

Please cite this paper as:

OECD (2013-07-26), "Electronic and Mobile Commerce",
OECD Digital Economy Papers, No. 228, OECD Publishing,
Paris.
<http://dx.doi.org/10.1787/5k437p2gxw6g-en>



OECD Digital Economy Papers No. 228

Electronic and Mobile Commerce

OECD

Unclassified

DSTI/ICCP/IE/IIS(2012)1/FINAL

Organisation de Coopération et de Développement Économiques
Organisation for Economic Co-operation and Development

26-Jul-2013

English - Or. English

**DIRECTORATE FOR SCIENCE, TECHNOLOGY AND INDUSTRY
COMMITTEE FOR INFORMATION, COMPUTER AND COMMUNICATIONS POLICY**

Cancels & replaces the same document of 18 July 2013

**Working Party on the Information Economy
Working Party on Indicators for the Information Society**

ELECTRONIC AND MOBILE COMMERCE

JT03343234

Complete document available on OLIS in its original format

This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

**DSTI/ICCP/IE/IIS(2012)1/FINAL
Unclassified**

English - Or. English

FOREWORD

This report on e-commerce looks at developments over the previous 14 years since the OECD Ministerial Conference “A Borderless World: Realising the Potential of Global Electronic Commerce”. It looks at e-commerce as a potential engine of economic growth, highlights existing challenges, and explores evolving market solutions to long-standing barriers.

This paper was developed for consideration by the Working Party on the Information Economy (WPIE) and the Working Party on Indicators for the Information Society (WPIIS). It was declassified by the Committee for Information, Computer and Communications Policy (ICCP) by a written procedure concluding in July 2013.

The report was prepared by Mr. Piotr Strykowski with contributions from Mr. Taylor Reynolds and Mr. Andrea De Panizza, of the OECD Directorate for Science, Technology and Industry (STI). It is published under the responsibility of the Secretary-General of the OECD.

TABLE OF CONTENTS

FOREWORD	2
TABLE OF CONTENTS.....	3
MAIN FINDINGS	4
E-commerce as an economic engine	4
Trends.....	4
Focus on SMEs.....	5
The way forward	5
E-COMMERCE AS AN ECONOMIC ENGINE.....	6
Impacts on businesses	7
Impacts on consumers	13
TRENDS AND INSIGHTS FROM E-COMMERCE DATA	16
E-commerce growth	16
Breakdown of e-commerce	17
Growth of mobile commerce.....	20
E-COMMERCE FOR SMALLER ENTERPRISES.....	23
BARRIERS AND POTENTIAL SOLUTIONS	26
Existing challenges.....	26
Market responses.....	32
THE WAY FORWARD	36
NOTES.....	38
REFERENCES	39

Boxes

Box 1. Barriers to entry	11
Box 2. Price Comparison Websites.....	13
Box 3. Electronic data interchange.....	18
Box 4. M-commerce.....	21
Box 5. Near field communication (NFC) - Turning mobiles into mobile payment devices	22
Box 6. <i>Paczkomaty</i> delivery service.....	36

MAIN FINDINGS

Commerce is a fundamental mechanism supporting economic activity. Technological improvements that facilitate commerce can reduce transaction costs, provide more information to participants, boost access to a wider array of products, lead to efficiency gains, as well as result in welfare improvements for the entire economy. This research presents the current state of development of e-commerce and aims to inform policy makers about the need to continue to reduce barriers to e-commerce and highlights emerging market solutions to long-standing barriers.

E-commerce as an economic engine

ICTs and the **Internet are leading to a structural change of commercial transactions by making them more efficient.** For **businesses**, e-commerce improves efficiency in two key ways, by enlarging the scope of the market and lowering operating barriers and costs. For **consumers**, e-commerce confers benefits by providing information on goods and services, helping consumers locate sellers, facilitating price comparisons, offering convenient delivery, and allowing them to purchase easily via a computer or mobile device wherever they are.

Policy makers have long seen e-commerce as “**potentially a key engine to increase economic growth**”,¹ as highlighted in 1998 by the conclusions of the OECD ministerial conference on e-commerce in Ottawa, Canada. The ministers at the meeting called on the OECD to promote the development of e-commerce and analyse specific barriers to e-commerce including taxation, privacy, consumer protection, authentication and access to infrastructures as a way to encourage economic growth.

Trends

E-commerce has grown steadily over the nearly 15 years since the Ottawa ministerial. From 2004 to 2010 alone, total e-sales grew from 9 to 14% of turnover of non-financial enterprises in the European Union, and from 10 to 16% in the United States.

But growth has been uneven across OECD countries. In Switzerland almost 80% of enterprises with at least 10 persons employed undertake e-purchases, while the percentage is lower than 10% in 10 other OECD countries. Also, firms are much less likely to do e-sales than e-purchases. New Zealand and Israel lead the OECD in the number of firms reporting electronic sales (~50%) while the percentage is lower than 20% in most countries.

The **composition of e-commerce has remained nearly constant** over the previous 10 years. E-commerce is **dominated by business-to-business (B2B) sales** that are often handled via electronic data interchanges (EDI). Roughly 90% of the value of e-commerce transactions is from B2B. The remaining 10% of transactions are a combination of business-to-consumer (B2C), business-to-government (B2G) and consumer-to-consumer (C2C) activity. Recently, **B2C transactions have been growing faster than other segments**, but from a low base. Social networks (and the participative web) are also increasingly used to market and sell products online in a way that is more tailored to individual users.

Smartphones and mobile apps provide a powerful new platform for e-commerce growth, particularly for B2C transactions. New apps also allow users to scan product codes, compare prices and purchase products online. Outside the realm of e-commerce new hardware developments, such as the integration of near field communication (NFC) in phones allow users to pay for items by holding their phone to an NFC reader and confirming the sale. Smartphones are also expanding the reach of point-of-

sale equipment as credit card readers that can be attached to mobile devices to accept payments anywhere mobile data coverage is available.

Focus on SMEs

Despite the steady growth of e-commerce, significant challenges to higher e-commerce adoption and use remain. **Barriers to e-commerce adoption appear to affect small enterprises disproportionately.** On average, firms with more than 250 or more persons employed are 20% more likely to sell online than firms with 10 to 49. This presents a significant challenge for policy makers as SMEs account for over 99% of all businesses in the OECD and 40-70% of value added in the economy. Much of the OECD's attention has turned to fostering entrepreneurship and the growth of SMEs as a way to promote a return to growth so **policies that can help these firms adopt and use e-commerce should in turn have a positive impact on long-term economic performance.**

Lingering structural challenges to e-commerce adoption remain but recently a variety of **market-based solutions have developed that are helping to reduce barriers to e-commerce** for small- and medium-sized firms. New platforms have emerged that allow firms to outsource many tasks from simple e-commerce transactions to comprehensive operations including marketing management, payment processing and delivery of goods to end users for a percentage of the revenue. These e-fulfilment platforms can significantly expand the reach of smaller firms in both domestic and international markets.

The way forward

There are still some well-known barriers that hinder the further growth the B2C and C2C components of e-commerce, and the maximization of its potential benefits: these include legal issues (cross-country legislative consistency), taxation, issues related to e-payments and the need for complementary skills. Policy steps aimed at reducing lingering barriers are increasingly important given the potential new reach the Internet provides firms.

Most of these obstacles are particularly challenging for SMEs. This has led to a market response with the emergence of large e-commerce platforms and e-fulfilment solutions that act *de-facto* as intermediaries. It is still too early to fully understand the competitive effects of these new platforms but policy makers should follow their growth and development.

More work could be done to understand the barriers to e-commerce adoption specifically for SMEs and SoHos (small office/home office). Another important area of work is related to understanding the commercial relationships between users of free apps and online service providers, where users provide their personal data in exchange for access to these services. Finally, additional research could examine the development of fulfilment services by post offices and private sector actors.

E-COMMERCE AS AN ECONOMIC ENGINE

Commerce is the fundamental mechanism supporting economic activity. Technological improvements that facilitate commerce, reduce transaction costs or provide more information to participants lead to efficiency gains for the entire economy.

There have been significant advances in commerce throughout time that have led to large efficiency improvements for societies. The most significant is arguably the introduction of money thousands of years ago to replace a trade and barter system that required significant resources just to match the participants on both sides of a potential trade. More recently, the introduction of credit systems by banks (cheques and credit cards) improved the fluidity and efficiency of commercial transactions by reducing the need for physical money to carry out transactions.

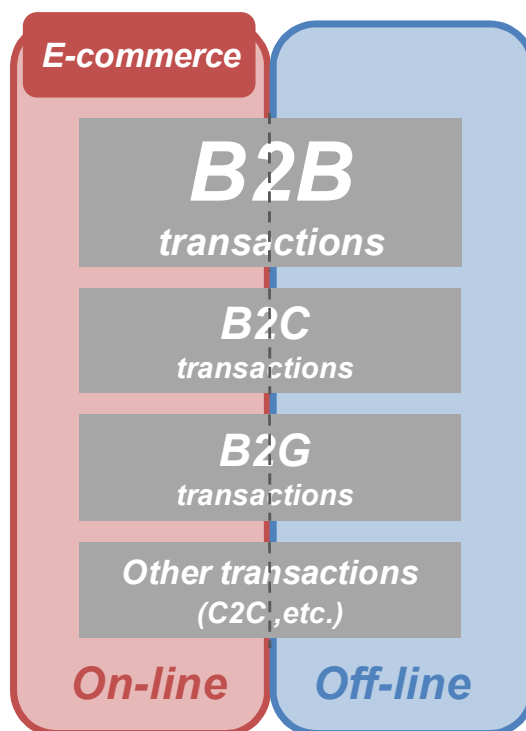
We are now in the midst of a new round of efficiency gains resulting from the rapid expansion of electronic and mobile commerce.

According to the 2009 OECD definition (which replaces the early definition from 2001), the term “e-commerce” includes any transaction for the sale or purchase of goods and services *conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders*. Payment and the ultimate delivery of the goods or services do not have to be conducted online, while orders made by telephone calls, facsimile or manually typed e-mail are excluded (OECD, 2011c). These methods, reflected in the classification of e-commerce, include the web, extranet or electronic data interchange (EDI), used in most e-commerce transactions between enterprises. E-commerce transactions can occur between enterprises, individuals, governments, and other public or private organisations: depending on the seller and buyer, the most common transactions are *business to business* (B2B), then *business to consumer* (B2C), *business to government* (B2G) and, more recently, *consumer to consumer* (C2C) (Figure 1).²

The development of e-commerce has been greatly facilitated by the development of standards and IT based instruments easing financial transactions, such as the SWIFT (Society for Worldwide Interbank Financial Communication) network, created in 1973, that allows the transmission of financial information in a standard and securitised way between institutions and introduction of secure socket layer (SSL) encryption by Netscape in 1994 to secure web traffic and support secure financial transactions over the Internet.

Initially, e-commerce solutions were limited to communications between large firms in specific industries that had opened dedicated communication channels. It has only been roughly 20 years since the benefits of e-commerce were extended to any firms with an Internet presence, allowing them to complete transactions with end customers using a fixed Internet connection. More important, in the same period the cost of dedicated (EDI) solutions has become affordable for SMEs and the diffusion of ICT tools has been growing massively across all enterprises. A new wave of e-commerce growth is underway, supported by the rapid increase in mobile phones and portable devices, and this has substantially contributed to new economic potential. The rise of use of e-commerce by consumers leads to structural changes in commerce, where a number of traditional intermediaries have found themselves bypassed or at least in need of adaptation, across retail sectors, from clothing to creative content. In addition today, mobile phone users can conduct global searches for information on products, compare prices internationally and complete an order from anywhere and at any time. The full ramifications of this wave of mobile commerce are just starting to be understood.

Figure 1. Aspects of e-commerce

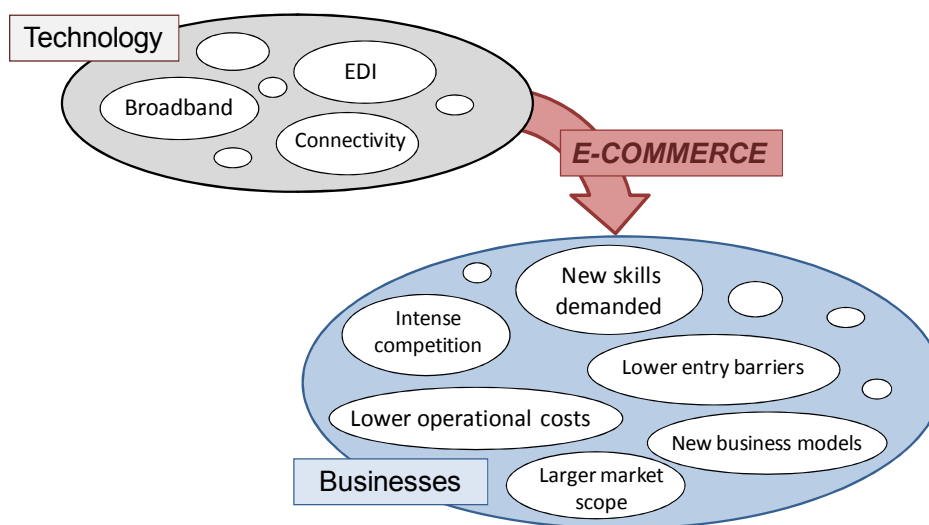


The benefits of e-commerce accrue to both organisations (firms, governments) and individuals and contribute to the overall economic potential of the economy. This section details these benefits and impacts.

Impacts on businesses

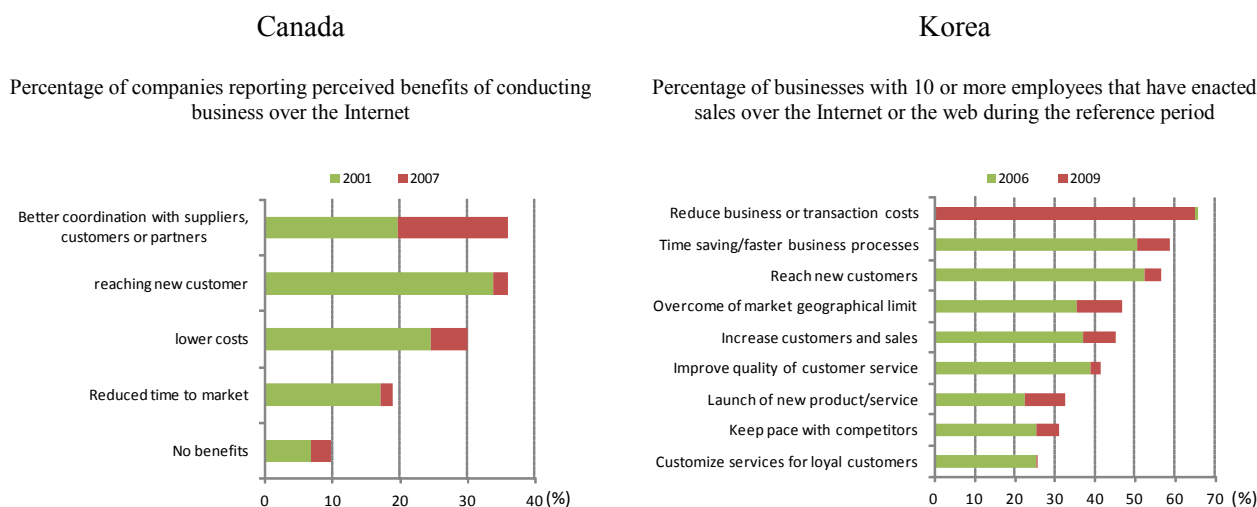
E-commerce is leading a **structural change** in commerce. It impacts businesses in a variety of ways. It **reduces operational costs** at various stages of business activities, **enlarges market scope**, **lowers barriers to entry** and consequently **intensifies competition**. For existing companies, e-commerce also introduces the need for **additional skills**. Graphically, the impacts of technologies that enable e-commerce on businesses are summarized in Figure 2.

Figure 2. E-commerce and businesses: Main impact areas



The variety of impacts that e-commerce has on businesses leads to a question about the global magnitude of the impact of e-commerce on industries. Indeed, some of the impacts might be beneficial for businesses (e.g. lower operational costs), whereas some others may lead to a temporary productivity drop (e.g. demand for new skills) over the short term. Existing surveys and quantitative studies find that **businesses that rely on e-commerce tend to be more successful compared with their peers with limited e-commerce usage.**

Two studies for Canada and Korea provide informative examples in this context. In 2001, 30% of Canadian firms did not have access to the Internet. However, between 2001 and 2007 there was a significant shift in the perceived benefits of the Internet. In 2007, “better coordination with suppliers, customers or partners” overtook “reaching new customers” as the biggest benefit of Internet access. The findings in Korea are similar. Between 2006 and 2009, Korean firms assigned more benefit to reducing business and transactions costs than to reaching new customers with the Internet (Figure 3).

Figure 3. Perceived benefits of conducting business over the Internet, Canada and Korea

Source: OECD, based on data from Statistics Canada and NIA.

Similarly, in most European countries in 2009, large and medium-sized enterprises ranked *the reduction of transaction costs* as the most favourable effect of electronic sales. This was typically followed closely by *increasing sales potential due to access to new markets*. Small firms, however, ranked increasing access to new markets as the most important benefit (Eurostat, 2011).

In addition to existing surveys, some quantitative studies provide evidence about the positive net impact that e-commerce has on businesses. Already in 2001, Subramani and Walden (2001) found that the application of e-commerce solutions by firms has a positive impact on their performance and is in turn reflected by positive returns for shareholders of these firms.

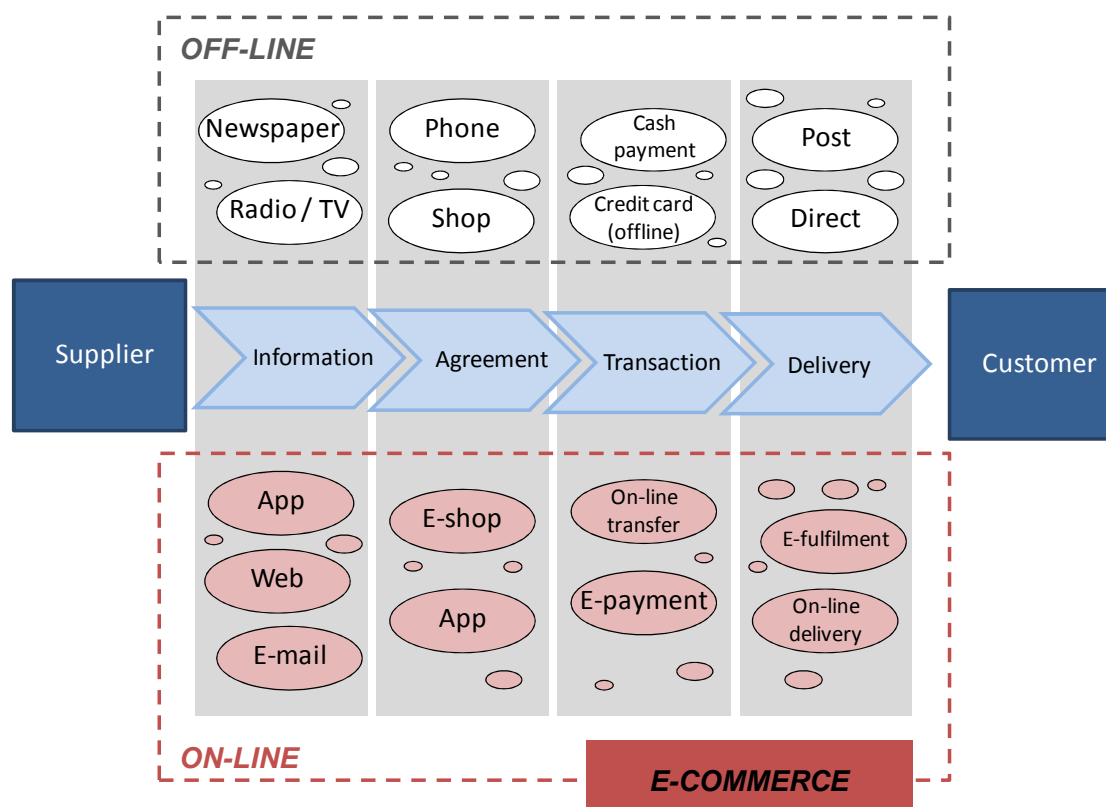
Lower operational costs

For businesses, e-commerce solutions offer a range of significant cost reductions along the whole transaction process. Figure 4 shows how new Internet-based channels are supplementing (or replacing) traditional channels at all steps across the seller-to-buyer relationship.

At the stage of information gathering, e-commerce offers relatively inexpensive solutions for making information available to a large number of customers *via* the web, including social networking platforms, that today complement (or sometimes even substitute for) traditional communication channels, such as newspapers, radio or television advertising campaigns (OECD, 2013).

At the stages of agreement and transaction, e-commerce solutions can offer additional cost savings. Unlike traditional (physical) stores, e-commerce can reduce the need for investments in physical infrastructure such as buildings, parking and retail shops. This leads to savings on items such as rent and other operating costs of physical infrastructure. E-commerce may free up labour resources that can be used in other areas of the business. Finally, there can be significant savings at the delivery phase. Dedicated, specialised e-fulfilment services or on-line delivery (in case of digital products) are usually less expensive than traditional methods, such as shipping and handling by the post or the maintenance of a pick-up counter.

Figure 4. E-commerce solutions



These potential savings are available across sectors. As one example, a 2009 study found that the driving force behind the adoption of online banking was the savings on transaction costs experienced by customers as compared to the conventional over-the-counter bank (Lee, 2009). Such savings can be significant for both large and small scale enterprises.

Larger market scope

Businesses also benefit from the larger market access that is possible with e-commerce because a simple website can advertise goods throughout the world to interested parties. This is the direct consequence of the Internet as a “borderless” communication medium. E-commerce solutions are available around the clock and can take orders when traditional stores would be closed. E-commerce also opens new possibilities to reach markets that were traditionally beyond the scope of smaller firms. The rise of the Internet has opened the possibilities for small firms, particularly those serving niche markets that may be too narrow to be sustained by a domestic market alone.

The positive effects that e-commerce has on market scope were confirmed by several empirical studies. For example Lendle et al. (2012) used eBay data and found that physical distance is much less important for e-commerce than for regular commerce. Similar results are presented by Cowgill and Dorobantu (2012), who using Google data, found that cross-country borders tend to have much smaller impact on e-commerce than on off-line trade.

Reduced entry barriers

Several studies point to the beneficial aspects of e-commerce on reducing market barriers. These are well established in economics and particularly in the theory of competition (see Box 1). Entry barriers merit special attention in the context of e-commerce because of the opportunities they present to SMEs that were traditionally too small to compete in larger geographic markets.

Box 1. Barriers to entry

The concept of entry barriers refers to hindrances that a given company may face while trying to gain entrance into a given market. An entry barrier induces either monetary or non-monetary fixed cost of entering into a given market that must be borne by any company looking to enter.

Some of the most common entry barriers include:

- Fixed capital requirements; a need for a certain capital level (physical equipment, buildings, machinery etc.), to begin the activity. This in turn might lead to some economies of scale that naturally limit the number of companies on a given market.
- Exclusive agreements between retailers and sellers that that can make it difficult for firms to enter a market.
- Government regulations that might restrict the number of suppliers or introduce additional licenses and permits that may raise the investment needed to enter a market. These effectively create a barrier to entry.

Since entry barriers limit the number of active business in a given market and restrict competition, they increase market power of incumbent firms and are one of the sources of distortionary prices. Therefore, their removal is of interest to policymakers.

E-commerce is seen as a way to reduce entry barriers for firms on a global scale, particularly if e-commerce solutions can be implemented at relatively low cost. This, in turn, leads to higher levels of competition.

Source: Tirole, (1989), McAfee et al. (2004)

E-commerce reduces entry barriers through two main channels. First, the Internet significantly reduces the costs of information search and exchange, which in turn leads to a disintermediation of traditional commerce channels. Suppliers can now by-pass retailer agreements, which in turn, lead to the disintermediation of classical channels of commerce. A number of traditional intermediaries have found themselves bypassed, across a range of sectors. This could consequently lead to a resetting of traditional economies of scale and thus to a change in the existing market landscape. These predictions are confirmed by several empirical studies that confirm that the geographical scope of e-commerce tends to be larger than the scope of off-line trade (Cowgill and Dorobantu, 2012; Lendle et al., 2012).

Second, the Internet helps firms overcome conventional barriers such as the high capital requirements that were previously necessary to start an off-line business. The costs to develop web store fronts based upon e-commerce platforms are relatively low compared to traditional brick-and-mortar retail outlets. Therefore, one could expect a growth in the number of firms serving markets if e-commerce makes market entry easier. One potential source of competition may come from existing employees or independent contractors who may leave and start competing businesses to their previous employers. The emergence of these enterprises could have a material adverse effect on existing incumbent companies.

Demand for new skills

Managing e-commerce operations may require new skills that companies lack, particularly smaller firms. Several studies suggest that introducing ICTs, of which e-commerce is part, results in a high demand for new competencies in businesses (OECD, 2010a). In terms of e-commerce, this means new skills are required not only for specialized designers of technical e-commerce platforms but also for skilled employees to implement and use these solutions. The Canadian Standing Committee on Industry, Science and Technology (2012) highlighted the problem of firms needing specific skills to have a successful e-commerce implementation. The report concluded that a lack of competent or specialised personnel was one of the main obstacles preventing businesses from adopting ICT solutions.

Intensified competition

The dramatic growth in transactions over the Internet changes the degree of competition in markets where e-commerce solutions are successfully applied.

In most instances, e-commerce represents an additional distribution or marketing channel in the same way that mail order represents a different sales channel for retailing. There are other cases where it creates new products (e.g. electronic information products) or services (e.g. comparison-shopping search engines). Indeed, consumers today can purchase products online from a wide range of shopping platforms and entities. These new shopping platforms include traditional online retail stores, consumer-to-consumer sites, cloud-hosted e-shops, and social media (OECD, 2013). Consumers can also purchase directly from app developers, mobile operators, ISPs or others.

Competition is strengthened as users can search for products and compare prices online across a variety of sellers. They can visit the sites themselves, use product and price comparison websites, or rely on other consumers' product reviews and ratings. These sites help consumers quickly identify the least expensive supplier or choose among products with different characteristics (Box 2). These tools enhance transparency in e-commerce and naturally increase the level of competition. For example, competition between sellers will tend to be more vigorous when search, menu and transaction costs are low, and when buyers have a large choice of suppliers.

Box 2. Price Comparison Websites

A price comparison website (PCW) refers to an online search tool designed to provide consumers price information from many retailers through a single portal. These sites are used by consumers as valuable information sources for online shopping.

According to a recent study by the EC, 81% of respondents have used price comparison websites in the past 12 months. A large percentage (48%) uses those websites at least once a month, and fewer than one in ten of them have only used them once in the last year (8%). PCWs are largely perceived by their users to be doing a good, unbiased job in finding and listing correct information about prices and delivery charges from different sellers. Consumers expect that PCWs will help them to make purchases at cheaper prices than if they buy from online retailers without using PCWs and without intensive search.

Although PCWs can help consumers find cheaper offers, in some cases they present some significant shortcomings, such as a lack of adequate information on aspects like delivery costs, delivery time, taxes, and availability of products. Also, usually there is a lack of clarity about default rankings; and importantly a lack of information about payments made for ranking placements and listings.

Source: EC (2012)

The potential impact of e-commerce solutions on competition was the subject of several studies. For example Goldmanis et al. (2010) checked the effect of e-commerce on structures of three industries in the United States: travel agencies, bookstores and new car dealers. The study concluded that e-commerce caused some market share shifts and intensified competition in all three industries, but the mechanisms varied, ranging from aggregate, general impacts in the travel industry to local effects in the other two industries.

Impacts on consumers

For consumers, the growth of e-commerce is marked by a number of important factors. First, consumers have better access to product and price information about a broader set of goods, allowing them a wider choice of goods at a lower price. Second, consumers benefit from other welfare gains such as time savings resulting from e-commerce activities.

In today's e-commerce environment, consumers are faced with more complex transactions and products, which are increasingly being supplied in a digital format. At the same time, consumers are now willing and able to access, compare, and share vast amounts of product and price information provided by businesses and other consumers on a growing number of e-commerce and other Internet-based platforms (OECD, 2013a).

One of the key benefits of e-commerce is that it offers consumers a wider range of products at lower prices (OECD, 2012b). Research carried out in 17 EU member states between December 2010 and February 2011 reveals that online products are indeed generally offered at lower prices than those sold offline, resulting in an estimated consumer welfare gain of EUR 2.5 billion (Civic Consulting, 2011). E-commerce also enables consumers to order products from sellers located in other countries, although this may introduce new taxation issues.

In addition to a wider product choice, a major benefit of e-commerce and online shopping relative to offline shopping is the ease of product and price comparison. Product and price comparison websites (as mentioned earlier in Box 2) allow consumers to compare quickly and efficiently products' characteristics and prices across various online stores. Existing consumer surveys show that finding cheaper prices online

is the single most important reason for shopping online and frequent online shoppers, especially those with higher levels of education, cite the convenience of the Internet marketplace in terms of price comparison as a driver of online shopping (Civic Consulting, 2011).

New services allow users ever more personalised information about products that interest them. New types of search engines combine features of product and price comparisons, social networking, recommendation engines, and e-commerce platforms. For example, ShopCade is a Facebook app that allows consumers to *i*) browse and choose from a range of products and brands, and *ii*) create their own customised ShopCade including the favourite products which they wish to share with or recommend to their friends, followers, and other online communities. Adding a product to their ShopCade also adds the product to the live feed of their followers, creating a social chain-reaction of product discovery. For each sale of recommended products, ShopCade members earn real cash commissions (OECD, 2013a).

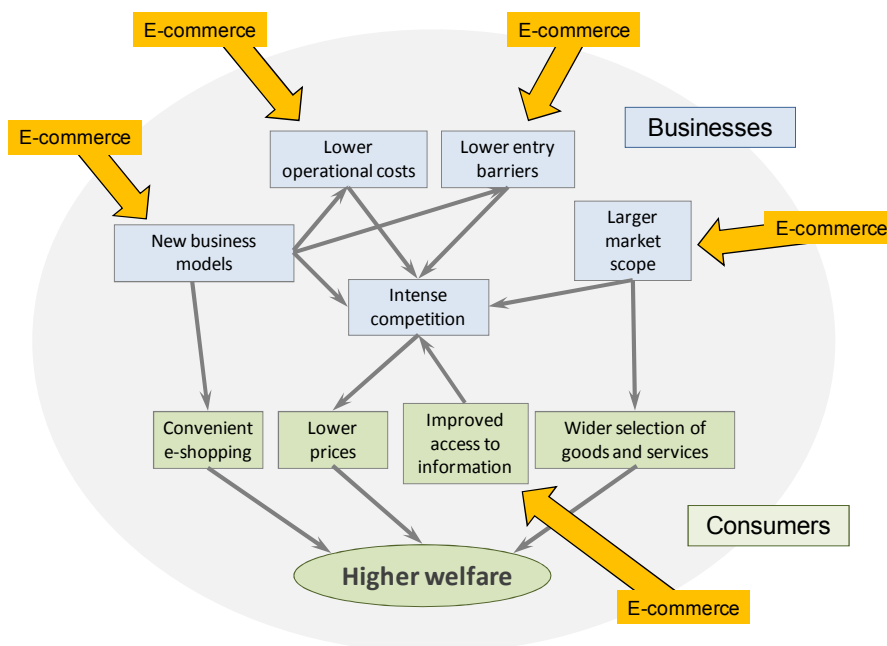
Another example is Facebook's Graph Search, which, unlike traditional search engines, is a new type of social search platform which provides Facebook's members with search results that match the data posted by their community on the platform within the limits of users' existing privacy settings; all users' activities are in this context available for search – including every like, post, comment, photos, music listened to, video watched and other products purchased (OECD, 2013a). This provides the user with a richer set of comments about products and services from people within their community.

A second way in which e-commerce affects individuals is through additional improvements in consumer welfare. New distribution channels for existing products (*e.g.* digital delivery of music, video or software) can significantly reduce search times for shopping and this contributes to higher consumer welfare.

E-commerce can therefore lead to significant savings of time and effort for customers. They save time by avoiding lines and paying bills online or by using a computer to book travel arrangements, as two examples. In fact, the extra value that consumers derive from the e-commerce transactions stems from loosening the day-of-week and time-of-day constraints of traditional markets by offering a nearly continuous shopping convenience and reduced transaction costs. In more traditional markets, the day-of-week constraint has been found to be associated with counter-cyclical pricing patterns; whereby, as demand increases during the weekend, prices actually decline. Scholten et al. (2009) find that the counter-cyclical price pattern no longer persists on the Internet and the authors attribute this result to a reduction in search costs imposed by the removal of the day-of-the-week and time-of-day constraints of the Internet.

Graphically, these direct and indirect impacts on e-commerce on consumer welfare are presented in Figure 5.

Figure 5. The impact of e-commerce on consumer welfare



It should be noted, however, only a part of these impacts can be quantified.³ B2C e-commerce transactions can create considerable value for consumers in areas such as time savings and ease of use, even if these benefits cannot be captured by traditional measures such as the system of national accounts (Scholten, 2012). Certain effects, although significant and observed, cannot be economically measured and expressed in economic value terms. Together, these impacts translate into a significant improvement in individual utility, and on aggregate, into a global improvement in consumer welfare.

TRENDS AND INSIGHTS FROM E-COMMERCE DATA

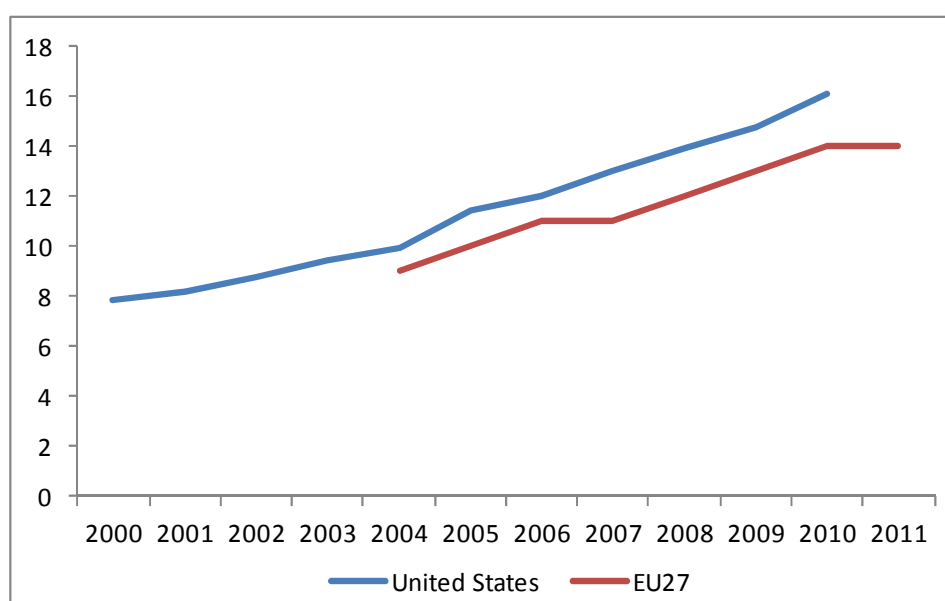
This section uses data from OECD countries over the past decade to analyse and track progress in e-commerce. It looks at the growth of e-commerce and the breakdown of e-commerce activity. It also provides information on new e-commerce trends such as the growth of mobile commerce.

E-commerce growth

The number of firms carrying out business transactions (placing or receiving orders) over the Internet has increased steadily over the last decade. The Internet facilitates transactions such as ordering goods and services in two key ways. First, the Internet has increased the efficiency and lowered the costs of transactions that would have otherwise taken place offline. Second, the Internet facilitates new transactions that could not have occurred without its existence (e.g. the use of the Internet by SMEs to sell goods globally).

In 2011, e-commerce represented about 14% of the total turnover of EU27 non-financial enterprises, up from about 9% in 2004. In the United States, e-commerce reached 16% of the business sector turnover (excluding some service activities), doubling with respect to the beginning of the decade (Figure 6). The efficiencies enabled by e-commerce have also been welcomed by businesses and consumers during the crisis as shown by the percentage of e-commerce transactions among total transactions continuing to climb.

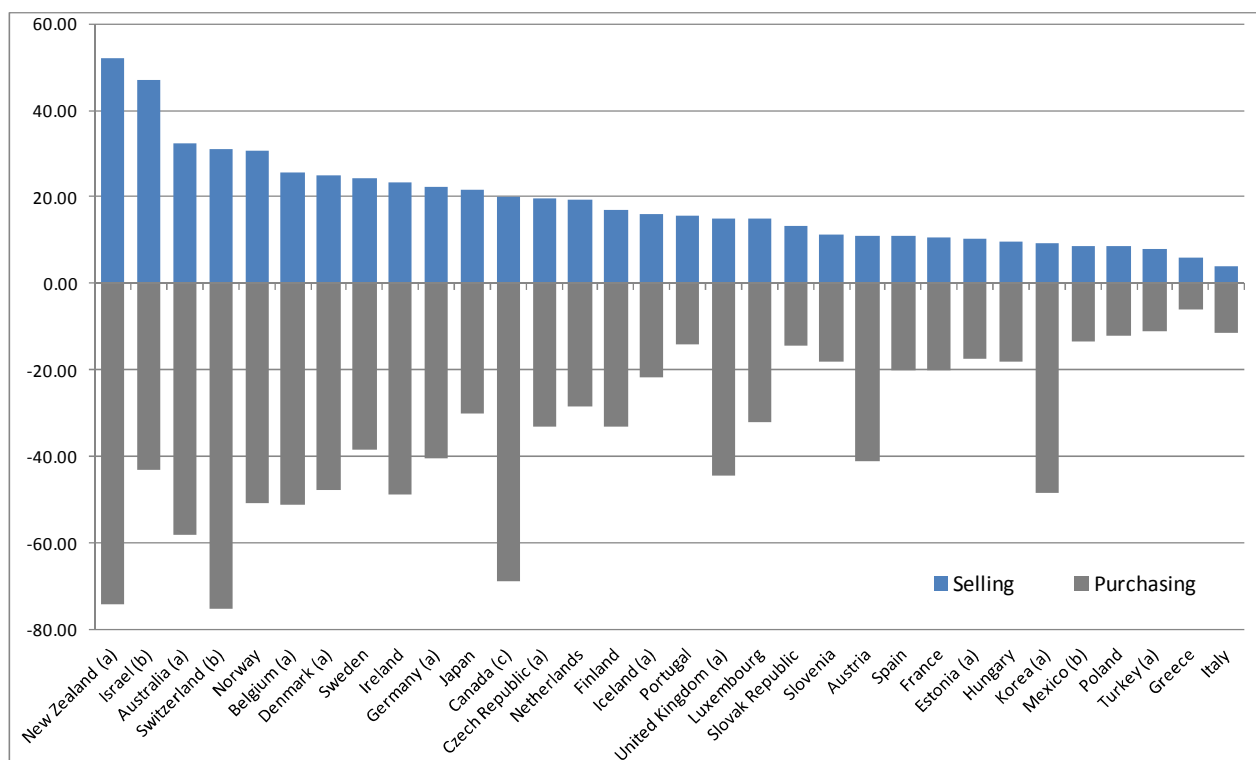
Figure 6. Value of e-commerce transactions as a percentage of business sector turnover in the EU27 and the United States



Note: EU data exclude the financial sector. US data take into account only a limited number of services.
Sources: Eurostat and OECD estimate on US CENSUS Bureau data.

At the beginning of the 2000s, electronic methods were used much more frequently to purchase/order goods and services than to receive orders, and significantly fewer firms sold goods online compared to those that made purchases online (OECD, 2004). More than a decade later in 2011, this is still the case (Figure 7). Data for the OECD in 2010 show that 35% of all businesses with 10 or more persons employed made electronic purchases, and 18% for e-sales of goods and services (OECD, 2011a).

Figure 7. Businesses performing electronic sales/purchases



Notes: Data for 2011 unless otherwise stated. a. 2010; b. 2008; c. 2012; d. 2006; e. 2005; f. 2004; g. 2003.

Source: OECD (2012a), Statistics Canada.

Companies generated more than 4% of their turnover through e-sales in approximately one third of OECD countries in 2011. In the Czech Republic and Slovak Republic, the increase in turnover from e-commerce was particularly strong between 2010 and 2011, with a growth of more than 5 percentage points for companies in the countries (Eurostat, 2011).

Breakdown of e-commerce

The composition of e-commerce has remained nearly constant over the previous 10 years. E-commerce is dominated by business-to-business (B2B) sales that are often handled via electronic data interchanges, or EDI (Box 3). EDI is particularly relevant for some manufacturing sectors such as the automotive industry. In the European Union, more than two thirds of the value of *e-sales* in 2011 was derived from EDI platforms that typically serve B2B operations (Figure 8). Recently, B2C transactions have been growing faster than other segments, but from a low base.

Box 3. Electronic data interchange

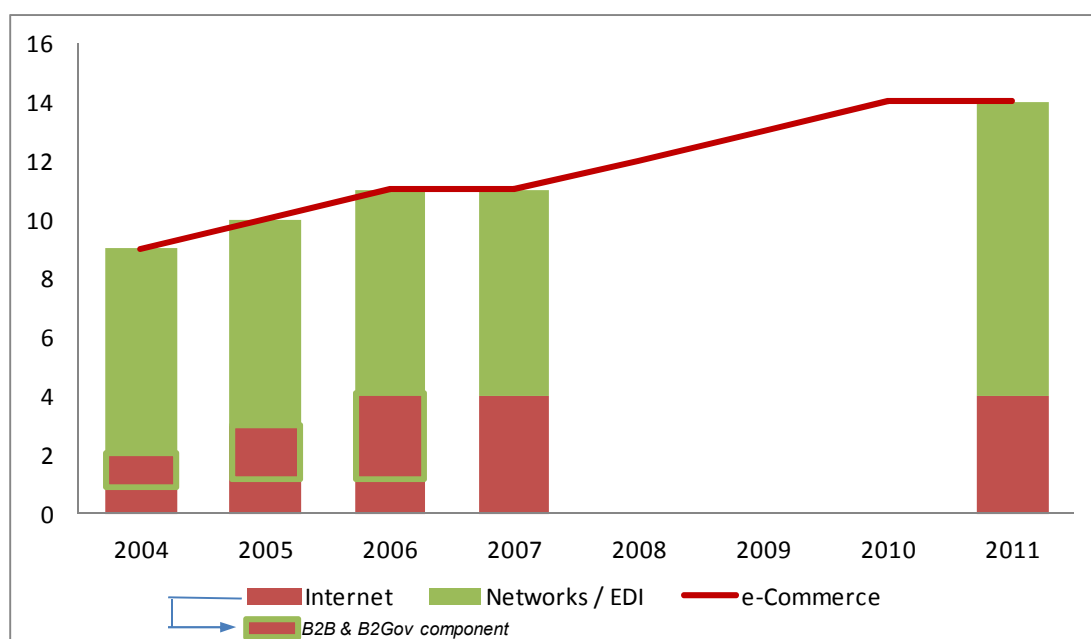
Electronic data interchange (EDI) is the structured automated process of exchange of documents between businesses, without human intervention. EDI is a kind of machine-to-machine process that replaces traditional faxing or mailing of paper documents.

EDI solutions offer B2B exchanges of information that are cheaper and much faster than conventional orders via telephone, fax or the regular post. In addition, the automation process ensures that fewer errors occur during transaction processes.

On the other hand, the successful implementation of an EDI system requires significant rollout and maintenance expenditures. In addition, there are costs of employees training and mapping internal files to EDI documents.

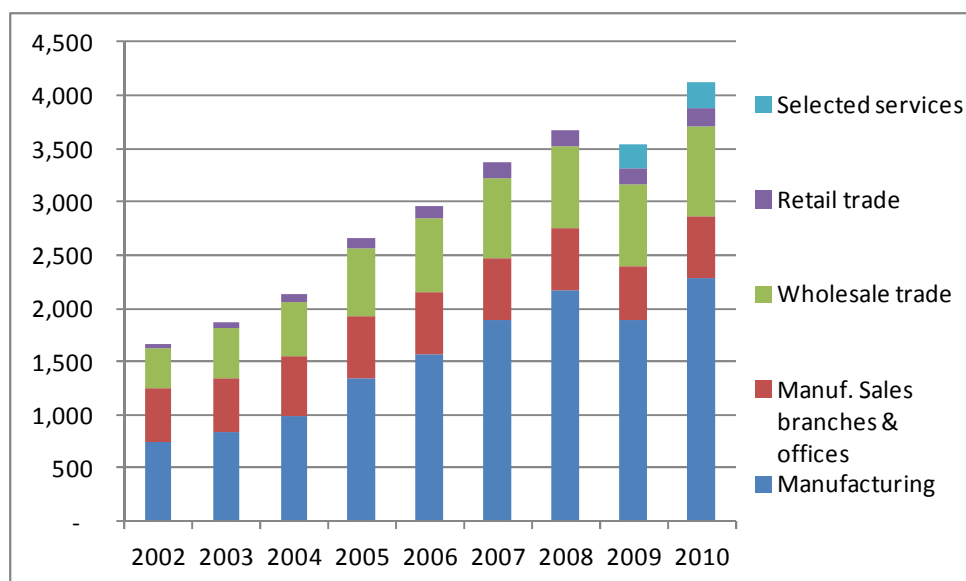
Sources: Kantor and Burrows (1996), OECD, (2012c)

Figure 8. Share of e-commerce transactions on business sector turnover in the EU27 overall and by type of technology, 2004-2012



Source: OECD computation based on Eurostat, Eurobase data

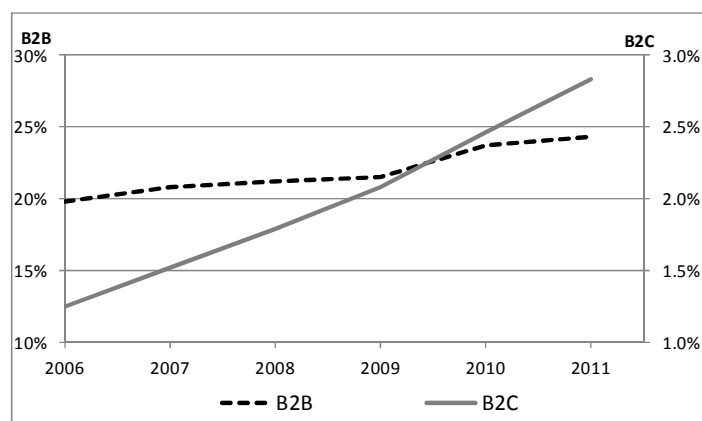
For the United States, the available data highlight that manufacturing and wholesale trade together contributed around 90% of the total value of e-commerce in 2010. It must be noted though that retail trade has been growing faster than these components, increasing almost fourfold at current prices from 2002 to 2010, while manufacturing and wholesale trade in 2009 experienced a fall in absolute terms, due to the crisis (Figure 9).

Figure 9. Value of e-commerce transactions (billions of current USD)

Note: the other ('selected') services aggregation is recorded only starting from 2009

Source: US CENSUS Bureau

Similar patterns can be observed for the other major OECD economies. In Japan, for instance, from 2006 to 2011 the share of e-commerce in total B2B transactions increased from about 20 to 27 percentage points while B2C electronic transactions grew from about only 1.3% to nearly 3% of final sales (Figure 10).

Figure 10. E-commerce ratios in Japan for B2B and B2C transactions

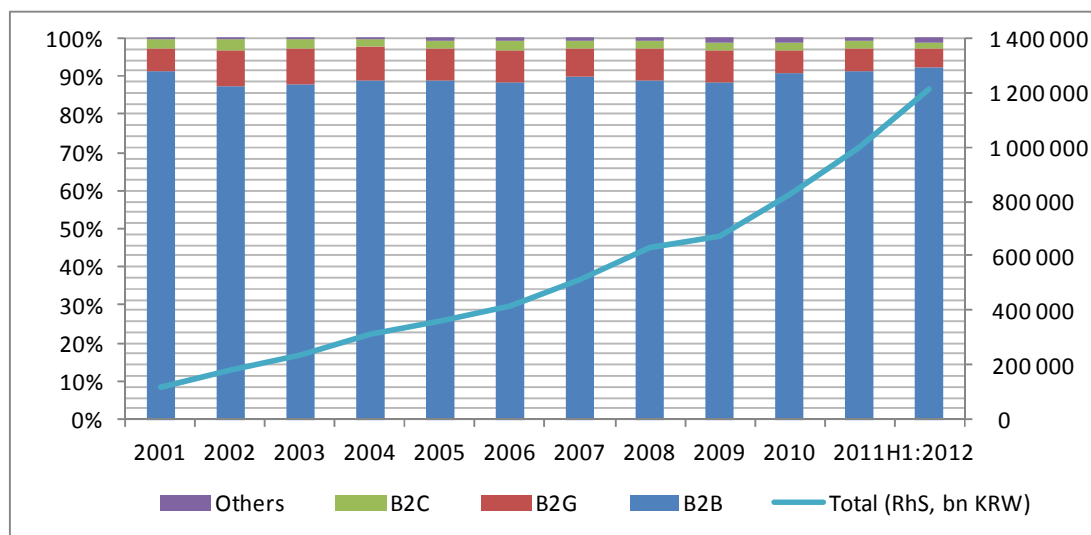
Note: B2B e-commerce defined as: Business transactions via a computer network system for which the restricted amount is known. This also includes transactions via conventional EDI that does not use TCP/IP protocol such as VAN leased line (Example: Those using Japanese Bankers Association Protocol, EIAJ protocol etc.). B2C e-commerce defined as: Business transactions via a computer network system using the Internet technology, for which the restricted amount is known. This includes the technology using TCP/IP protocol, extranet, Internet VPN (Virtual Private Network) and IP-VPN.

Source: http://www.meti.go.jp/english/press/data/pdf/20100720_02a.pdf

Source: Japan's Ministry of the Economy, Trade and Industry (METI) – E-commerce Market Survey, various years

In Korea, the breakdown of e-commerce transactions by type has remained roughly constant over the previous 11 years at a time when the total value of e-commerce has grown seven fold at current prices between 2001 and 2011, and a further 20% in the first half of 2012. The share of B2B is roughly 90% (Figure 11).

Figure 11. Korea: Value and composition of e-commerce transactions by type, 2001-2012*
KRW billion and % shares



(*) Based on 1st Half values and year-on-year growth rates.

Source: Statistics Korea

Growth of mobile commerce

While the composition of e-commerce has remained relatively stable over the past decade, the phenomenal growth in mobile broadband and the expansion of shopping tools available on mobile platforms could potentially set the stage for growth in the B2C market segment over time.

Mobile commerce (m-commerce) is significantly extending the potential connectivity options between businesses and their clients via mobile devices (Box 4). This is an important shift because access to online services was originally only available from computers attached to fixed Internet connections. But the recent expansion of mobile broadband, smartphones and inexpensive data offers has ushered in a wave of mobile subscribers with access to data services wherever they are and at nearly all times.

Box 4. M-commerce

The term m-commerce (mobile commerce) refers to a business model which allows a consumer to complete a commercial transaction using a mobile device, either at a point of sale (e.g. payments made through NFC-technology), or remotely (e.g. through SMS payments or payments charged on mobile operators' bills). (OECD, 2012b).

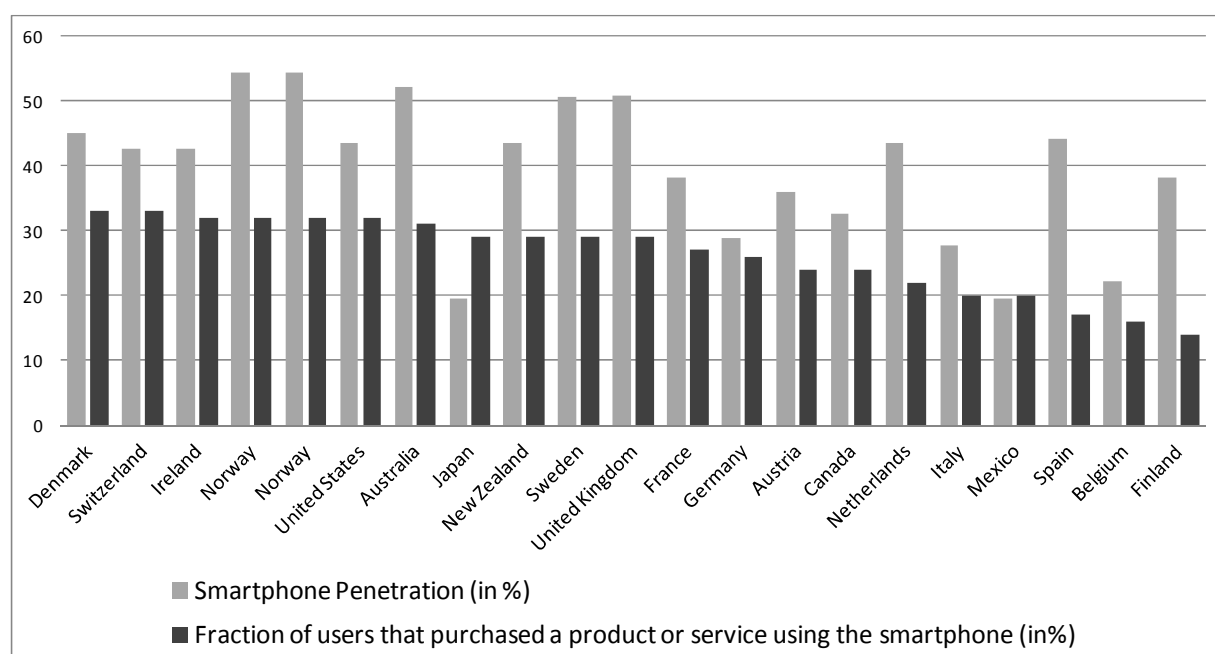
The history of m-commerce began in the early 2000s, when retailers started offering mobile device add-ons such as ringtones, games, wallpapers and screensavers. By 2009, the offers over mobile phones had evolved significantly. Specifically, out of all consumers that purchased goods through m-commerce channels in the United States: 58% purchased digital content (such as music or apps), 51% consumer electronics, 37% computers/laptops/related equipment, 36% books, 31% apparel and 20% jewelry (eMarketer, 2009).

Similar results are found for the UK market, where the percentage of sales via mobile devices in 2010 (Q1) amounted to 0.4% of e-commerce sales. In 2011 (Q4) it reached 5.3%, representing a growth rate of 1 320% over the 2-year period (EMOTA, 2012). In Japan, sales via mobile devices, which amounted to EUR 13.4 billion in 2008 (USD 17.1 billion), reached EUR 18.9 billion in 2011 (USD 24.2 billion), representing a 40.9% growth (MIC, 2012).

Sources: OECD (2007a), Siwicki (2007), eMarketer (2009), EMOTA (2012), MIC (2012)

Mobile devices may enhance the ability of point-of-purchase retailers to compete with the growing use of online shopping including over mobile devices. The growth in online use of mobile devices can be exemplified by looking at the changes in eBay's traditional and m-commerce revenue. eBay's m-commerce revenue grew from USD 2 billion in 2010, to USD 5 billion in 2011. In 2011, m-commerce represented 7% of eBay's total revenue for the year. Research from Google finds that smartphone usage for m-commerce is already high in Denmark, Switzerland and the United States and to a lesser extent in Mexico, Spain, Belgium and Finland (Figure 12).

Figure 12. *M-commerce with smartphones*
Spring 2012



Source: Google, (2012)

In the United Kingdom, Ofcom reports that more than half of smartphone users have used their handset in some way when out shopping, including for tasks such as taking a picture, comparing a price to an online price, or scanning a bar code to get more product information.⁴ The potential uses of smartphones as a means of payment will grow as functionality improves, such as via the rollout of near field communication (NFC) capabilities that allow consumers to make a payment by simply placing their phone next to an NFC reader and confirming the purchase (Box 5).

Box 5. Near field communication (NFC) - Turning mobiles into mobile payment devices

The Italian postal service, Poste Italiane, is launching a NFC-enabled payment system that is scheduled to begin rolling out in Milan in December 2012. It is targeted at the Poste's mobile (PosteMobile) and banking (BancoPosta) customers by allowing them to make payments in post office branches or in retail stores using the NFC enable phones.

Poste Italiane is also said to be working with the Italian government to add new government-related services to the platform such as identity cards, drivers' licenses and health ID cards.

Source : www.nfcworld.com/2012/10/17/320594/italian-postal-service-to-introduce-nfc-payments/
<http://salastampa.poste.it/ol/comunicatostampa.do?id=625>

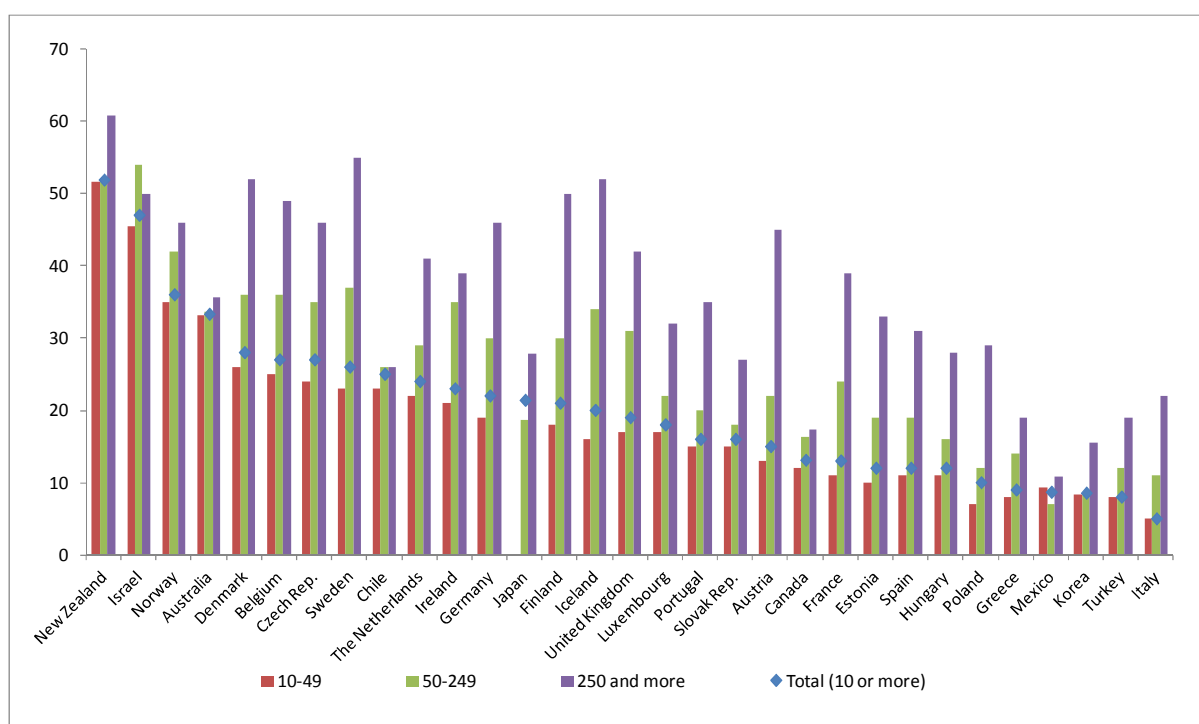
New payment models offer consumers specific, easy-to-use payment mechanisms and include online payments (payments made via the Internet, for example using a credit card) and mobile payments (which include online payments made via a mobile device using for example a credit card, payments made through SMS, which can be linked to a bank account, a credit, debit or pre-paid card, or payments charged to bills from mobile operators) (OECD, 2012*b* and 2013*b*).

E-COMMERCE FOR SMALLER ENTERPRISES

Despite the steady growth of e-commerce, significant challenges to higher e-commerce adoption and use remain. **Barriers to e-commerce appear to affect small enterprises disproportionately** more than larger firms. This presents a significant challenge for policy makers as SMEs account for over 99% of all businesses in the OECD and 40-70% of value added. Much of the OECD's attention has turned to fostering entrepreneurship and the growth of SMEs as a way to promote a return to economic growth so **policies that can help these firms adopt and use e-commerce should have a positive impact on economic performance.**

Participation of firms in e-commerce varies significantly across countries where information is available. The share of enterprises selling online goods and services ranges from more than 50% in New Zealand to about 5% in Italy; this overall result depends crucially on the involvement of SMEs and, in particular, of small firms. The total percentage of firms with e-sales in all countries for which data are available is driven by participation of small firms with less than 50 employees (Figure 13).

Figure 13. E-sales in enterprises by employment size-class (percentage of firms)



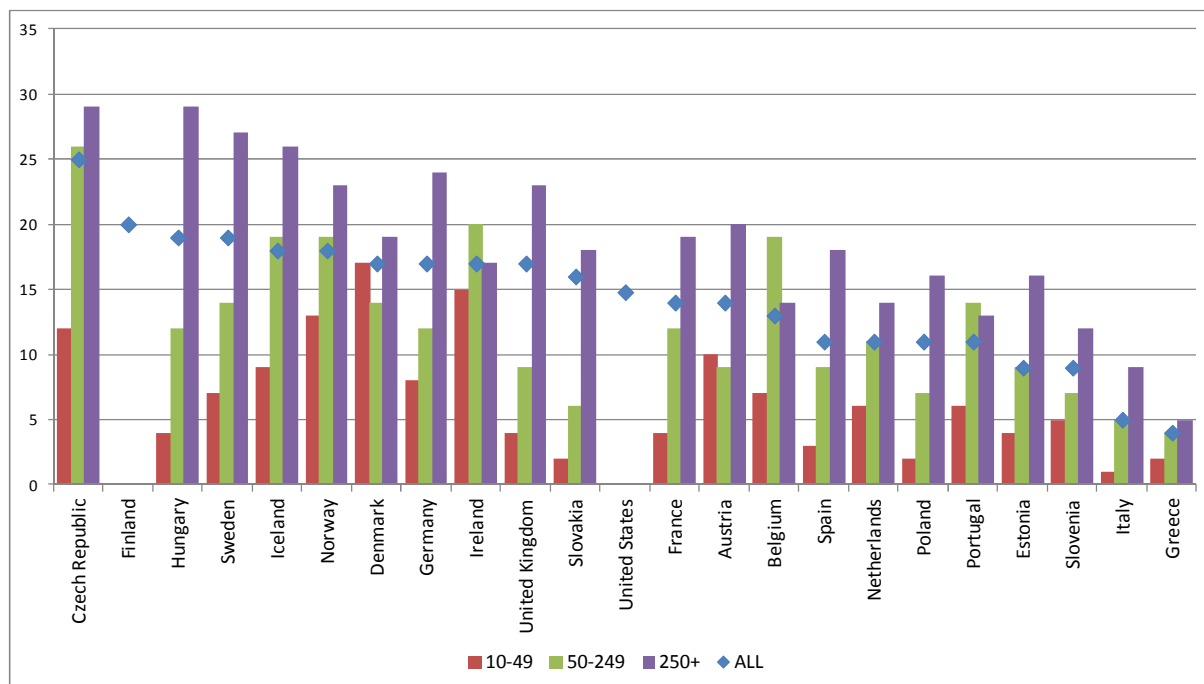
Data for 2011. For Japan, New Zealand, Iceland, Turkey and (partly) Poland data for 2010; Australia and Korea data for 2009; Israel and Mexico data for 2008; Switzerland data for 2005.

Source: OECD based on national sources.

Another way to examine the development of e-commerce is the ratio of e-commerce to total transactions of the non-financial business sector in the economy (Figure 14). Again, the success of e-commerce in a country will depend, to a large extent, on how SMEs have adopted the technology because they comprise the largest portion of firms.

Data from the EU on e-commerce demonstrate the importance of SMEs for total on-line sales when turnover is taken into consideration. Firms are separated out by size (small, medium and large) and then the relationship is analysed for the *i*) proportion of firms that sell on-line; and *ii*) the share of on-line sales in total turnover. The results are presented on Figure 15.

Figure 14. E-sales in turnover of enterprises by employment size-class

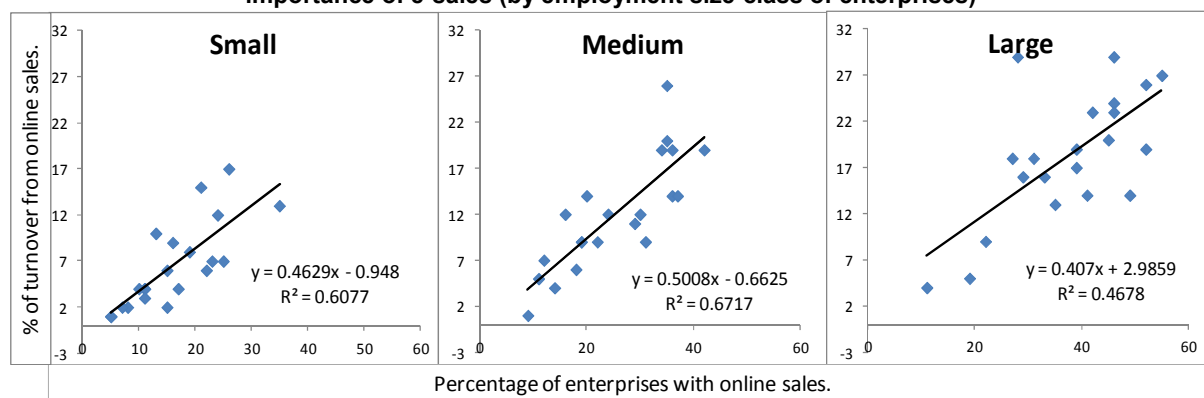


Data for 2010-2011

Sources: Eurostat and US Census Bureau

Note: Data for Finland and the United States only on the total percentage of turnover

Figure 15. The relationship between (1) the fraction of enterprises doing e-sales and (2) the relative importance of e-sales (by employment size-class of enterprises)



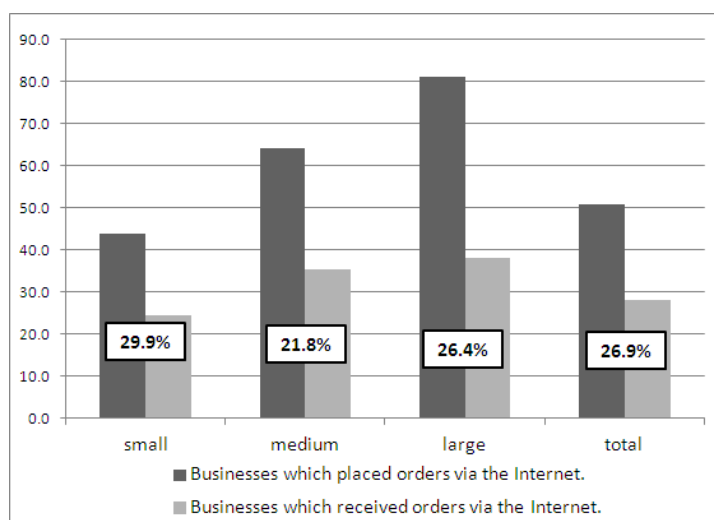
The simple exercise presented in Figure 15 shows that the strength of the relationship between *i*) fraction of firms selling online and *ii*) the share of online sales in total turnover is stronger and usually

more straightforward for the case of small and medium-sized firms. This evidence points at the potential strategic value of stimulating e-commerce uptake by SMEs.

The importance of SMEs for the general uptake of e-commerce as illustrated by the European data is also confirmed and reinforced by available Australian statistics. In Australia, SMEs have been adopting e-commerce solutions at a greater rate than their larger counterparts. Between 2007 and 2011, small companies in Australia reported the highest growth rate for *e-commerce*-related income (Figure 16).

Figure 16. Australia: Businesses which placed/received orders via the Internet

(Percentage of businesses in 2011; Boxes — growth rate of e-commerce-related income between 2008 and 2011)



Source: OECD computation on Australian Bureau of Statistics, *IT Use and Innovation in Australian Business; Australian Industry* (several years)

BARRIERS AND POTENTIAL SOLUTIONS

The preceding sections highlight the impacts of e-commerce on businesses and individuals, and in particular, the social and welfare gains that e-commerce can bring. They also provide data on the breakdown of e-commerce within OECD countries that show strong, steady growth but also emphasise a particular need for more e-commerce adoption and use among SMEs.

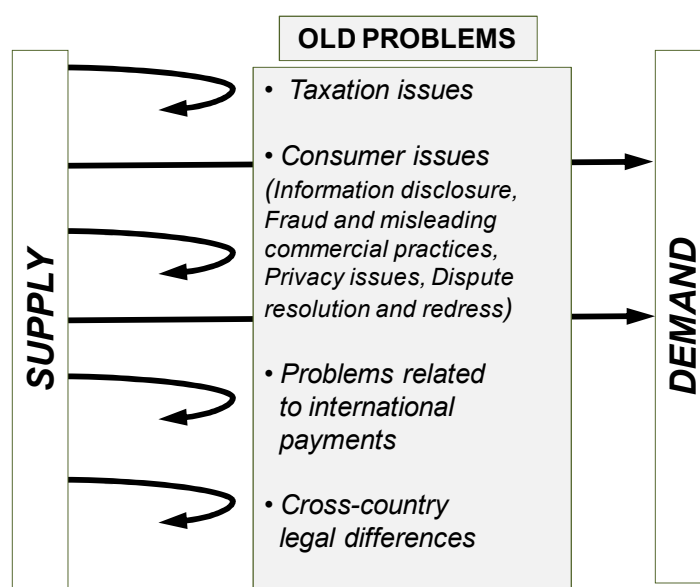
These potential social and welfare gains should lead policy makers to encourage the development and uptake of e-commerce and m-commerce. This is particularly important for SMEs because they make up the vast majority of firms in a country but may struggle more than large firms with implementing e-commerce solutions.

One of the key ways policy makers can promote e-commerce is by reducing barriers to adoption. Many of the key policy concerns related to e-commerce were identified more than 10 years ago and are still outstanding.

Existing challenges

E-commerce is an established phenomenon, but there are still key barriers in place that hinder its growth. Many of these barriers were rightly identified in the past, but have become more pressing as the expanding potential benefits of e-commerce on firms and individuals become documented and the number of firms that can take advantage of e-commerce is growing. Graphically this is presented on Figure 17. Barriers such as complex tax regimes, problems related to international payments, issues related to consumer protection, and in some cases cross country legal differences are significant challenges holding back e-commerce development.

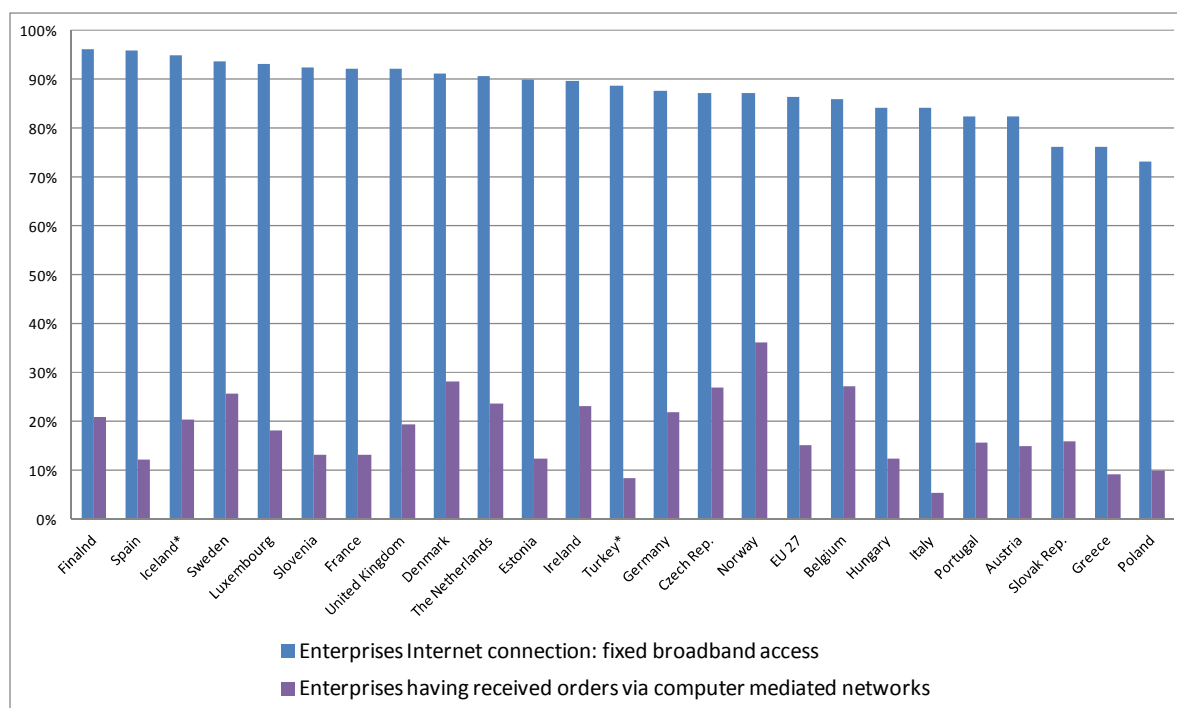
Figure 17. Barriers to e-commerce



Note: The arrows represent domestic firms trying to meet global demand for goods or services. Some firms are able to overcome existing barriers to global e-commerce and their products reach those demanding them (straight arrows). Other firms are blocked by existing barriers and therefore sell only domestically (represented by the arrows turning back).

For example, in the EU there is a big gap between firms that have access to the Internet and those firms that actually place or receive orders through computer mediated networks. An average of 87% of firms have Internet access in the EU but only 15% use computer mediated networks for receiving orders (Figure 18).

Figure 18. Firms with Internet connection and firms receiving orders via computer mediating networks (EU, 2011)



(*) 2010

Source: Eurostat

The relatively **high cost of adoption** of ICT solutions and the **lack of adequate financing** represent two of the main barriers to further adoption of e-commerce solutions by SMEs. According to a 2011 survey of Canadian SMEs, the cost of implementing an e-commerce platform was the most important obstacle to accepting electronic payments (Standing Committee on Industry, Science and Technology, 2012). This reinforces observations in a 2004 OECD study that pointed to the high costs of e-commerce maintenance and upgrades as a significant challenge. This is particularly true in the case of SMEs when small firms wish to set up sophisticated and customised solutions (OECD, 2004).

One of the key hindrances to e-commerce is **limitation to market scope**. In fact, one of the key impacts of e-commerce on businesses (discussed above) is that it can dramatically enlarge the scope of the market. The Internet is global by its nature, so once a firm establishes a website, it could potentially receive orders from customers located abroad. However, existing studies still find that most firms offering e-commerce transactions serve a very limited number of countries. Even with a regional grouping such as the European Union, 33% of consumers say that sellers/providers often refuse to sell or deliver goods or services because they are not residents in the firm's country of operation (EC, 2009). These findings underscore potential efficiency gains that could be realised if cross-border e-commerce were easier.

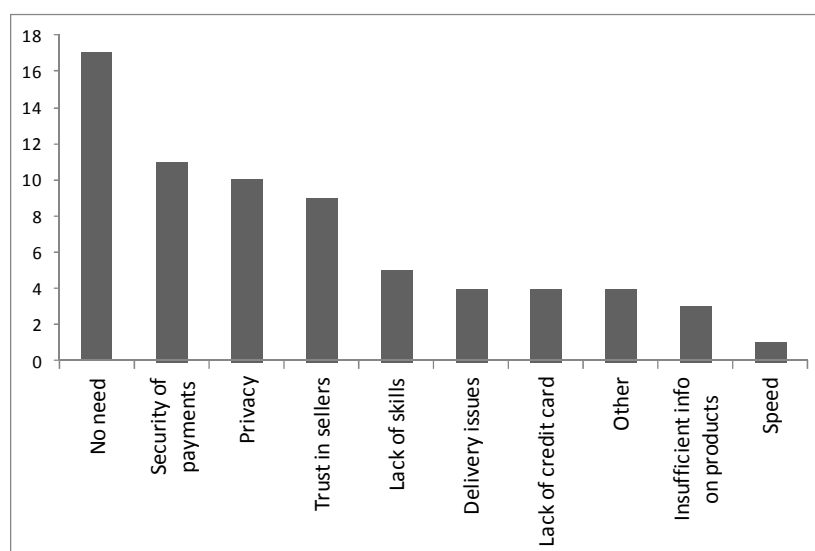
Other key policy concerns deal with ways to improve the uptake of e-commerce by individuals. In this context, the pan-European Survey on ICT adoption and usage by households and individuals suggests a

strong need to improve security, privacy and trust between sellers and buyers in international transactions (Figure 19).

In the 2009 survey across the EU27 countries, the most common barriers to the development of B2C e-commerce after “not needing to purchase online” were concerns about security, privacy and trust of sellers. This set of concerns is reported as relevant in about twice as many cases as practical reasons encompassing individuals’ financial and technical endowments, or the accessibility of IT and postal infrastructures.

Figure 19. Individuals: Perceived barriers to buying/ordering over the Internet in the European Union

Reasons for not ordering products over the Internet in 2009 (% share of all individuals)



Source: Eurostat, Eurobase

These data reveal wide inter-country differences and may need to be interpreted with caution. In some cases the concerns reflect objective reasons (e.g. the "lack of a credit card"), while in others they can mirror differences in the awareness or the perception of some risks, or might require interpretation (e.g. a part of the “no need” answer can hide lack of financial resources which in turn would likely point to connectivity, credit card and skills issues)

The persistence of some key barriers still impedes the further growth of e-commerce for industries and individuals. Some of these barriers, such as the need for Internet infrastructure, have been well addressed in most geographic areas. But other existing barriers remain significant for firms. In particular, the need to remedy these barriers has become more pressing now as the potential number of e-commerce users and sellers is growing rapidly with more firms entering the marketplace to take advantage of the potential of the Internet for commerce. These main issues for policy makers’ consideration include problems related to: *i)* taxation issues, *ii)* payments, together with *iv)* some issues related to consumer protection, and *iv)* international legal consistency.

Taxation

One of the most challenging obstacles for further e-commerce development relates to taxation despite it being one of the first areas of co-ordinated policy actions towards the promotion of e-commerce development. Already in 1998, the OECD issued principles on e-commerce taxation (OECD, 1998). Since then, some of these principles have been incorporated into national legislation in several jurisdictions, such

as the European Union and United States (Penn and Arias, 2009) but there are still many areas that need to be addressed.

One of the most pressing issues for small and medium enterprises is consumption taxes (such as VAT). In a recent survey within the EU, the vast majority of business respondents indicated they faced challenges related to the application of VAT rules (EC, 2009).

Firms must register with foreign tax authorities when selling abroad once their sales to a country exceed a certain threshold. Tax rates and the thresholds that trigger registration requirements vary across jurisdictions. Together this adds a significant amount of bureaucratic complexity for small firms that may not have the expertise to negotiate the foreign systems (EC, 2009).

Any steps to reduce the complexity related to taxes for firms selling goods and services abroad will help promote e-commerce, especially in the B2C segment. This could be done via agreements between states or by providing domestic firms with assistance in navigating the requirements in foreign jurisdictions. More detailed research seems to be warranted on the effects of various tax regimes on inbound e-commerce and on ways to help small firms use e-commerce to expand their markets.

Payments

Policy issues that refer to e-commerce payments touch upon the relatively high transaction costs of cross-border operations and security risks. Well-functioning payment mechanisms are essential for the successful development of e-commerce. Existing solutions include a wide selection of payment mechanisms such as linking to an existing account (e.g. credit cards, mobile payments), electronic currency systems (electronic cash) and conventional offline systems (e.g. "cash on delivery").

The economic importance of a well-developed on-line payments system was recognized in a report by Canadian Digital ID and Authentication Council (DIAC, 2011). The study highlighted that payments were *the backbone of the economy* and recognised that the *payment system's networks, institutions, infrastructure and legislation were designed for yesteryear*. The report has identified some key challenges related to electronic payments: *i)* lack of acceptance of electronic invoicing; *ii)* lack of a digital identification and authentication regime; and *iii)* need to create a mobile ecosystem to deliver both commercial and public services to citizens.

Even when payment systems for e-commerce are well developed, many of them are not available internationally or become too costly or complicated for cross-border transactions. National payments systems are commonly only available within the domestic market, and services such as "cash on delivery, or CoD" are offered only to domestic customers. In other cases, e-stores that offer payments by cards may only accept cards issued by local banks.

Often, consumers perceive international transactions to be relatively insecure. Recent studies find that consumers' concerns related to payment security, data protection and the fear of online fraud are particularly high for the case of international transactions (EC, 2009). Apart from educating consumers about safety rules for on-line payments, there is potential scope for strengthening international co-operation in enforcement of security rules for electronic transactions, such as more active co-operation in actions to counter credit card fraud or phishing.

Additional costs and complications often emerge even if a given payment method is available for international e-commerce transactions and seems to be trustworthy. Additional service costs, extra time needed for international transaction processing or currency fluctuations that affect the final price and are not visible at the time of payment are the main issues that increase the transaction costs of cross-border payments.

Main issues related to consumer protection

The two above-presented barriers apply to both the supply and demand sides of e-commerce transactions. There are numerous important barriers that are holding back the potential of e-commerce that are demand-specific only, and that mostly affect consumers (OECD, 2003, 2007, 2012*b* and *c*). Generally speaking, these barriers refer to the fact that often consumers tend to be less protected when shopping online than they are when they buy from their local store or order from a catalogue (OECD, 1999).

There are five key, ongoing policy issues related particularly to consumer protection in respect to e-commerce. These are problems related to:

- Information disclosure
- Fraud and misleading commercial practices
- Privacy issues
- Dispute resolution
- Redress.

One of the key consumer issues in e-commerce is related to **information disclosure**. Key information on consumer rights and potential liabilities associated with these transactions are not always provided to consumers in a clear, timely, and transparent manner. As a result, consumers may not be able to easily access, read, review and/or preserve the terms before completing the transaction (OECD 2012*b*).

Fraudulent, misleading and deceptive commercial practices associated with online and mobile payments are ongoing challenges that can cause consumer harm and may undermine consumer confidence more broadly, within and across jurisdictions. This is mainly because of three reasons: *i*) consumers often cannot validate the identity and integrity of vendors; *ii*) consumers often cannot inspect products prior to making a purchase; and *iii*) while the conclusion of an online or mobile commerce transaction may be done quickly, consumers are not always in a position to understand the terms and conditions or to think thoroughly before acceptance (OECD 2013*b*).⁵

In today's data-driven e-commerce, consumers' personal information is increasingly being collected and used by various types of business actors, and shared with a growing number of third parties (including social media, online retailers, and data brokers), often without consumer knowledge or consent. In this context, a number of **privacy and security** challenges have been reported in countries, which require attention. Many of these issues are common to online activity in general: risks of data security breach, fraudulent use of identity information gained through, for example, phishing or malicious spam, and the tracking of consumer behaviour online (OECD, 2011*b*). The transactional context of B2C e-commerce does provide special privacy challenges. Typically, consumers are not able to negotiate the range of personal data to be provided to an e-commerce platform. Clarity about the purposes for which the data is to be used, and with which third parties it may be shared, may be lacking. Even where clear disclosures are provided, the complexities of data uses, and the "take it or leave it" character of online transactions, raise questions about whether consumer consent is meaningful (OECD, 2011*b*; and OECD, 2013*a*).

With respect to **dispute resolution**, e-commerce still remains an area where consumers may still lack adequate dispute resolution procedures. Providing consumers with adequate tools is one issue where a large number of parties may be involved. This is particularly true in the case of low value purchases (e.g. apps or small online items). In today's complex e-commerce marketplace where a range of entities

may be involved in transactions with consumers, determining whom a consumer should turn to in case of problems with a product or the transaction is often unclear. For example, should the consumer turn to the app developer or to the online platform on which the app is published when an app does not function as expected? Work is underway in various countries and international organisations to develop easy-to-use, faster and less onerous means for resolving disputes, in particular across borders (OECD 2012*b* and *c*).

Redress is another area where simplified procedures for consumers could help boost cross-border e-commerce. Specific concerns have been raised in relation to the purchase of intangible digital content products, where consumers are encountering difficulties in obtaining any remedies for defective or corrupted content or non-delivery. This is due, in part, to the multiplicity of parties involved in digital content transactions and the lack of legal frameworks for addressing these issues. In some OECD countries, this issue arises because digital content products do not fall into traditional statutory good/service distinctions that govern the type of redress (e.g. refund, price reduction, product replacement) available by law (OECD 2012*b* and *c*).⁶

Legal consistency

In most countries, e-commerce transactions are covered by various legal frameworks including general consumer protection and contracts rules; specific e-commerce rules; legislation combating fraudulent, misleading and unfair commercial practices; anti-spam initiatives; privacy; copyright and telecommunications rules. In addition, shipping products internationally introduces new regulatory issues such as technical regulations (e.g. voltage), regulations on disposal of electronic and electrical waste, labelling of consumer information rules (e.g. information on ingredients in food products), national certification rules on certain products (e.g. safety certification rules on cosmetics, or motion picture rating systems), and others.

In some instances, these frameworks may overlap; in others, they may not cover all issue areas. For example, in most countries, mobile payments are not covered by any existing legislation and this leaves consumers without any protection if they have problems with their transaction. While there is little doubt that regulations serve important policy purposes, they result in differences between jurisdictions and hence in non-tariff barriers to cross-border e-commerce.

Several studies confirm that cross-country legal differences are among the main barriers to e-commerce and cross-border trade. For example, in the European Union, 60% of business survey respondents identified the "additional cost of compliance with different national laws regulating consumer transactions" to be a significant barrier to intra-EU trade (EC, 2009). According to the study, these non-tariff barriers can impose a significant cost burden for firms looking to leverage e-commerce to sell abroad. For example, the estimated administrative costs imposed by consumer law on distance sellers in the EU is 67% higher when trading cross-border (only within the European Union) than when trading only within the domestic market (EC, 2009).

However, several other studies suggest that while cross-country legal differences may create barriers to e-commerce, their relative importance is lower when compared to other barriers, such as consumer-related issues. As an example, the European Consumer Organisation highlights that no evidence has been shown to support the proposition that the differences in law are a major obstacle (BEUC, 2011).

In this context, policy makers could consider ways to provide sellers, and in particular small businesses, with information that helps them engage in trans-border e-commerce activity. This could include establishing information centres or clearing houses where sellers could learn about regulations and procedures that apply when selling abroad. Any entities that can help map common requirements across countries and highlight differences that exporters need to address could help reduce barriers to

international trade. Some countries such as Finland, Norway and Sweden have or are developing legislation or best practice guidelines to fill in the gaps (OECD, 2012*b* and *c*).

The problem of cross-country barriers to e-commerce growth has been debated at several international fora. Unfortunately, despite the wide recognition of these barriers, little progress has been made to reduce them. The main forum for these negotiations is the World Trade Organization (WTO) where discussions have yielded very little progress. One important area of discussion in this area, among the many issues being negotiated, is the question about whether digital products, specifically those products such as software, music, films and others which can be either downloaded or traded in physical form, are goods, services, a combination of both or possibly constitute a new category (OECD, 2010*b*).

On the other hand, some policy aspects related to e-commerce are included in regional trade agreements settled in the last decade. A growing number of regional trade agreements now include reference or have specific chapters covering e-commerce and address many of the outstanding issues discussed at the WTO. Examples include bilateral trade agreements between Australia and Chile, or between Canada and Columbia that include provisions on consumer protection or paperless trade. This intensified multi-lateralisation of e-commerce provisions could lead to improved coherence with regards to regulatory complexity in the future and thus reduce barriers to e-commerce.⁷

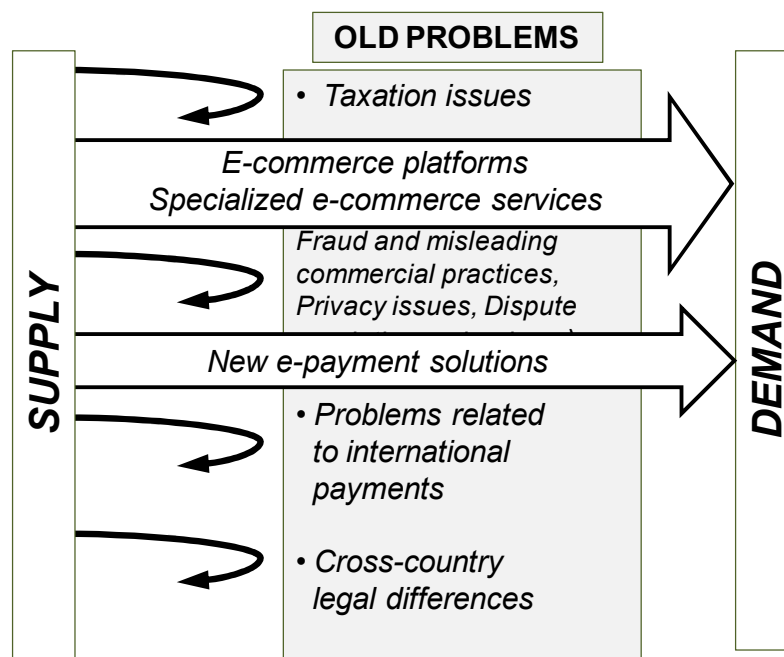
Market responses

Most barriers to e-commerce were identified already over a decade ago. For some of them, there have been some promising market solutions to address particular issues over this time.

E-commerce is no longer just a distribution channel, but a way for brands and merchants to reach consumers in a targeted manner. Consequently, the introduction of e-commerce solutions changes profoundly not only the way transactions are being completed, but also stimulates processes that eventually led to the emergence of new business models and business opportunities. In many cases, these new business models and business opportunities make existing processes more efficient by overcoming (or at least reducing) some existing barriers and inefficiencies.

Many of the e-commerce barriers mentioned earlier affect small enterprises the most since they do not have the resources or specialised skills necessary to overcome them. Some of the most innovative, new e-commerce-based services are tailored to the needs of small and medium enterprises. These are discussed below and include such services as: *i*) large platforms that offer complete e-commerce solutions; *ii*) new e-payment methods; and *iii*) e-fulfilment or e-commerce-tailored delivery services (Figure 20). Clearly the emergence of new business models tailored to SMEs confirms the claim about the efficiency and responsiveness of a well-functioning market mechanism.

Figure 20. Barriers to e-commerce and market responses



Note: This figure is a slight modification of Figure 17 earlier in the paper. The difference is that now new market solutions (shown by the large vertical lines between supply and demand) are helping firms overcome old problems.

E-commerce platforms

One of the most interesting new developments is the emergence of e-commerce platforms that allow firms to outsource their transactions processes to an outside firm. These platforms link the suppliers and buyers and can manage the transaction between the two.

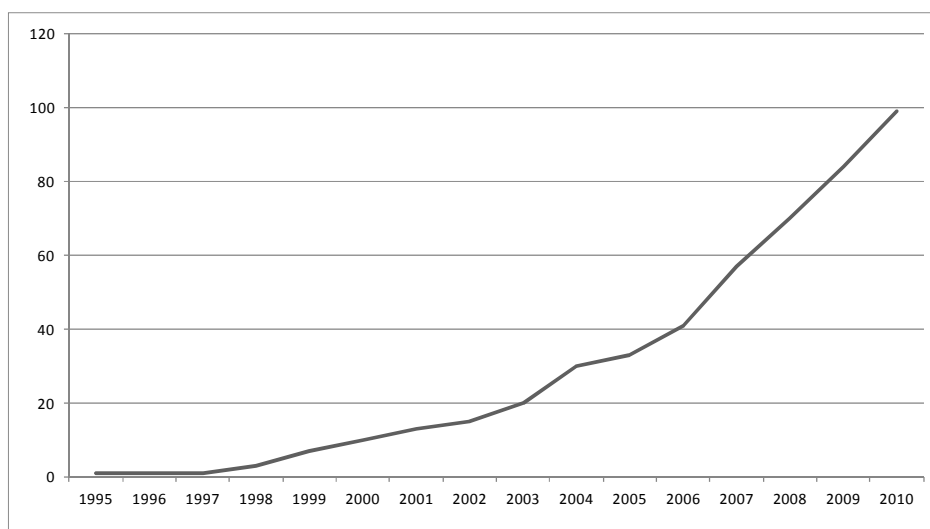
For example eBay, which initially was launched as an online auction website, expanded from its original format to include other e-commerce solutions such as standard shopping (“buy now”); shopping by product code, classified advertisements; event ticket trading, e-payments and other e-commerce services. This expansion was largely done through a series of acquisitions of specialised companies by eBay. For example, with the acquisition of PayPal, eBay became one of the largest players in the *e-payment* market.

Another example of a company that has evolved from a specialized e-store to a large e-commerce intermediary is Amazon. Today it offers businesses a wide range of e-commerce solutions, which makes Amazon an attractive *e-commerce* platform for other firms to use. Companies registered as “third-party sellers” can supply their goods through Amazon and are listed directly in the Amazon catalogue of items for sale and appear in searches on its site. Amazon handles listing and payment-related transactions in return for a commission on the sale. Amazon also allows companies to embed a subset of Amazon products within another website, or linked to another website.

A survey of third-party sellers found that Amazon was one of the most popular e-commerce solutions. According to the respondents it offered larger profits through the outsourcing of costly services and access to greater markets than would be possible on their own.⁸ Sellers also reported that Amazon had clearly defined rules, provided a steady stream of traffic to their listings, and put less emphasis on a community

component. This strategy of offering complete e-commerce solutions leads to a steady growth of Amazon's market. Figure 21 presents the evolution of product categories offered on Amazon various country-specific websites.

Figure 21. Amazon product categories offered on country-specific sites.



Source: OECD, based on data from Amazon's 2011 annual report

New e-payment solutions

The relative high costs of conventional payment methods were one of the triggers for the development of new methods of e-payments. Fast, efficient, reliable and inexpensive payment systems are vital for the successful application of e-commerce by businesses and its use by individual customers. In recent years, the growing availability of sophisticated payment mechanisms facilitated the expansion of B2C e-commerce. These include:

- **Online payments**, which are payments made *via* the Internet using, among others; *i*) credit, and debit cards; these may be linked to an online wallet account; and *ii*) electronic currency systems (or prepaid payment services);
- **Mobile payments**, which can be *i*) online payments made *via* a mobile device (paid by credit, debit, or pre-paid cards); *ii*) payments made through SMS (which may be linked to a bank account, a credit, debit or pre-paid card); or *iii*) payments charged onto consumer mobile operators' bills (OECD, 2012*b*).

Capgemini estimated that in 2010, the worldwide value of online payments was estimated at EUR 824 billion; this was expected to reach EUR 1 400 billion in 2013. The value of global m-payments was estimated at EUR 62 billion in 2010, with the level expected to reach EUR 223 billion by 2013, mainly driven by growth in developing economies (Capgemini, 2011).

There are many forms of payment systems that are tailored for e-commerce and that often differ from traditional payment methods. Mediating services like PayPal offer the possibility of inexpensive, fast payments worldwide. PayPal and similar services such as escrow.com also can provide increased levels of trust between buyers and sellers by holding funds in escrow in cases of a dispute. Consumer surveys suggest that these mediating services have attracted many customers and are an increasingly larger

percentage of transactions. In the United States, PayPal is among the most common payment options for online purchases (together with credit cards). In Australia mediating systems like PayPal or BPay have attracted 36% of the market for on-line transaction (APCA, 2009).

Geographically, mobile payments usage varies from country to country but they are mainly used to process low-value transactions. In the United States and Canada, mobile payments are used primarily to purchase digital and virtual goods (such as music, ringtones, and “in-game” items). In some Asian and European countries, mobile payments are made to purchase a broader range of products, including transport tickets, movie downloads and physical goods (OECD, 2012*b*).

The growth of mobile payments and m-commerce is expected to accelerate with the introduction of new payments business models that are based on near field communication (NFC) technologies. A number of mobile operators, payment card networks, and financial institutions are joining forces in this regard. For example, in February 2012, *Visa* and *Vodafone* established a partnership with a view towards enabling Vodafone customers to make small value purchases at retail stores by waving their devices in front of a payment terminal; payment will be made from their Visa pre-paid account. Under the partnership, Vodafone customers will also be able to make high value purchases using a secure password.⁹

Apart from the development of e-payments, the risks related to payment security and the threat of fraud have also created a new industry of service providers who assist merchants in obtaining payments, including managing the technical connections, relationships with the external network and bank accounts. They also offer services like fraud protection, transaction payment matching, reporting, fund remittance etc.

Specialised e-commerce services

The emergence of companies offering general, complex e-commerce solutions is in turn paralleled by the growth of e-commerce related businesses such as e-fulfilment, a service that heavily relies on the Internet for the entire transaction process including the storage, marketing, sale, payment and delivery of products.

E-fulfilment encompasses Internet-based solutions to gather, process and quickly report information as well as to track and monitor specific shipments. It becomes an innovative approach for fulfilment components of the supply chain by combining fast data flow and processing with wide spread geographical customer bases (Agatz et al, 2008; Alexander, 2009). Consequently, e-fulfilment services are offered by numerous companies that have not been involved in manufacturing, but are able to enter onto this market due to their experience with logistics and ICT solutions. For example the Swiss Post has included e-fulfilment solutions in its portfolio, and offers services such as storage, packaging and dispatch of merchandise. Amazon also offers e-fulfilment services that will store, sell and deliver goods for sellers for a commission fee.

E-commerce faces challenges related to delivering goods to buyers. Consumers may not be at home when packages need to be delivered but new market-driven business models have emerged to address this. Services offered by conventional post or package delivery companies can be too expensive or just not suited in terms of their operational models for customers of e-commerce stores. To address this issue, several companies are offering delivery services that are primarily tailored for customers that buy on-line. These companies usually offer inexpensive and quick delivery either to a dedicated collection point that is located either at a co-operating store or kiosk (e.g. Belgian *Kiala*) or to a fully automated station (e.g. German *Packstation* run by DHL or Polish *Paczkomaty* operated by *InPost* – see Box 6).

E-commerce vendors and their customers use these services for quick, convenient and inexpensive delivery services. For customers, they also offer flexibility by providing a large number of easily accessible collection points that may be available during non-traditional delivery hours.

Box 6. *Paczkomaty* delivery service

An illustrative example of a delivery service that is tailored for e-commerce is *Paczkomaty* offered by the Polish mail company *InPost*. The term *Paczkomaty* refers to stations with automated lockers, where individuals can collect their parcels (see picture below).

Box Figure 1: *Paczkomaty* station in Warsaw



Several Polish e-stores and online auction sites include *Paczkomaty* as a possible delivery method. Purchases are delivered to the *Paczkomaty* station chosen by the customer within two working days by *InPost*. The parcel can be tracked online and the customer is notified by a text message and e-mail notification upon its arrival at the station. This message also includes a special code for parcel collection at the chosen station. Stations are fully automated and parcels can be collected at any time.

By offering deliveries to the *Paczkomaty* stations instead of individual deliveries to customers' homes, *InPost* is able to significantly reduce delivery time and cost. In addition, the *Paczkomaty* stations are fully automated which significantly reduces costs of their operation.

Source: www.paczkomaty.pl

THE WAY FORWARD

The rapid emergence and development of e-commerce can bring significant positive effects to businesses, especially SMEs, and to consumers in OECD countries.

For businesses, the existing evidence highlights net beneficial effects on firms' market performance through the successful application of e-commerce solutions. E-commerce is a mechanism that enlarges firms' market scope, lowers operation costs and reduces entry barriers. It also enables the emergence of

new business models that permit existing businesses to outsource many services, which is especially beneficial for SMEs and entrepreneurs.

For consumers, e-commerce can reduce search costs, and thanks to price comparisons services, empowers consumers with better market information. In addition, new technological solutions such as online platforms that support *m-commerce* or *e-payments* make it easier to locate and purchase the goods consumers demand. These changes, in total, can lead to significant improvements in aggregated consumer welfare. Policy makers therefore have an incentive to promote e-commerce because of the efficiency and welfare gains it can potentially deliver.

However, there are still key barriers in place that hinder the further growth of e-commerce and the maximization of all its potential benefits for firms and individuals. Many of these barriers were rightly identified in the past and include legal issues (cross country legislative consistency), taxation problems, issues related to e-payments and needs for complementary skills.

Most of these obstacles are particularly challenging for SMEs. This has led to a market response with the emergence of large e-commerce platforms and e-fulfilment solutions that act *de-facto* as intermediaries. It is still too early to fully understand the competitive effects of these new platforms but policy makers should follow their growth and development.

E-commerce is an extremely dynamic phenomenon, and this report presents an overview of general economic processes that currently take place in this area. Some findings that emerge from this initial study merit a closer and more in-depth analysis.

More work needs to be done to understand the barriers to e-commerce adoption and how they can be addressed, particularly among SMEs and SoHos (small offices/home offices). Future work should examine how the Internet can support SMEs with regards to some of the most challenging barriers (*e.g.* taxes, regulations, international payments and consumer/seller protection) which would be valuable to inform policies. More effort is needed to ensure markets are competitive and consumers are protected and empowered. There is also significant work to be done concerning e-commerce related to the sale of online digital content across borders. Another important area of work is related to understanding the commercial relationships between users of free apps and online service providers, where users provide their personal data in exchange for access to these services. Finally, additional research could examine the development of fulfilment services by post offices and private sector actors.

NOTES

- ¹ OECD (1998a), OECD Ministerial Conference "A Borderless World: Realising the Potential of Global Electronic Commerce", Ottawa, 7-9 October 1998 Conference Conclusions, available at: [http://search.oecd.org/officialdocuments/displaydocumentpdf/?doclanguage=en&cote=sg/ec\(98\)14/final](http://search.oecd.org/officialdocuments/displaydocumentpdf/?doclanguage=en&cote=sg/ec(98)14/final)
- ² In 2009, OECD member countries reviewed the OECD definition of e-commerce, which dated from 2001. The 2009 OECD definition of e-commerce is: "*An e-commerce transaction is the sale or purchase of goods or services, conducted over computer networks by methods specifically designed for the purpose of receiving or placing of orders. The goods or services are ordered by those methods, but the payment and the ultimate delivery of the goods or services do not have to be conducted online. An e-commerce transaction can be between enterprises, households, -individuals, governments, and other public or private organisations. To be included are orders made over the web, extranet or electronic data interchange. The type is defined by the method of placing the order. To be excluded are orders made by telephone calls, -facsimile or manually typed e-mail.*"
- ³ For further discussion on the impact that e-commerce and the Internet have on consumer surplus see Scholten (2013).
- ⁴ Scanning a bar code to get more product information or to compare a product's price to an online price is not allowed in some stores. From a policy perspective this issue is addressed in OECD (2012b).
- ⁵ The problem of fraudulent, misleading and deceptive commercial practices was addressed in the OECD "Cross-Border Fraud Guidelines" that set forth broad principles for international co-operation and specific provisions covering notification, information sharing, and assistance with investigations. (OECD, 2003)
- ⁶ The OECD Recommendation on Consumer Dispute Resolution and Redress provides governments with a framework to help consumers resolve disputes and settle claims with business. The framework covers disputes in both domestic and cross-border transactions. (OECD, 2007b)
- ⁷ For further information on this issue see OECD (2010b).
- ⁸ AuctionBytes.com, Seller's Choice: Merchants Rate Ecommerce Marketplaces, January 2010, summary available at: www.ecommercesbytes.com/cab/abu/y210/m01/abu0255/s02
- ⁹ Financial Times, Visa in partnership with Vodafone, 27 February 2012, www.ft.com/intl/cms/s/0/d1087e04-6132-11e1-a738-00144feabdc0.html#axzz27J5OIaNC.

REFERENCES

- Agatz, N. A. H., M. Fleischmann, J. A. E. E. van Nunen (2008), *E-fulfillment and multi-channel distribution – A review*, European Journal of Operational Research, Volume 187(2), Pages 339-356.
- Alexander, P. (2009), *A study of e-fulfilment in the logistics industry: a model of supply chain transformation*. Theses: Doctorates and Masters. Paper 160. <http://ro.ecu.edu.au/theses/160>.
- APCA (2009), *Online Payments: What's Next?* Australian Payment Clearing Association www.apca.com.au/
- BEUC (2011), "European Contract Law: 28th Regime", available at: www.beuc.org/Content/Default.asp?PageID=2135.
- Bigoli, H. (2004), *The Internet Encyclopedia*, Volume 1, John Wiley & Sons, 2004.
- Capgemini (2011), *World Payment Report 2011*, 9 September 2011, available at: www.capgemini.com/insights-and-resources/by-publication/world-payments-report-2011/.
- Civic Consulting (2011), *Consumer Market Study On The Functioning Of E-Commerce And Internet Marketing And Selling Techniques In The Retail Of Goods*, Final Report Part 1: Synthesis Report, prepared for the Executive Agency for Health and Consumers on behalf of the European Commission, September 2011, http://ec.europa.eu/consumers/consumer_research/market_studies/docs/study_ecommerce_goods_en.pdf
- Cowgill, B, C. Dorobantu, (2012) *Gravity and borders in online commerce: results from Google*, mimeo, available at: http://faculty.haas.berkeley.edu/bo_cowgill/papers/GravityBordersPaper.pdf
- DIAC (2011), *Going Digital: Transitioning to Digital Payments – Task Force for the Payments System Review*, Canadian Digital ID and Authentication Council (DIAC) available at: http://paymentsystemreview.ca/wp-content/themes/psr-esp-hub/documents/r03_eng.pdf.
- EC (2009), *Report on cross-border e-commerce in the EU*, Commission Staff Working Document, February 2009.
- EC (2010), *Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, A Digital Agenda for Europe*, COM/2010/0245/f/2, 26 August 2010, [http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52010DC0245R\(01\):EN:NOT](http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:52010DC0245R(01):EN:NOT)
- EC (2012) *Consumer market study on the functioning of e-commerce and Internet marketing and selling techniques in the retail of goods*. Reported by Dr Frank Alleweldt, available at http://ec.europa.eu/consumers/consumer_research/market_studies/docs/study_ecommerce_goods_en.pdf.
- eMarketer (2009), *M-Commerce Ringing Up (Some) Sales*, 10 June 2009.
- EMOTA (2012), *Europe Confirmed as Leader in Global e-Commerce*, 1 June 2012, European Multi-Channel and Online Trade Association, www.imrg.org/ImrgWebsite/User/Pages/Press%20Releases-

[IMRG.aspx?pageID=86&parentPageID=85&isHomePage=false&isDetailData=true&itemID=7685&specificPageType=5&pageTemplate=7](http://www.oecd.org/sti/2093249.pdf)

Eurostat (2011), *Information Society statistics website, database on ICT diffusion and use among businesses*. Available at: http://epp.eurostat.ec.europa.eu/portal/page/portal/information_society/data/comprehensive_databases

Goldmanis, M., A. Hortaçsu, Ch. Syverson and Ö. Emre (2010), “E-commerce and the Market Structure of Retail Industries”, *The Economic Journal*, vol. 120(545).

Google (2012), *Our Mobile Planet*, dataset and country reports, smartphone research of spring 2012; available at: www.thinkwithgoogle.com/mobileplanet/en/downloads/

Kantor, M. and J.H. Burrows (1996), *Electronic Data Interchange (EDI)*. National Institute of Standards and Technology.

Lee, M.-C. (2009), Factors influencing the adoption of internet banking: An integration of TAM and TPB with perceived risk and perceived benefit, *Electronic Commerce Research and Applications*, Volume 8, Issue 3

Lendle A., M. Olarreaga, S. Schropp, P.-L. Vézina (2012), *There Goes Gravity: How eBay Reduces Trade Costs*, CEPR Discussion Paper 9094.

McAfee, R.P., H. M. Mialon, and M.A. Williams (2004), What Is a Barrier to Entry? *American Economic Review*, Vol. 94(2)

MIC (Ministry of Internal Affairs and Communications) (2012), *Survey results on industry structure of mobile content industry (FY 2011)*, July 2012 (available in Japanese only), www.soumu.go.jp/main_content/000168895.pdf.

OECD (1997), *Measuring Electronic Commerce*, STI Digital Economy Paper 27, available at <http://www.oecd.org/sti/2093249.pdf>

OECD (1998b), *Electronic Commerce: taxation framework conditions*, A Report by the Committee on Fiscal Affairs, as presented to Ministers at the OECD Ministerial Conference, “A Borderless World: Realising the Potential of Electronic Commerce” on 8 October 1998, available at: www.oecd.org/tax/consumptiontax/1923256.pdf

OECD (1999), *OECD Guidelines for Consumer Protection in the Context of Electronic Commerce*, available at: www.oecd.org/sti/consumer/34023811.pdf

OECD (2003), *OECD Guidelines for Protecting Consumers from Fraudulent and Deceptive Commercial Practices Across Borders*,

OECD (2004), *OECD Information Technology Outlook 2004*, OECD, Paris.

OECD (2007), *Mobile Commerce*, OECD Digital Economy Papers, No. 124, OECD Publishing. doi: 10.1787/231111848550

- OECD (2007b), OECD Recommendation on Consumer Dispute Resolution and Redress, available at: www.oecd.org/dataoecd/43/50/38960101.pdf
- OECD (2010a), OECD Information Technology Outlook 2010, OECD, Paris.
- OECD (2010b), *Multilaterising Regionalism: The Case of E-commerce* OECD Trade Policy. Working Paper No. 99, OECD, Paris.
- OECD (2011a), *Empowering Consumers in the Purchase of Digital Content Products*, work in progress, [DSTI/CP(2011)25/REV2].
- OECD (2011b), "The Evolving Privacy Landscape: 30 years after the OECD Privacy Guidelines", at www.oecd.org/sti/ieconomy/47683378.pdf.
- OECD (2011c), *OECD Guide to Measuring the Information Society 2011*, OECD, Paris, 2011, www.oecd.org/sti/measuring-infoeconomy/guide.
- OECD (2012a), *Internet Economy Outlook 2012*, OECD, Paris.
- OECD (2012b), *Report on Consumer Protection in Online and Mobile Payments*, OECD, Paris, 2012, available at: [http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/CP\(2010\)22/FINAL&docLanguage=En](http://search.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/CP(2010)22/FINAL&docLanguage=En)
- OECD (2012c), *Machine-to-Machine Communications: Connecting Billions of Devices*, OECD Digital Economy Papers, No. 192, OECD, Paris.
- OECD (2013a), *Consumer Protection and Empowerment in the Participative Web*, work in progress.
- OECD (2013b), *Empowering and Protecting Consumers in the Internet Economy*, OECD Digital Economy Papers, No. 216, OECD Publishing, <http://dx.doi.org/10.1787/5k4c6tbcvvq2-en>.
- Penn, A.D and M. L. Arias, (eds) (2009), *Global E-Business Law and Taxation*, Oxford University Press.
- Scholten, P. A., Livingston, J. A., Chen, S. (2009), *Do Countercyclical-Weekend Effects Persist in Online Retail Markets?* Electronic Commerce Research and Applications, 8 (4).
- Scholten, P. (2013), *Measuring the Internet Economy: Economic Arguments and Evidence for Consumer surplus*, OECD Digital Economy Working Paper, forthcoming
- Siwicki, B. (2007), *M-commerce: What it is, where it's at, when things may happen and what stands in the way*. Internet Retailer, May 2007. Pages 14-16.
- Standing Committee on Industry, Science and Technology (2012), *E-Commerce in Canada: Pursuing the Promise: Report on the Standing Committee on Industry, Science and Technology*, available at: www.parl.gc.ca/content/hoc/Committee/411/INDU/Reports/RP5535392/indurp01/indurp01-e.pdf
- Subramani, M. and E. Walden, (2001), *The Impact of E-commerce Announcements on the Market Value of Firms*, Information Systems Research June 2001 vol. 12 no. 2 135-154 doi: 10.1287/isre.12.2.135.9698
- Tirole, J. (1989), *The Theory of Industrial Organization*, MIT Press, Cambridge MA