

Unpacking E-commerce

Business Models, Trends and Policies

As digital transformation has accelerated, the e-commerce landscape has become increasingly dynamic. New players have emerged at the same time that established actors have taken on new roles; some barriers to e-commerce at the firm, individual and country levels have been overcome, while new barriers have emerged. New business models have transformed buyer-seller relationships and pushed out the frontier of what it is possible to buy and sell online. Above all, new opportunities have arisen to unlock the potential of e-commerce to boost growth and well-being.

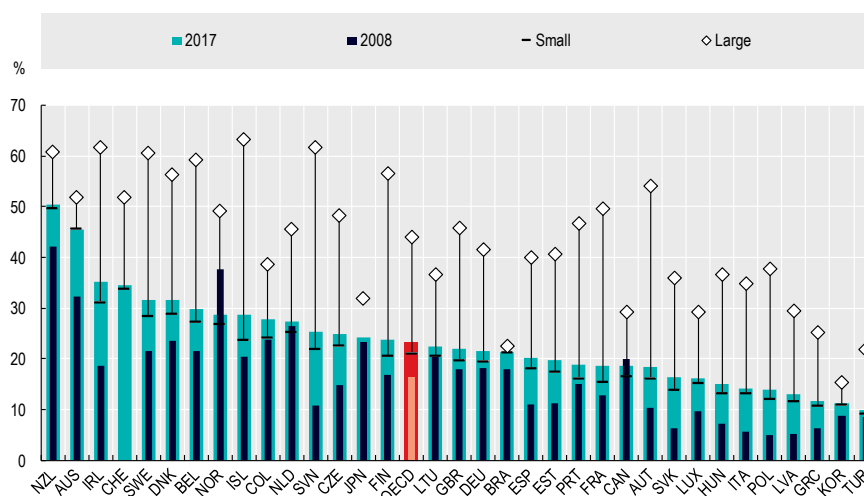
Unpacking E-Commerce: Business Models, Trends and Policies analyses new and emerging e-commerce business models, examines e-commerce trends across a range of dimensions, and identifies how policies may need to adapt to remain fit for purpose in a fast-moving e-commerce landscape.

E-commerce is increasing in size and scale, but gaps remain

More firms are buying and selling online than ever before, including across borders. The absolute value of the e-commerce market is growing and an increasing share of firms is selling online, including small and medium-sized enterprises (SMEs). This is true across industries, including in traditionally consumer-facing sectors. Overall, business-to-business (B2B) e-commerce dominates in absolute terms, but there has been a relatively larger increase in business-to-consumer (B2C) e-commerce transactions in sectors like retail and accommodation. In 2017, more than one in five firms in OECD countries participated in e-commerce transactions, with the share reaching 40% in some countries (Figure 1). However, large firms are more than twice as likely as SMEs to participate in e-commerce in a majority of countries, and this gap is widening in absolute terms in many countries.


Figure 1. Large firms participate more in e-commerce than small firms

The percentage of firms receiving orders over computer networks by size, 2017



Note: See endnote 1.

Source: OECD, *ICT Access and Usage by Businesses* (database), <http://oe.cd/bus> (accessed February 2019).

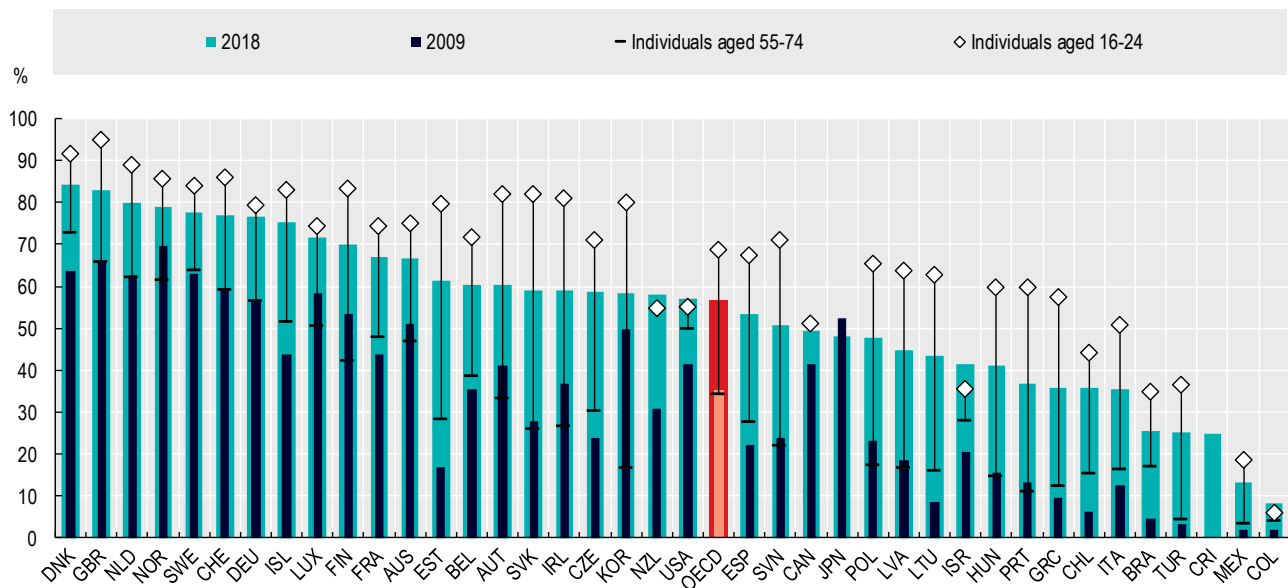
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Although the share of firms selling online is increasing, many firms still face challenges to further engaging in e-commerce. Survey responses from both e-commerce and non-e-commerce firms suggest that firms believe that some products are unsuitable to be bought or sold online. In addition, a large proportion of firms struggle with high costs associated with delivery and returns, or logistics more broadly. Addressing cross-border complaints and disputes, limited language skills or differences in regulations pose additional challenges, particularly for firms that engage in cross-border e-commerce. These factors help explain why less than half of all e-commerce firms in the EU28 sell products to other European countries.

On the other hand, there has been a surge in individuals purchasing online. E-commerce is convenient, enabling people to shop online from any location and at any time of day, and it can lower prices and expand the variety of products available. The most recently available surveys suggest that more than half of all individuals in OECD countries have made online purchases over the last 12 months (Figure 2).

Figure 2. More people are buying online than ever before

Percentage of individuals who have purchased online over the last 12 months, 2018



Note: See endnote 2.

Source: OECD, *ICT Access and Usage by Households and Individuals* (database), <http://oe.cd/hhind> (accessed February 2019).

StatLink <https://doi.org/10.1787/888933922994>

However, not all consumers are equally likely to buy online. Participation rates are markedly lower for older individuals, people with lower levels of education, as well as low-income households and those in rural areas. Furthermore, significant gender gaps persist in several OECD countries. But while the gender gap, and more recently also the urban-rural gap, have on average been decreasing over time, the absolute size of other gaps (e.g. age, income and education) increased between 2009 and 2018. This is worrisome because the increasing availability of smartphones, and decreasing prices for Internet access, should have made it easier to participate in e-commerce, in particular for low-income households. In addition, the larger variety of products sold online today should have made e-commerce more appealing to low-income households and older individuals.

One of the most cited reasons for the lack of consumer participation in e-commerce is that consumers often prefer to shop in brick-and-mortar stores. Other challenges related to trust and payment security appear to have diminished over time, but remain important barriers for particular groups, such as the elderly. This group may also feel constrained by a lack of necessary skills, a challenge that has become more significant over time and is likely to affect individuals with low levels of education as well. Access to payment mechanisms represents another important challenge for many people engaging in e-commerce, and is likely to affect some groups, particularly low-income households, disproportionately.

Targeted policies can help bridge e-commerce divides

As digital transformation progresses, the economy will continue to digitalise, with positive impacts on economic efficiency and convenience in many cases. As a result, those who do not engage in e-commerce may find themselves on the wrong side of a potentially persistent and harmful digital divide. Policy can help foster the participation of actors, from SMEs to older individuals, that still do not buy or sell online.

Innovative business models can help address the specific needs of some of these groups, for example by offering solutions that help SMEs to sell online or by providing alternative payment mechanisms. However, there are a number of challenges to business innovation due to either low incentives to invest or cumbersome regulation. For example, complex rules can leave customers responsible for unforeseen duties, taxes or burdensome return requirements. Transparent rules, consistently applied at the border across both digital and brick-and-mortar firms, can reduce some of the resulting uncertainties.

With respect to individuals, significant gaps remain with respect to education, income and age, but also gender and for households in rural areas. Factors that inhibit participation of these groups are often related to economic and social conditions that reach far beyond e-commerce, including urban-rural divides, income distribution, unequal access to education or an aging society. With regard to e-commerce, these conditions may manifest themselves in low connectivity, a lack of information and communication technology (ICT) skills, low levels of trust or a lack of viable payment options – factors that can all be addressed by policy action. Relevant measures in this regard include targeted information campaigns, trust building initiatives, adult training, as well as public-private partnerships that target the participation of low-income households and those in rural areas.

In the case of firms, data suggest that SMEs still lag behind in terms of e-commerce participation. This is true despite the emergence of web-based and standardised solutions specifically targeting these firms. In many cases, this is related to high costs of delivery and returns, a problem that SMEs face significantly more often than other firms. Some business models have emerged that aim to boost firm participation in e-commerce. Updating regulations to overcome bottlenecks in areas such as postal services or custom clearance may help in this respect. In addition, SMEs are likely to struggle more with regulatory uncertainty, as they often lack the financial means to obtain the required legal expertise. This carries over to the relationships between SMEs and larger service providers, such as online platforms.

E-commerce business models are evolving

Many firms are innovating in the ways that they sell products online. Firms can make use of a range of digital technologies, including artificial intelligence, blockchain, the Internet of Things and autonomous delivery devices like drones or robots to facilitate e-commerce. Three e-commerce business models have been particularly transformative: business models that use online platforms, offer subscription services, and/or incorporate online-offline models. Similarly, online payment innovations can help to unlock e-commerce potential by promoting trusted online transactions between unknown parties.

Online platform e-commerce business models

Online platforms have transformed the e-commerce landscape by matching sellers and buyers, including across borders, to facilitate online transactions. Platforms bring together many actors enabling a much wider scale and scope of goods and services that can be profitably sold online but might have been impossible to sell offline or through an individual website. As e-commerce platforms bring together many unknown actors and products, reputation mechanisms to enable trusted transactions become more important, as do matching mechanisms that connect buyers with sellers, or individuals with content. As it is often in the best interests of e-commerce platforms to help firms to sell via their marketplace, mechanisms to facilitate firm engagement have increased, including fulfilment, customer service and export assistance.

Using big data analytics and artificial intelligence can improve matching of e-commerce buyers and sellers via online platforms. To match buyers and sellers, or indeed consumers and content, e-commerce firms can make use of data gleaned from their customers to algorithmically optimise and personalise matching and product recommendations. These data could include browsing patterns, the length and nature of user engagement with particular features, responsiveness to design or format changes, or the behaviour of other similar users. Research suggests that changes in algorithmic design have been found to alter the rate of matching between buyers and sellers in the context of online platforms, improving overall engagement and the likelihood of matches.

Subscription e-commerce business models

Many e-commerce markets also feature subscription business models, which enable the continuous provision of goods or services in exchange for recurring payments. From music-streaming business models to subscription access to bundled digital and physical products, these business models are becoming increasingly prevalent in the B2C space. Consumers may find such models convenient, especially for the recurring purchase of goods that require replenishment, including many common household goods. Similarly, firms can benefit from lower marginal costs, reduced frictions and long-term recurring revenue flows.

Connected devices can facilitate recurring e-commerce purchases of goods that require replenishment. An interesting development for e-commerce subscription business models is the use of connected devices that utilise streams of data through sensors, software and network connections associated with physical goods to make continuous or recurring purchases of tangible goods. In some cases, “smart” appliances can automatically detect when they run low on essential supplies and automatically purchase additional supplies. For example, the Amazon Dash programme enables the automatic replenishment of supplies for connected devices like dishwashers, washing machines, printers and water filters.

Online-offline e-commerce business models

Some firms sell online using offline services or facilities. Others add online functions to traditional offline business models. Such models may allow customers to order online but pick up offline, including in-store, kerbside or other pick-up locations. This appears particularly prevalent for goods, like groceries, where consumers may wish to assess the quality of the product. Some online-offline business models help consumers to assess the fit of a particular product (e.g. clothing) before making an online purchase. Another business model that blends online and offline components includes the online ordering of products in or near brick-and-mortar shops. From automated supermarkets to skip-the-queue mobile application ordering, more firms are experimenting with mechanisms that enable e-commerce while removing the frictions associated with offline ordering.

Mobile technologies enable consumers to conduct a range of digital activities, including online shopping, and can support online-offline e-commerce business models. Consumers use digital technologies throughout the commercial process, but smartphones enable shoppers to research, compare prices, and ultimately make transactions from any networked location. Survey results suggest that over 80% of surveyed consumers research products on their smartphones before making purchases in brick-and-mortar stores. The actual act of purchasing through a smart, connected device is referred to as “m-commerce,” whereby consumers complete a commercial transaction using a mobile device. Smartphone features also enable other innovations in the retail space, including location-based offers.

Innovative payment mechanisms

Safely and remotely exchanging money online, including across borders, is fundamental to e-commerce. Safe and effective online payment mechanisms facilitate trusted online transactions, boosting the growth of e-commerce between unknown actors. Three innovative forms of holding and conducting payments could facilitate e-commerce going forward: digital wallets, mobile money and cryptocurrencies. These mechanisms are not necessarily discrete – indeed, mobile money and cryptocurrencies can both be stored in forms of digital wallets – and together they have the potential to drive future developments in the e-commerce landscape.

Digital wallets have proven particularly popular in the People’s Republic of China, which is the world’s most developed market for mobile payments through digital wallets, driven by the ubiquity and functionality of two digital wallet systems, each associated with major e-commerce platforms. Alipay is a digital wallet system developed by Alibaba, the Chinese e-commerce platform, and WeChat Pay is a digital wallet system developed by Tencent, another Chinese e-commerce platform. Purchases made on Tencent (e.g. bike sharing services) or an Alibaba platform (e.g. Taobao) are often mediated through each respective digital wallet. Both digital wallets are notable for the scope of their functionalities beyond the simple mediation of the purchase and sale of consumer goods. For example, Alipay is increasingly integrated with a range of Chinese public services, meaning that Alipay can be used to pay for expenses including utility bills, transportation fines and school fees. These features may help push out the extensive margin of e-commerce into transactions that were previously analogue.

Public policies should enable innovative e-commerce business models

As digital transformation progresses, new business models will arise in ways that are difficult to predict. Business model innovations that make use of data and digital technologies often challenge traditional policy frameworks, particularly for firms that use new business models to innovate across and between sectors, offer new forms of payment services or exploit technologies in new and innovative ways.

Remove regulatory barriers that preserve artificial distinctions between online and offline commerce

Technological changes have blurred the boundaries between online and offline activities, as well as between goods and services. This has an impact on policy frameworks that often rely on the increasingly artificial distinction between traditional commerce and e-commerce. Because firms are increasingly combining the most promising aspects of both worlds, the level of ambiguity will rise.

For example, the increasing use of a mix of online and offline distribution models means that brick-and-mortar stores increasingly perform functions beyond the simple point-of-service purchase of products. Instead, physical stores often act as an extension of the online experience facilitated by e-commerce, and vice versa. Innovative business models may use brick-and-mortar stores as a point of collection or return of products bought online, or as a temporary storage facility before delivery. Existing licensing, permitting or zoning rules – particularly at the local level – may not allow such functions, and in doing so constrain the development of promising e-commerce business models (e.g. omni-channel models).

As consumers choose to order tangible goods online and have them delivered to a specific location, firms come under pressure to integrate digital and physical supply chains to ensure fast and responsive delivery. Consequently, firms are experimenting with logistics and fulfilment solutions to enable the physical delivery of products over the last mile, or the final leg of the delivery journey to a particular location. Some innovations in this area, including the use of autonomous robots and unmanned aerial vehicles, may not have been anticipated in existing road and sidewalk rules. Many such rules are local, which further underscores the need for a consistent and co-ordinated whole-of-government approach to e-commerce policy making at all levels of government.

Encourage regulatory flexibility, experimentation and transparency

Regulatory uncertainty can reduce the incentive to invest, and it may constrain the ability to scale as investors may be unwilling to invest in a firm with an untested product, service or business model. Policy experimentation can help ensure a firm's ability to innovate while remaining within the spirit of existing laws. Outcome or performance-based regulations that specify required outcomes or objectives can be useful in this regard. Regulatory sandboxes are another mechanism of ensuring regulatory flexibility that enable selected firms to test innovative products or services through approaches and competences that differ from existing policy frameworks. In the e-commerce context, such sandboxes have been used to test the use of drones for delivery and digital payment mechanisms. As e-commerce business models evolve, additional applications may arise with respect to new technologies, like blockchain or 3D printing.

At the same time, policies that focus on a particular type of e-commerce business model should be avoided. Given the dynamism of the e-commerce landscape, some e-commerce business models that are dominant today may not be dominant in the future. For example, while e-commerce business models that use online platforms are among the most prominent in the current e-commerce landscape, advances in decentralised structures like distributed ledger technologies may diminish this role in the future. An alternative approach is to ensure that particular business functions conform with the regulatory framework, while better accounting for the interlinkages across business functions. Increased transparency, including through better communication of existing regulations and their specific application to e-commerce, is another important step in reducing uncertainty for innovative firms.

A wide range of policy areas affect e-commerce

As with many other facets of digital transformation, a wide range of policy areas directly affects the development of e-commerce. This includes policies related to consumers, tax, competition, cross-border trade and the environment. Some of the key e-commerce policy issues in these policy areas are briefly discussed below.

- **Consumer protection** has become more complex in the digital era, including for vulnerable consumers (e.g. children). At the same time, new issues have emerged, for example in relation to online apps and services offered for “free” in exchange for gaining access to the user's personal data. More generally, cross-border

e-commerce challenges the enforcement of national and regional consumer protection regimes, particularly for product safety and recalls.

- **Tax policy** challenges have moved to the top of the global agenda, especially with respect to the taxation of intangible assets, as new digital business models, including for e-commerce, have raised issues around how and where value is created, particularly through emerging opportunities for data collection and user engagement. As intangible assets are highly mobile, new e-commerce business models further test existing income taxation systems, which are based predominantly on physical factors to determine a taxable presence and allocate profits (e.g. the definition of permanent establishment).
- **Competition policy** also comes to the fore with respect to e-commerce. A range of different competition dynamics have emerged for online sellers as well as other actors in the brick-and-mortar space, including for online platforms. Issues around whether traditional antitrust enforcement mechanisms are fit for the digital age have become more important, including with respect to possible horizontal collusion. The role that algorithms may play in facilitating such collusion has also been raised in competition policy circles.
- **Trade policy** represents another important e-commerce policy area. As more trade occurs in digitally-enabled services and bundles of goods and services, the blurring of boundaries between goods and services can result in legal and regulatory uncertainties for firms participating in cross-border e-commerce under existing multilateral and bilateral trade agreements that rely on rules based on the traditional distinction between goods and services. Rules regarding cross-border data flows also impact e-commerce.
- **Environmental policy** may also affect e-commerce, although the net effect is not clear-cut. On the one hand, e-commerce can reduce transportation use (and the associated negative environmental effects) to brick-and-mortar stores, as well as decrease pressure on physical infrastructures (e.g. lower electricity use). On the other hand, increased residential deliveries do not benefit from the same scale effects as professional bulk purchases, reducing transportation efficiency, while increased e-commerce may also increase e-waste. E-commerce can also raise issues with national, regional, and local environmental protection policy regimes.

Policies should be co-ordinated to unlock the potential of e-commerce for all

Technological change and business model innovations are constantly altering the e-commerce landscape, and these new developments are increasingly challenging several policy areas simultaneously. While many of the challenges identified in the early days of e-commerce remain relevant (e.g. related to data protection), new challenges have emerged (e.g. the rise of tradeable services and their implications for trade policy frameworks).

These developments imply that a holistic approach to e-commerce policy making is essential, including co-operation and collaboration across policy domains. Policy makers should ensure that policy action is not unilateral, but instead developed with thoughtful consideration of the impacts across policy domains, particularly those identified in this report. A periodic review of policy settings may be useful in ensuring that the benefits of e-commerce can be maximised while addressing the related challenges.

Notes

1. Firm participation is the percentage of all businesses employing more than 10 employees receiving orders over computer networks. Data from for 2017 comes from the 2018 survey (and equally for other years). Unless otherwise stated, only enterprises with 10 or more employees are considered, small firms are defined as companies with between 10 and 49 employees, and large firms as companies with 250 or more employees. For some countries, data for a given year is missing and has been replaced with data from previous years. Survey methodology and definitions are different for some countries. See Statlink files for details: <https://doi.org/10.1787/888933922823>.

2. Unless otherwise stated, data refer to the percentage of individuals (age 16 to 74) that purchased online over the last 12 months. OECD average by age group excludes Canada and New Zealand due to missing data for the age group 55 to 74. For some countries, data for a given year is missing and has been replaced with data from previous years. Survey methodology and definitions are different for some countries. See Statlink files for details: <https://doi.org/10.1787/888933922994>.

Further reading

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