e-Business and e-Commerce

Bruno Moriset

Bruno MORISET
Jean Moulin Lyon 3 University – Lyon – France
bruno.moriset@univ-lyon3.fr

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Abstract

This article presents the fundamentals of e-business and e-commerce and their relations with geography. Electronic platforms and marketplaces provide economies of scale and network effects. E-business gives value chains a high degree of organizational (outsourcing) and locational (offshoring) flexibility, and firms can purchase intermediate goods and business services on a global basis. The rise of e-business shapes the geography of work: tasks that process information are amenable to various forms of teleworking, at home, on travel, or in a coworking space.
E-commerce is a subset of e-business, related to trade of goods and services. E-commerce is often defined as business-to-business (B2B), business-to-consumer (B2C), and consumer-to-consumer (C2C). China has surpassed United States as the leading market for both B2B and B2C e-commerce. E-commerce has revolutionized shopping: online merchants benefit from low costs of entry in the business, and consumers have easy access to huge catalogues of products, without regard on their location. But distance still matters: logistics is at the nexus of e-commerce operations. The competition between 'physical' and online retail leads to the rise of multichannel forms of commerce. The foreseeable future of e-business and e-commerce will be shaped by the sophistication of digital technology: advanced algorithmic and artificial intelligence, big data analysis, and the Internet of things.

Introduction

With the rise of the digital economy, electronic transactions have permeated all economic sectors. The intensity of digitization – the use of computers, telecommunications, and the Internet – varies across industries. Software, computer services, financial services, and electronic media, which trade digital content and data, can be said 'fully digital'. Advanced manufacturing and professional services may be regarded as highly digital. Other sectors, where physical operations are still dominant, although increasingly information technology-enabled (IT-enabled), should be said 'moderately digital', like mining, utilities, education, commerce and so on.
In this perspective, given the broad scope embraced by the word 'business', we must consider that e-business encompasses transactions and processes conducted by electronic means, without respect to the industry concerned. Manufacturing, logistics, finance, health, education, tourism and hospitality, are worth mentioning sectors where firms are consumers of e-business services. But e-business is not limited to inter-firm transactions. Individuals who buy online, get technical support on the Internet, or benefit from remote school tutoring, are involved in e-business.

The words *e-business* and *e-commerce* are often used interchangeably. However, e-business is not limited to purchases and sales, but captures many IT-enabled elements of the value chain, such as marketing and advertising, customer relationship, enterprise resource planning, training, and human resource management. The spectrum of e-commerce is much narrow, and it must be regarded as a particular subset of e-business. The US Census Bureau suggests a widely accepted definition of e-commerce: "the sale of goods and services where the buyer places an order, or the price and terms of the sale are negotiated over an Electronic Data Interchange, the Internet, or any other online system (extranet, e-mail, instant messaging). Payment may or may not be made online."

Platforms and the economic model of e-business

The concept of *platform* – or *marketplace* in e-commerce strictly speaking – is essential to the understanding of e-business. A platform is a set of norms, codes, and processes, which guaranties the interoperability of tasks processed separately in time and space throughout a given value chain. As such, it provides the fundamental base of a business *ecosystem*. In the automobile industry, a platform is a frame and/or a set of components, common to different models or brands. In digital industries, a physical platform is often coupled with a software platform. For decades, the PC industry has been dominated by Intel's central processing units associated to Microsoft's Windows operating system. In the smartphone industry, Apple' IOS and Google's Android are today the dominant software platforms, and support a myriad of programs and applications. In e-commerce, Alibaba's websites and Amazon are the world's largest platforms (or marketplaces).

The economics of electronic platforms is dominated by two intertwined features: economies of scale and network effects. Economy of scale occur, for example, when the cost of designing, writing, and updating a website or a given suite of software, increases much slower than the number of users and associated revenues, therefore leading to an increase of return on investment and operating profits. Google, the dominant search-engine outside China, and Facebook, the dominant social network, provide textbook examples. Their main source of revenue comes from targeted advertising (ads) driven by consumer's data analytics. As the number of users gets higher, the audience of the ads soars, and the platforms' revenue rises proportionately. Network effects compound this dynamic. As the number of users increases, the network's value for users gets higher, because opportunities of relevant findings and interrelations, and the audience of subscribers' content, rise concomitantly. Simultaneously, the value of data Google, Facebook and the likes are able to extract from users' and subscribers' activity is rising too, and firms can charge higher prices for targeted advertising. The power of scale economies and network effects makes that, by the end of 2017, Google and Facebook had become a duopoly which had captured more than 60 percent of the U.S. online ads market. E-commerce shows similar features: as Amazon's and Alibaba's catalogs get larger, the number of online visitors and shoppers increases, leading to faster inventory cycles, attracting a growing number of independent sellers on the platforms, with cumulative effects on platforms attractiveness.

Therefore, the combination of economies of scale and network effects generates a "winner-take-all" economy. Many examples can be added: eBay has taken an edge in C2C online auctions, Airbnb is dominant in the hospitality industry, Uber is prime in the taxi industry, LinkedIn, now a subsidiary of Microsoft, reigns supreme among business-oriented social networks. But the tendency toward concentration is counterweighted by the low cost of entry in e-business activity, which makes it possible to find niches which have so far remained unspoilt by existing Internet giants.

The key values that make a given platform the base of a successful business ecosystem are its openness to individuals and third party businesses, and its ability to scale up. As such, e-business platforms make the most from the limitless intermediation and switching capacity of the Internet, which has driven the emergence of a *sharing economy* or a 'wikinomics' (epitomized by the collaborative encyclopaedia Wikipedia). The number of individuals and micro-firms involved in a given value chain can now be counted by the million. The ecosystems of iOS and Android applications for smartphone (App Store and Google Play) deliver a textbook example. Both are multi-billion dollars industries runned by hundreds of thousands of small firms and individual developers worldwide. According to its parent company, App Store generated over $26.5 billion in revenue for developers in 2017. Web-based platforms have made possible for big numbers of individual needs and individual demands to meet together, therefore creating an endless series of business opportunities, in transportation

(carpooling), food (home delivery services), purchase of used/second hand goods, education mentoring, day care services.

The double-edged geography of e-business

The rise of the information technology 'holy trinity' – computers, high speed telecommunications, and the Internet – has deeply altered the trade-off between concentration and dispersion of business, which is pivotal in the understanding of the geography of e-business. The geography of e-business features a fundamental paradox. On the one hand, the production and trade of digital content and services delivered by telecommunication means, lead to some ubiquity in business operations and resources, and to geographic patterns of dispersion. On the other hand, many business sectors and processes show a tendency toward geographic concentration.

Time-space compression and the organization of digitized value chains

The concept of value chain conceptualizes the production of marketable goods and services as a flow of tasks which consume physical and intellectual resources, from design and research and development (R&D), and raw materials extraction, to sales and after-sale services to end-consumers. Value chains are increasingly organized in well-identified bricks of value creation, which may be separated in both time and space.

Information technology is pivotal in this splintering. It favours the creation of standards and technical norms, that make it possible to integrate the physical or informational bricks of the value chain. Outsourcing practices, made possible by digitization, have so far been a major driver of e-business growth. Large companies in all industries show the tendency to focus on core operations (pharmaceutical firms invent and produce drugs, car makers design and manufacture automobiles). Operations which are not ‘core’ or critical are subcontracted or 'outsourced' to third-party firms. The sophistication of information technology makes it possible to secure a convenient degree of business continuity and security between ‘in-house’ and outsourced operations. Nowadays, car makers, hotel and supermarket chains, banks, airlines, and so on, do not need to recruit, train and pay professionals to do paperwork, translate documents, perform legal and accountancy tasks, deal with consumer claims, and fix the company's computer and telecommunication network. Outsourcing gives firms more flexibility (a permanent, in-house staff cannot scale up and down to match with the fluctuation of demand), and more efficiency (external services can fit precisely with the company's needs).
Outsourcing is a win-win formula because it generates economies of scale: specialized service providers are likely to be more productive. Last, but not least, a share of outsourced operations can be processed offshore at lower costs. Table (1) shows the large span of e-business services offered by Flatworld Solutions Pvt. Ltd., an Indian outsourcer headquartered in Bangalore. According to the World Trade Organization,

India was in 2016 the second largest exporter of IT-enabled business services (after the United States), and the first exporter of computer services.

Table 1. Services offered by Flatworld Solutions Pvt. Ltd. (Bangalore, India) (1)

Finance and Accounting Services	*Engineering Services*
Bookkeeping	Mechanical - Structural
Tax Processing	Architectural - Civil
Invoice Processing	Electrical
Financial Analysis	*Healthcare BPO*
Cash Flow Management	Billing and Coding
Payroll Processing	Medical Transcription
Real Estate Owned Services	Healthcare Claims
Mortgage Services	Tele radiology
Loan Processing	Medical Animation
Underwriting	*Virtual Assistant Services*
Appraisal Support	Appointment
Closing Support & Post-closing	Scheduling
Legal Process Outsourcing	Event Planning
Law Office Management	Correspondence Management
Legal Drafting & Analysis	Call Answering
Litigation Support Services	Desktop Publishing
Legal Document Review & Management	Travel Reservations
Call Center Services	*Video & Photo Editing*
Telemarketing	*Data Management Services*
Technical Support	Data Entry
CCTV Monitoring	Transcription
Email Support	Translation
Chat Support	Scanning / OCR
Research and Analysis Services	
Customs Brokerage Services	

(1) Adapted from: www.flatworldsolutions.com, 12 March 2018

The 'end of geography' fallacy

In the last years of the 20th century, when the Internet economy was still in its infancy, some pundits had forecasted that geography – location and distance – would soon lose its significance as a key component of the economy. It is a matter of fact that digitization and advanced telecommunications have opened up new countries, places, and communities to knowledge-based business. However, e-business is still far from ubiquity and remains heavily subjected to the tyranny of geography.

First, the access to fast and reliable telecommunications is still unequal. In low-income countries, the absence of any Internet connection is still common, especially in rural areas (although the rise of mobile phone may, to some point, provide access to some kinds of e-business). In advanced economies, the coverage by high-speed (fixed or mobile) connection remains unequal. Individuals and small firms located in rural areas or small cities often suffer from some inadequate Internet access, which prevents them from seizing the opportunities offered by the rise of e-business. Some political barriers remain. The most notorious case is China, where e-business is under strict control from the government, which prevents foreign companies to trade freely in the Chinese market, the world's second largest overall, and the first for e-commerce strictly speaking.

Second, major limitations to ubiquity are related to local conditions of service production. The availability of talent is the nexus of e-business development. E-business has flourished, for the main, in well-established business cities with a pool of college-educated people. A vast academic literature has explained this paradox of the digital economy. Routine transactions of standardized content can easily be processed from abroad: few would fear, nowadays, to purchase a 10 USD piece of electronics on Amazon or AliExpress. However, high value-added transactions that involve the exchange of tacit content, or intensive teamwork in creative activities, require face-to-face meetings. The much routine commercial relations have got easier to proceed at distance, the more physical proximity has become valuable.

Therefore, the rise of the Internet economy has given a premium to existing ecosystems of innovation and production endowed with transportation hubs and fine research universities. For example, a recent study of the geography of e-business enterprises in China founded that, out a sample of 446 firms, about 85 percent were located in four provinces and province-level municipalities: Beijing, Shanghai, Guangdong (cities of Guangzhou and Shenzhen), and Zhejiang (city of Hangzhou). China's political context has given to the capital city a clear cut advantage over its competitors: nearly half of the total (219) is located in Beijing. The same study emphasizes the key role of entrepreneurs ' social relationships. For example, China's two e-business giants, Alibaba Group and Tencent, were founded, and are headquartered today, in the cities where Jack Ma and Ma Huateng, their respective chairmen and CEO, have graduated from

university: Hangzhou, province of Zhejiang, and Shenzhen, province of Guangdong. In both cities, the two giants have contributed to the emergence of a vibrant e-business ecosystem.
In different institutional contexts, The Bay Area (San Francisco and Silicon Valley), Seattle, Seoul, Tokyo, London, and Paris tell similar stories. It is worth noting that in the recent years, San Francisco has overwhelmingly surpassed Silicon Valley strictly speaking as the major spot on earth for venture capital investment, which is the essential fuel of e-business startup growth. According to the literature, the social and geographic proximity between venture capitalists and entrepreneurs is a cornerstone of e-business ecosystems growth.

Last, distance still remains a strong component of the Internet-mediated relation between vendors and buyers. The global reach of e-business is the exception rather than the rule. In the IT-enabled services industry, even if back office may to some degree be processed offshore, in India or the Philippines for example, firms must be locally present through a great number of commercial agencies which act as the interface with customers. In the sphere of e-commerce, distance – or time to travel – is the essential component of the fulfilment issue (this topic is elaborated in the end of this article), and many commercial websites trade only on a regional basis.

E-business and the versatile geography of workplace

When the myth of 'the end of geography' arose in the late 20th century, many prophesied the generalization of teleworking, which would make redundant offices and even cities. Such utopian visions have been discarded once and for all. As explained above, the location of e-business enterprises still matches more or less faithfully the geography of talent availability, economic infrastructure, and capital. However, the geography of work in a digital economy features an unprecedented degree of organizational and locational flexibility. Daily commuting to traditional office facilities in central business districts or suburban business parks, is complemented, rather than contested, by IT-enabled flexible work solutions. E-business tasks can be processed at home, while on travel (nomadic work), or in a 'third place' such as a coffee shop, an hotel lounge, a telecenter or a coworking space.

The perimeter of home-teleworking is surrounded by a 'grey zone' which makes definition and measurement difficult and unreliable. Work at home is a common practice for millions of self-employed people and individual entrepreneurs, urban or rural, who make a living in e-business. As such, teleworking has been regarded by many as a promising tool for driving a kind of 'rural renaissance.' Nevertheless, the vast majority of teleworkers live in cities. Salaried workers telework usually on a part-time basis, because employers fear – rightly – that full time teleworking could isolate employees from their colleagues.

The effect of e-business rise on workplace organisation is epitomized by the dramatic growth of coworking spaces. Coworking spaces (CS) are mainly designed for freelance entrepreneurs and startup founders at the early stage of development who wish to counterbalance the social and business isolation that could derive from working exclusively at home, but do not need or cannot afford to rent an office on a full time basis. The key principle of coworking is the creation of a friendly atmosphere which is likely to favour social and professional interaction between members. The provision of social and business-oriented animation is the key difference between CS and flexible office solutions offered by specialized firms such as Regus.

The starting point of the coworking phenomena is often traced in San Francisco in 2005. At the end of 2017, the number of CS worldwide was estimated to 15,500. The creation of CS was pioneered by small communities of entrepreneurs. Since, CS have entered the sphere of big business. IT giants like Microsoft, Apple, and Google, have implemented a network of business incubators and coworking facilities in major business cities. The success story of WeWork, founded in 2010 in New York, equals in magnitude those of Airbnb in the hospitality industry. It is specialized in the upscale segment of coworking, with premium locations such as Broadway and Fifth Avenue (New York) or Avenue des Champs-Elysées (Paris). By March 2018, experts valued it about 22 billion dollars – although some pundits warned it was a bubble. At this time, WeWork was offering 320 offices located in 62 major business cities on five continents (table 2).

Table 2. Number of WeWork offices (for cities with at least four locations) (2)

New York City	50	Berlin	7
London	33	Sao Paulo	7
Los Angeles & Orange County	18	Tel Aviv	6
Bay Area	16	Singapore	6
Washington, D.C.	11	Tokyo	6
Mexico City	10	Austin	5
Seoul	9	Beijing	4
Shanghai	9	Paris	4
Seattle	8		

(2) As of end of March 2018. Source of data: www.wework.com

The rise of e-commerce

A subset of e-business, e-commerce describes sales and purchases of goods and services through electronic data interchange (EDI) systems or Web-based interfaces. The main classification of e-commerce is based upon the nature of buyers and vendors, and their location throughout the business value chain. *Business-to-business*, (B2B) e-commerce is related to transactions between companies or professional vendors. It is the online variant of wholesale commerce. *Business-to consumer* (B2C) e-commerce describes

sales operations where the buyers is an individual end-user. It is synonymous of e-retail. *Consumer-to-consumer* (C2C) e-commerce comprises electronic transactions between individual consumers, often through third-party platforms such as Facebook Marketplace or auctions web sites such as E-bay. *Consumer-to-business* (C2B) is less usual. It occurs when individuals post products or services (like photos, videos, cooking recipes...) on blogs, forums, or dedicated web applications, to be purchased or auctioned by companies.

Some e-merchants act as the principal vendor. Like traditional retailers, they buy goods wholesale and resell them to consumers. They take in charge the fulfilment process and aftersales service, and make their revenue from the margin on sales. This was Amazon's initial business model. However, the dominant tendency is the opening of commercial websites to third-party sellers. Nearly half of sales on Amazon's platform are now made by third-party sellers. In such a case, Amazon makes it revenue from a fee charged on the transaction. The fulfilment process is taken in charge by the company only if the consumer has subscribed to Amazon Prime. Pure *online marketplaces* do not get ownership of the product at any stage of the transaction. This is the case for T-Mall and Taobao (for Chinese consumers) and AliExpress (for international markets), all subsidiaries of Alibaba Group. To enhance consumers' level of trust, AliPay, the preferred payment system on Alibaba marketplaces, resorts to the system of escrow: the payment made by the buyer is temporarily kept by the marketplace until the delivery is fulfilled.

The hidden dominance of B2B e-commerce

Business-to-business (B2B) e-commerce has grown largely unnoticed to the public. However, by the volume of sales, it dwarfs B2C e-commerce (or e-retail) by a wide margin. According to Statista, a data analysis company, the global B2B market in 2017 was worth 7.7 billion dollars, while B2C sales amounted to about 2.3 billion dollars.
The main explanation of this dominance is trivial: modern value chains act as a globalized cascade of exchange of raw materials, semi-finished goods, parts, and then, finished goods. In the end, the addition of sale operations is much greater than the final value added. In addition, large firms have embraced digitization more early than households, and the share of trade operated electronically is usually greater in B2B than in B2C. For example, the U.S. Census Bureau found that the market share of e-commerce in wholesale amounted in 2015 to about 30 percent of total sales, that is much higher than figures observed in B2C e-commerce (about nine percent).

The digitization of B2B commerce carries many advantages. Real-time analysis of sales data helps to monitor finely inventory levels. Wholesale buyers have access to huge online catalogs. That favors the globalization of markets, fuels competition, and decreases the cost of purchases throughout entire value chains. The implementation of auction sales is made easier, with further effects on prices. The need of in-person commercial visits by firm representatives is decreased, with positive effects on costs

and time to market. Therefore, e-commerce has become today the cornerstone of supply chains. In the European Union, according to Eurostat, small and medium companies trade mainly on websites, while large companies – notably in manufacturing sectors – make more extensive use of Electronic Data Interchange (EDI) systems, that link privately buyers and suppliers. Therefore, the global share of EDI-sales is significantly higher than those of web-sales.

The majority of web-based sales are processed on vendors' own web sites. However, in many industries, commercial negotiations and purchases can be operated on neutral exchanges – or marketplaces. B2B marketplaces are more common in industries, or segments of value chains, which trade large series of commoditized or semi-finished goods. Some platforms, sometimes called 'vertical marketplaces', are specialized in a given industry or value chain, such as steel semi-products and equipment (www.b2bmetal.eu), or clothing and fashion (Joor). Other platforms have a regional or national focus. Made-in-China.com, Dhgate.com, and Ofweek.com, among many, offer retail brands, supermarket chains, and wholesale purchasers of every country an access to China's wide industrial capacity. Tradeindia.com is a major portal to access Indian producers. Although they are more notorious as B2C retailers, Amazon and Alibaba also operate as neutral platforms in the B2B market.

The growth of retail (B2C) e-commerce

In 2017, retail e- commerce had captured an estimated share of 10 percent of retail sales worldwide, a 22.9 percent increase over 2016. However, the geography of e-retail sales volume and growth shows a contrasted landscape (table 3). Although e-commerce figures are subjected to much measurement uncertainty, there is no doubt that China is now the leading online market. This fact is the outcome of an enormous purchasing power (China's overall retail industry now surpasses those of the United States) and the high propensity of local consumers to shop online: about 23 percent of China's retail sales are made online (the example of China is elaborated below). In Europe, the UK is the largest B2C online market, thanks to a market share which is markedly higher than in any other countries, except China. The high propensity of British citizens to buy online is driven by a bundle of factors: the high density of population and its degree of 'IT-readiness', the pervasive use of electronic means of payment, and the specific regulation of mail order commerce which offers to consumers strong guaranties, notably with regard to the returning of purchased items. India is at the lower end of e-commerce diffusion, with a market share of only 3.5 percent in 2017. Admittedly, India's online retail industry was in 2017 the fastest growing among large economies, but the starting point is low. Despite federal and state-level policies which endeavor to make India a digitized country, and the wide availability of simple and low cost mobile payment solutions, B2C e-commerce is plagued by the low average purchasing power and inadequate transportation and warehousing infrastructures which make the final delivery to consumers a logistical nightmare.

Table 3. B2C e-commerce figures in selected economies, estimations for 2017 (3)

	E-commerce (billion dollars)	Growth 2016-2017 (percent)	Percentage of total retail sales
China	1132	33.1	23.1
USA	452	15.8	9.0
Japan	111	---	---
UK	110	14.5	19.1
Germany	65	11.3	7.9
South Korea	44	9	11.3
France	42	8.8	6.7
India	38	60.3	3.5
World	2352	22.9	10.0

(3) Source of data: www.eMarketer.com

The dramatic rise of B2C e-commerce in China mirrors the tremendous growth of the country's economy since the beginning of the 21th Century. The phenomenon stems from a series of idiosyncratic factors. Online retail in China is fueled by the shopping appetite of hundreds of millions newcomers in the urban middle class. The pervasiveness of mobile payment solutions such as Alipay (Alibaba Group) and WeChat Pay (Tencent), and the rise of flexible and reliable delivery options, must be taken into account.

However, the key explanation must be found in the recent history and temporalities of China's economic growth and digitization. Old industrialized countries have seen well before the Internet era the establishment of a sophisticated physical retail industry, with a great number of competing brands, a full network of stores, malls, and supercenters with parking facilities adapted to the car-enabled urban and suburban model of life. The recent meteoric growth of China's economy and cities tells a much different story. The Chinese urban middle class has been educated in the digital era. Therefore, the retail industry in the country has had to get digital at the early stage of its development. And the experience of physical shopping 'Walmart-style' cannot reign supreme in a country where the number of cars per capita remains so low by Western standards.

The timing of economic and technological growth explains, in a similar case of 'leapfrogging', the supremacy of mobile retail or 'M-commerce' in China, which has captured about two thirds of the country's online retail market. In mature economies, the mass of consumers entered the digital age through personal computers connected to fixed telephone lines, well before the mass diffusion of smartphones. In China, the smartphone has often been the primary device to get digitally connected.

Advantages and disadvantages: the fundamentals of B2C e-commerce

Table 4 summarizes the pros and cons of e-commerce. Most of e-retail advantages derive from the data crunching capability of computer systems and the networking power of web-based platforms. It is often said that e-commerce features low barriers of entry in terms of initial capital requirements. Online vendors do not need to establish a costly network of physical outlets, and can reach a national market at the very beginning. This explains in part the supremacy of US and Chinese retailers, who have been able to scale-up in their home country before launching international operations whose profitability is usually lower. Online vendors can get a wide audience through presence and ads on search engines and social networks (Google's and Facebook's main source of revenue). Aside from global marketplaces like Amazon or Alibaba, entrepreneurs have found numerous opportunities through specialization, in the commerce of goods (garment, shoes, jewelry, wine, sport gear, fishing tackle, musical instruments, tools, furniture, home appliance…) as well as in the commerce of services (home cleaning, child and elderly care, school mentoring...).

On the customer side, two main advantages should be identified. First, there is the possibility do shopping without regard on time and geography, at home in pajamas, or while travelling by road, rail, and air (mobile-commerce). This is a major advantage for people who are busy and fear to get stuck in traffic jams while driving to the supermarket. From this view, young urban professionals or 'millennials', and affluent double-income households have been so far the preferred target of online merchants, especially when they live in congested city centers – like those of New York, Paris, Shanghai or Mumbai – where car ownership has become a liability rather than an asset.
The second advantage is the benefit from limitless, IT-enabled choice. Comfortably seated in his/her sofa or aboard a high speed train, the consumer can browse through millions of items and compare products and prices through 'search and compare' engines. Google operates its own comparison engine, Google Shopping, but was fined 2.4 billion dollars by the European Commission in 2017 for abuse of market dominance. Some research and comparison tools, such as Nextag.com, have emerged as specific businesses.

However, both sellers and buyers must pay the price of ubiquity and versatility. With the exception of purely digital goods delivered by telecommunication channels, such as software or music, e-commerce cannot escape from logistics constraints. In the end, the cost of transportation is charged on the consumer, and the faster is the delivery, the higher is the price (Amazon Prime standard users have to pay an annual fee of about 50 to 99 dollars).
The absence of travel to the shop involves that consumers cannot touch and try the product. This is a major drawback for the selling of clothes, shoes, and furniture: online shoppers cannot appreciate the texture of a fabric or a specie of wood. This flaw is almost fatal to the commerce of fresh food, the segment where online market share is the lowest. Last, both vendors and buyers are deprived from in-person meetings that

physical shops only make possible. Like in other business sectors, the value generated by face-to-face contacts is uneasy to capture in terms of monetary advantage. The key professional skill of a good salesman/woman is not to provide practical or aesthetic advice, but to create a fine social contact with customers, which is a prerequisite for the creation of trust and loyalty. Admittedly, in most supermarket chains, social contact with sales-persons is close to zero. This, in turn, explains why the segments of traditional commerce which have so far suffered the less from competition with online commerce (set aside fresh goods) are high-end and luxury goods, where margin are high enough to cover the cost of salesmen/women presence. However, the growth of e-commerce is so fast, especially in emerging countries, that luxury brands have had to give up their initial reluctance to sell online. Purchasing online a $25,000 Hermès handbag is today no more difficult than buying à $10 print cartridge.

Table 4. Advantages and disadvantages of e-commerce

Advantages	Disadvantages
For sellers	***For sellers***
Low barrier of entry	Difficulty of selling food and perishables
No need for physical shops	Logistics costs and complexity
Logistic constraints can be outsourced	Cost of returned items
National / global market area	
Access to a wide audience through search engine visibility	***For buyers***
Customized / targeted online advertising	Delay of delivery
Secured online payment	Impossibility to touch, try, experiment
Feedback from consumers taste and behavior	Lack of additional experience and services
	Absence of personal contact with vendors for advice, claim, and negotiation
For buyers	Difficulty to carry a claim in a physical outlet
No need to travel to the shop	
No time limitation for shopping	***For sellers and buyers***
Possibility of mobile-shopping	Difficult delivery at working hours
Unlimited choice	Risk of fraud, forgery and cyber attack
Web-enabled product finding	
Models and prices comparison	
Access of feedback from other consumers	
Access to technical support online	
Online discounts and bargains finding	
Access to rare and/or second-hand items	
Easy handling of return and reimbursement	

The disruption of traditional shopping and the road toward multichannel retail

Retail is often listed among business sectors subjected to a phenomenon of disruption or "uberization", like recorded music or the taxi industry. The peril looks greater in mature, advanced economies, where the global retail market is almost stagnant. In China and other emerging economies, there is room for the growth of both physical and online commerce.

The situation looks much infamous in the United States, where iconic department store chains such as Sears and Macy's have closed thousands of outlets. Debacles like those of Toys "R" Us have made the headlines, and 'retail apocalypse' has now his own entry in *Wikipedia*. The rise of e-commerce, with Amazon at the vanguard, is often cited as the main factor of the rout of brick-and-mortar shopping. Actually, it has given the coup de grace to an industry overburdened by debt and oversupply of stores and malls. In some way, traditional U.S. retailers are caught in a pincer between e-commerce platforms and Walmart, who has successfully streamlined its 'physical' operations and revamped its supercenters, and vigorously embraced online commerce, notably with the acquisition of Jet.com in 2016 which is seen as a complement to Walmart's own web platforms. The world's biggest company by revenue (nearly half a trillion dollars of sales in 2017), Walmart benefits from an enormous purchasing power which makes it the main competitor of Amazon in the U.S. market.

The competition between Amazon and Walmart, and, more generally, the convergence between physical and online commerce are made even more evident by Amazon's recent leaning toward brick-and-mortar shopping. In 2017, it acquired Whole Foods Market Inc., a U.S. grocery store chain of 472 outlets specialized in organic products. In early 2018, under the Amazon Go brand, it opened in Seattle its first automated grocery store without cashier or checkout station. Alibaba Group is following the same path. In 2017 it opened in Hangzhou (Zhejiang) Home Times, a physical outlet dedicated to furniture and home accessories (looking like an IKEA store) where visitors can fill their virtual shopping cart by scanning QR codes with their smartphones.

Therefore, it is now widely acknowledged that physical and online shopping, rather than colliding, are converging toward multichannel models which offer to consumers complex combinations of shopping experiences. Some buyers like to try, touch, savor or smell in a boutique, and then after, to order online. Other would order online and pick up their groceries at the supermarket without leaving their car. Pioneered by French supermarket chains such as Auchan and Carrefour, the 'drive through' concept is now widely adopted by Walmart and other global retailers.

Logistics: when e-commerce overcomes the tyranny of distance

Electronic commerce, in both B2B and B2C forms, is fully dependent from advanced logistics, which, itself, relies on intensive use of the latest information technology. The race toward shorter delivery delays and lower inventory levels predates the Internet era. Toyota, a Japanese car maker, introduced just-in-time production and lean supply chain methods in the 1960s. The digitization of production and the rise of e-commerce drove these methods to the highest degree of sophistication. The level of inventory of any vendor is known in real time. Once one order is placed by a given consumer, the information can reach instantaneously manufacturers and their part suppliers who are able to monitor production and their own inventory. However, these methods cannot work without sophisticated logistics. The fundamental of just-in time methods is to fulfill the need of frequent delivery of small quantities and individual parts and items. This is even more true in the world of e-commerce. In the pre-Internet era, book printers and PC makers (for example) had to dispatch sales to shops and supermarkets by full pallets, and individual consumers were in charge of the last mile transportation. Since Dell pioneered the direct sales of PC to end-users and Amazon started to sell books online, the key transportation issue is to deliver items one-by-one to consumers' homes. As such, the growth of e-commerce (both B2B and B2C) has made the fortune of parcel freight carriers such as UPS, FedEx, and DHL, to mention a few.

The fact that logistics is the cornerstone of e-commerce is epitomized by the dramatic growth of Amazon's facilities, whose total area has so far faithfully paralleled its growth of sales. At the end of 2016, Amazon operated a total of 16.6 million square meters of facilities (mainly leased), of which 90 percent (14.9 million) were made of data centers and warehouses. In 2017, this figure grew by 30 percent, to 19.4 million square meters (source of data: Amazon.com, Inc., Form 10-K annual reports). Logistics is so critical to e-commerce that Amazon started to operate its own fleet of trucks (2016) and aircraft (2017). In this way, the company endeavors to decrease its dependence from postal services and package carriers.

The digitization of logistics has been a key driver of e-commerce growth, improving delivery reliability and increasing customers' comfort and trust. As said FedEx founder Frederick W. Smith, "the information about a package is as important as the delivery of the package." From Amazon's warehouses to consumers mail boxes and nearby collection points, bar code scanning generate a seamless flow of data used for parcel tracking and, if need be, the printing of labels with bar codes that make easy the return of items to the vendor.

The 'last-mile' or last leg delivery is the crucial issue. Frequent stops in congested city centers or sparsely populated suburbs ban the use of heavy trucks. Rather, a flotilla of vans, tricycles and even bicycles is necessary, making the final delivery a low-productivity business, notably in countries with inadequate transportation infrastructures like India. In order to tackle the congestion issue, Amazon have started to experiment delivery by drones.

Conclusion

The main conclusion that a geographer should draw from the rise of e-business and e-commerce is that the world is far from becoming flat. As the world's economy is getting more digital, its landscape is becoming even more rugged. The 'winner-take-all' logic that characterizes e-business economic models shows a strong geographic dimension: the growth of e-business has favored well-established metropolises and innovative ecosystems. E-commerce adds its own inequalities to existing ones. For example, the Amazon Prime Now service (delivery in one to two hours), launched in 2014, benefits only to those living in a selective club of U.S. and European wealthy cities. Meanwhile, rural areas and some impoverished neighborhoods are set aside. But e-business may also have inclusive effects. For example, a partnership between Alibaba and local governments has led to the creation of hundreds of 'Taobao Villages' – clusters of small e-business enterprises – throughout rural China.

Political, social and ethical issues must be taken into account. Although it opens the door to new opportunities of job creations, the rise of e-business and e-commerce fuels fears about the future of routine jobs such as branch tellers and cashiers. Borderless e-business and e-commerce may threaten state sovereignty. Notably, the tax treatment of firms with international operations has become a major issue for governments. In the same vein, the location of data centers which host data of citizens, firms, and even public agencies, has become a strategic problem. Big data analysis is becoming a e-business sector of its own, for the best (creation of value for consumers) and for the worst (loss of privacy and individual rights). In the foreseeable future, the sophistication of algorithms, the rise of artificial intelligence and the Internet of things will drive the evolution of e-business and e-commerce. A basic inkjet printer is today able to purchase ink cartridges on its own. In the digital advertising industry, programmatic advertising is now dominant: machines, not human beings, buy and insert ads. Tomorrow, freezers might routinely buy frozen food, cars might order repair services.
Last, there are environmental issues. The measurement is controversial, but the IT ecosystem as a whole (from data center operations to smartphone battery recharge) devours an increasing share of the world's electricity supply. Take into account the delivery of goods purchased online, and it becomes clear that e-business and e-commerce still rely heavily on coal and fossil fuels. The advent of environment-friendly, digital 'smart cities' – whose implementation will require a great deal of e-business services – might counterbalance this trend, up to some point. But this remains a far-flung vision.

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