in touch. Parents also find their children are opening up to them via e-mail far more readily than if they were talking to them over the telephone or even face to face. Convenience is cited as a main reason for using e-mail, as well as cost savings and 24-hour contact availability without disrupting schedules. Of the 9 million students in college, 7 million use e-mail regularly.", *Washington Post*, 3 November 1997.
7. See, for example, Toronto *Globe and Mail*, 31 July 1996, p. A16.
8. US Department of Commerce (1998), "Falling Through the Net II," <http://www.ntia.doc.gov/ntiahome/net2/falling.htm>, 30 July 1998.
9. CommerceNet/Neilson study as cited in "Startling Increase in Internet Shopping", *Business Wire*, 3 December 1997.
10. Judy Balint, Senior Vice President, Global Marketing & Strategic Business Development, E*Trade, speaking at the IDC E-commerce Forum, 10-12 May 1998, Monaco.
11. "Cautious Ascent by the Smaller Companies", *Financial Times*, 1 July 1998.

