

E-commerce & ICT Development in South Korea: Prospects & Challenges

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South Korea as a Global IT Powerhouse

E-commerce in South Korea has grown rapidly in tandem with its Information and Communication Technology (ICT) development. Following the WTO tradition, e-commerce here is defined as the “production, distribution, marketing, delivery of goods and services by electronic means”. In a narrow sense, e-commerce refers to buying and selling carried out in virtual markets via the Internet. There is no internationally agreed upon clear concept of e-commerce. However, as there are no time constraints for buyers as well as sellers, spatial restrictions, or additional fixed costs incurred from the operation of physical stores, e-commerce expanded rapidly in major developed countries throughout the 1990s. As such, the spread of ICT and e-commerce, interchangeably with digital trade, are rapidly changing the paradigm for the economic activities of nations and enterprises in the world. In essence, the global economy is fast being converted into an e-commerce system.

South Korea has steadily been in the first rank in the Digital Opportunity Index (DOI) of the International Telecommunication Union (ITU) since 2004, and has been within the top five countries in the UN e-Government Readiness Index. Moreover, South Korea has been among the top three countries several times in each IT competitiveness index of the Economist Intelligence Unit (EIU) in the United Kingdom. According to the Ministry of Science, ICT and Future Planning, the Internet user and smartphone user population in South Korea in 2016 reached 88.3% and 89.9% respectively.

As shown in the [Chart](#), South Korea enjoyed the highest average Internet connection speeds in the first quarter of 2017 as an indicator of ICT development. In South Korea, 99.2% of 19 million households have Internet access via PC, mobile or another device. South Korea has not only the highest Internet penetration, but also the highest number of mobile Internet users in the world. This has led to a rapid growth in the mobile market. Most of the South Korean population live in major cities like the capital Seoul and its vicinity, where 25.6 million, half of the national population, reside in dense and high-rise apartment dwellings.

For ICT development and its applications, governments in developed countries have been focusing on establishing ICT infrastructure and improving relevant institutions and eagerly attracting skilled manpower even from abroad. Under these circumstances, South Korean companies are also accelerating their efforts to facilitate e-commerce. The South Korean government has

also come up with industrial policies to support e-commerce by enacting the Basic Act on Electronic Commerce in 1999, “Comprehensive Policies for e-Commerce Development” in 2000 and “e-Business Initiative in Korea” in 2001.

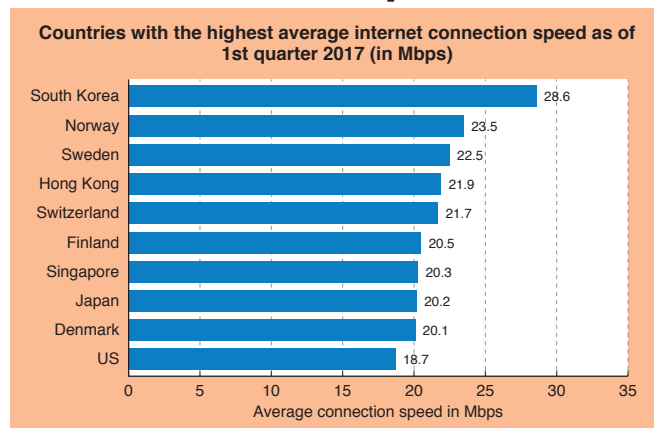
South Korea is one of the biggest e-commerce markets worldwide. Its m.kosis.kr indicates that the retail e-commerce volume in the country will grow to US\$32.56 billion by 2021, up from \$19.12 billion in 2016. Online shopping in South Korea enjoyed double-digit growth in 2016. The most popular online shopping categories were online travel arrangement and reservation services, home electronics and appliances, and fashion and apparel.

On the use of social media in South Korea, Band is the most widely used, followed by Facebook, according to a 2017 study by App Ape. In 2016, a survey by the Korea Information Society Development Institute indicated that KakaoStory was the most widely-used social media platform.

Along with e-commerce growth, e-government has also been developing very quickly in South Korea by applying IT tools and techniques to provide governmental services for citizens, businesses and other governmental agencies efficiently. It helps a great deal for citizens to access public information and services. Thus, e-government can help upgrade administrative efficiency, transparency and accountability, which tends to reinforce e-commerce development in South Korea.

CHART

International comparisons of internet connection speed



Source: Akamai Technologies Statista 2018

Additional Information: Worldwide; Akamai Technologies, 1st quarter 2017; IPv4

Upsurge in E-commerce: Trends & Motivations

The main agents of e-commerce are firms, consumers, and the government. Normally, e-commerce transactions in South Korea are largely categorized according to the parties involved in the transactions. First, B2C (Business-to-Consumer) refers to a business model in which firms sell goods or services to consumers, as exemplified by Amazon. Second, B2B (Business-to-Business) refers to a business model in which firms sell and buy goods or services among themselves. Third, B2G (Business-to-Government) refers to a business model in which such transactions take place between firms and the government. Lastly, C2C (Consumer-to-Consumer) is a business model where consumers sell goods or services to other consumers. Under these business models, the intermediaries between the sellers and consumers are online auction companies such as eBay.

The first South Korean online shop was opened in June 1996. After two decades, the South Korean retail e-commerce market is the 7th largest in the world and ranked the 3rd largest in the Asian-Pacific region. *Table 1* shows that domestic e-commerce had risen very rapidly over the years 2009-2013, in which B2B had consistently more than 85% on average. B2B was then followed by B2G, B2C, and C2C in order of business volume.

South Korea's statistics and facts show that domestic online purchases, including purchases on PCs and mobile phones, reached \$69.2 billion in 2017, up from \$55.9 billion in 2016, comprising 25.3% of South Korea's total retail industry. High penetration of

TABLE 1

Domestic e-commerce market size by category & annual growth rate (Unit: billion won)

	Total	B2B	B2G	B2C	C2C
2009	672,478 (6.7)	592,965 (5.8)	59,455 (13.8)	12,045 (6.0)	8,012 (29.1)
2010	824,392 (22.6)	747,090 (26.0)	52,772 (-11.2)	16,005 (32.9)	8,524 (6.4)
2011	999,582 (21.3)	912,883 (22.2)	58,378 (10.6)	18,533 (15.8)	9,788 (14.8)
2012	1,146,806 (14.8)	1,051,162 (15.1)	62,478 (7.0)	21,160 (14.2)	12,006 (22.7)
2013	1,204,091 (5.0)	1,095,696 (4.2)	70,649 (13.1)	24,331 (15.0)	13,414 (11.7)

Source: Korea Internet and Security Agency (Nov. 2, 2016)

TABLE 2

Popular consumer products from domestic online

Ranking of Items	Ratio (%)
1. Travel & reservation services	16.5
2. Home appliances & electronics	11.4
3. Clothing	10.0
4. Home & car accessories	9.8
5. Cosmetics	8.0
6. Computers	5.7

Source: Ministry of Trade, Industry and Energy (MOTIE), Korea Customs Service (KCS)
<http://www.customs.go.kr/kcshome/site/index.do?layoutSiteId=english>

smartphones is the main driving factor for market growth. While purchases on PCs remained at \$27 billion in 2017, a similar level to 2016, purchases on mobile phones increased from \$31 billion in 2016 to \$42 billion in 2017. In 2016, the online purchases surpassed hypermarket sales, making e-commerce the biggest retail channel in South Korea. Popular e-commerce sites include Auction Co., Gmarket, 11 Street, Coupang, Ticket Monster (TMON), and Wemakeprice Inc. Based on the number of mobile and PC users combined, 11 Street was ranked the first in 2016 with 19 million visitors. Coupang was first for mobile users followed by 11 Street and TMON. The most popular products sourced from domestic online retailers are shown in *Table 2*.

The Ministry of Trade, Industry, and Energy (MOTIE) database also shows that online purchases from foreign retailers have also been rapidly increasing because South Koreans find less expensive prices on overseas websites even after adding in international shipping fees and import duties. Cross-border e-commerce reached \$2.0 billion in 2017. Under the South Korea-US FTA, express courier service mailed goods under \$200 are duty free when sourced from the United States, and "Made in the USA" items under \$1,000 are exempt from KORUS FTA documentation. Multi-brand online retailers such as Amazon.com and eBay are the most frequently used foreign online shopping sites by South Koreans. Major foreign items purchased by South Korean customers in 2017 included dietary supplements, cosmetics, food, and apparel with almost equal weight (*Table 3*). Of the \$2.0 billion spent by South Korean consumers on overseas e-commerce platforms in 2017, \$1.1 billion worth of dietary supplements, apparel, and food products were sourced from the US, while cosmetics and electronics were sourced more from the European Union and China.

TABLE 3

Popular foreign products from online retails in 2017

Ranking of Items	Ratio (%)
Dietary supplements	16
Cosmetics	14
Food	13
Apparel	12
Footwear	8
Electronics	7

Source: Ministry of Trade, Industry and Energy (MOTIE), Korea Customs Service (KCS)
<http://www.customs.go.kr/kcshome/site/index.do?layoutSiteId=english>

As [Table 4](#) shows, South Korea's retail e-commerce market size is half the German one. It has grown by roughly 10% steadily in recent years, and is expected to continue to grow at the same pace in the years ahead. But despite the rapid growth of e-commerce in South Korea, its volume is only 10% of all retail sales ([Table 5](#)). Yet the ratio of online retail sales to the total is still the second-highest in the world, after the British market. Given South Korea's top ranking in ICT – 1st from 2010 to 2016, except for 2013 and 2014 – by the International Telecommunication Union, the future of e-commerce in South Korea is very likely bright.

The history of South Korea's e-commerce market runs only just two decades. But in the last 15 years, the e-commerce business volume had grown an average of 22% each year. Especially during the last three years, the market for online shopping through mobile devices has grown by 93.1% in each year. In 2016, 45.4% of online

TABLE 4

Top 7 countries by retail e-commerce sales worldwide (Unit: US\$ billion)

Country	2013	2014	2015	2016	2017	2018
1. China	315.75	426.26	562.66	714.58	871.79	1,011.28
2. US	264.20	305.65	349.06	394.43	442.55	493.89
3. UK	70.39	82.00	93.89	104.22	114.64	124.96
4. Japan	62.13	70.83	79.33	88.06	96.87	106.07
5. Germany	51.91	63.38	73.46	82.93	91.97	99.33
6. France	34.21	38.36	42.62	46.13	49.71	53.26
7. South Korea	29.30	33.11	36.76	40.43	44.07	47.82

Source: Nowak & Partner Co., Ltd. Republic of Korea Platforms / Marketplaces for e-commerce, Nowak & Partner

TABLE 5

Total retail & retail e-commerce sales in South Korea, 2013-2018 (eMarketer 2014) (Unit: US\$ billion)

Year	2013	2014	2015	2016	2017	2018
Total retail sales (A)	360.63	368.93	376.31	383.83	391.51	398.95
% of change	2.5	2.3	2.0	2.0	2.0	1.9
Retail e-com. sales (B)	29.30	33.11	36.76	40.43	44.07	47.82
% of change	12.6	13.0	11.0	10.0	9.0	8.5
B/A (%)	8.1	9.0	9.8	10.5	11.3	12.0

Source: Nowak & Partner Co., Ltd. Republic of Korea Platforms / Marketplaces for e-commerce, Nowak & Partner

Note: Sales exclude travel and event tickets but include products or services ordered using the Internet via any device, regardless of the method of payment or fulfillment.

shopping was made through mobile devices ([Table 6](#)).

In the Asia-Pacific region, South Korea also boasts the highest e-commerce penetration with a 72% active online shopping reach as of the fourth quarter of 2016. The most popular online shopping platform is auction and shopping mall 11st.co.kr, with more than 11 million unique monthly visitors in January 2017. The site belongs to SK Telecom, a telecom provider that is part of the SK Group, one of South Korea's largest chaebols and one of the most valuable brands. Other competitive e-commerce brands include online shopping malls such as Lotta.com and GS SHOP, online marketplaces Gmarket and Auction (both belonging to eBay), and social commerce brands including Coupang and Wemakeprice. Coupang was also the leading online store based on net e-commerce sales in 2016.

Customers have found many benefits in e-commerce activities. Above all, the quicker, the better is the consumers' attitude in evaluating the merits of e-commerce. As a result, the timeline of delivery becomes the key to success in online sales. For quicker shipping, some online malls started setting up their own logistics

TABLE 6

Size of mobile shopping market (Unit: 100 million won)

Year	2010	2013	2014	2016
Online shopping	252,030	384,979	384,979	538,883
Mobile shopping	na	65,596	148,698	244,645
% of mobile shopping	na	17	32.80	45.4

Source: Nowak & Partner Co., Ltd. Republic of Korea Platforms / Marketplaces for e-commerce, Nowak & Partner

system to attract more regular customers. Coupang and Wemakeprice are representative social commerce websites. They have expanded their business connectivity to the open market. Coupang introduced the “rocket” delivery system to ensure next-day delivery by setting up its own logistics system. As this strategy was successful, other online malls like Wemakeprice followed.

South Korean customers prefer a quick as well as simple purchase. The easier the purchase, the more customers line up. In general, payment for online shopping is made by credit card or a bank transaction. Recently, some online platforms have introduced their own payment system in order to simplify the process, such as Ssg Pay, Payco, Naver Pay, Rocket Pay, KakaoPay. With these quick delivery and simplified payment systems, the number of mobile shoppers in South Korea is growing rapidly. As a further update on mobile shopping, a recent report says that 56.3% of online shopping sales – totaling 3.43 trillion Korean won in value out of a total of 6.08 trillion won – were made through mobile devices in December 2016. Because of its small territorial size and high population density, South Korea has developed a good public transport system. Most city dwellers use public transportation every day. This living environment fosters the use of mobile devices, allowing urban dwellers to shop through numerous online shopping platforms.

Price matters critically for expanding e-commerce in South Korea. People are motivated to shop online to take advantage of discounts or sales, as well as convenience. For example, many local grocery stores offer a home delivery after shopping. Convenience stores run for 24 hours a day and are found every few hundred meters. But still there are many people who shop online because of the price bargains. Shoppers can now compare product prices in just seconds with a few clicks instead of searching around on foot. Besides the convenience, online consumers tend to be more concerned about the price. If the price is cheaper, customers tend to put up with a possibly longer delivery. South Korean customers also tend to shop online in overseas market for quality brands and cheaper prices than comparable domestic products.

To date, the Korean Customs Office has allowed private duty free imports for low-value items while commercial imports are strictly regulated. Global open market platforms have successfully branded themselves and give people the idea that if they do online shopping globally, they do it in a “reasonable market”. There are numerous online shops but major open market platforms attract higher numbers of frequent visitors on their websites. Normally, platforms are a better solution than launching an individual online mall. In 2016, the number of mobile shoppers overtook the number of online shoppers on PCs. Growing numbers of mobile shoppers prefer to

TABLE 7

Sales of major 5 open market platforms (Unit: 100 million won)

Major open market platforms	2010	2011	2012	2013	2014
Auction, Gmarket, 11 Street, Interpark, NShopping	1,220	1,330	1,490	1,639	1,840

Source: Nowak & Partner Co., Ltd. Republic of Korea Platforms / Marketplaces for e-commerce, Nowak & Partner

use a mobile platform to shop, advertising and selling items on major shopping platforms because it is less time-consuming and less effort.

Table 7 shows that the sales of the top five South Korean open market platforms have been growing rapidly. If a seller and a buyer have some disagreement on a deal, the market platform handles the situation so a direct conflict or dispute can be avoided. This grievance resolution scheme can be a huge benefit for both parties. It is difficult to say which open market platform is the best or most popular, as there are distinct platforms available for specific products.

E-Finance Development in South Korea

It is well known in the literature that e-commerce and e-finance are mutually reinforcing each other in their respective developments. E-commerce must involve e-finance. Currently, South Korea’s domestic mobile payments market is dominated by three big network operators – SK Telecom, KT and LG U+. In order to better enable e-commerce, FinTech needs to be employed for cross-border payments as well as all types of financial services such as insurance, wealth management, small business loans and logistics. In South Korea, many of the applications for FinTech for trade are still in the experimental phase but eventually need to be connected to a financial supply chain seamlessly incorporated with digital finance banking services.

An active e-commerce makes e-payments or e-transactions more appealing to businesses. E-finance in South Korea has evolved since the late 1980s when ICT started to be applied to the financial industry. Since the early 1990s, e-finance has led a paradigm shift as financial transactions in computer-based tools began increasing. It has been shown that asset size and operation costs were irrelevant for a bank to introduce Internet banking and that only profitability mattered (Choong Yong Ahn and Doo Yong Yang, “E-Finance Development in Korea”, *The Journal of the Korean Economy*, Vol. 7, No. 2, 2006). In 1987, Kookmin Bank first introduced the firm’s

e-banking system through the PC network bank and further introduced home banking in 1991. However, an Internet hacking incident in 1996 slowed a bit the diffusion of Internet banking. The cases of home banking increased from 147 million in 1995 to 460 million in 1999. By the first half of 2003, most commercial banks in South Korea provided various Internet banking services to both individuals and firms. Most banks lowered their fees for bank wire transfers when clients used the service through banking websites. The number of Internet banking users dramatically increased from only 120,000 in 1999 to over 20 million in the first half of 2003 and then leapfrogged to 140 million in the second quarter of 2018 according to the Bank of Korea. It should be noted, however, that the number of Internet as well as mobile banking users contains some caveats, such as a customer's multiple registrations at different banks and even at the same bank with different account numbers.

Despite the rapid development of Internet banking, mobile banking services grew slowly from 2000 to reach just 1.4 million mobile banking users in 2002, but jumped to about 100 million in the second quarter of 2018 as mobile phones become a must item for South Korean adults. All of 18 domestic banks have provided mobile banking services to deal with balance inquiries, account aggregations, loan services to cover redemption and loan interest payments. Among several factors conducive to e-finance development, South Korea's single standard mobile phone system in the form of CDMA played an important role in handling interoperability among telecommunication businesses. E-finance has extended to cover e-insurance and e-brokerage too. This can be attributed to several factors: a) an advanced IT infrastructure, b) the government e-commerce initiative, and c) financial restructuring during the Asian financial crisis.

Korea's Launch of World's 1st Commercial 5G Network

South Korea's three major telecommunication providers have just deployed the world's first commercial fifth-generation services. Together they began to send out the first 5G signals in South Korea on Nov. 30, 2018. The 5G is a next generation network designed to be at least 10 times as fast as today's 4G long-term evolution network, promising download speeds of up to 20 gigabits per second and a response time of less than 0.0001 second. The mobile carriers plan to deliver 5G services first by using mobile routers that enable connection to Wi-Fi devices rather than smartphones. The 5G services for smartphone users will become available in March next year.

Because 5G can handle large amounts of data with ultra-low latency, it is set to form the basis of many services requiring seamless connectivity, without lags, among humans and objects. SK Telecom plans to deploy 5G services in the Seoul metropolitan area as well as South Korea's six major cities with the network becoming available first to corporate clients in the manufacturing sector. The mobile carrier's first 5G client is an automobile component manufacturer, which will adopt SKT's 5G-AI machine vision solution that will collect and send high-definition photos from the production line to a cloud server. Any defects will be detected via artificially intelligent algorithms. The mobile carrier plans to install more than 7,000 5G network stations across South Korea by the end of 2018 and extend its 5G infrastructure to major cities before launching smartphone-enabled 5G services in March 2019.

Undoubtedly, the 5G network is the central vein connecting people to goods and goods to other goods in the age of industry 4.0, while AI will become the brain that seeks optimized solutions. The 5G network is likely to bring in leapfrogging development for B2B, B2C, G2B, G2C, etc. Another gigantic development of ICT is likely to have immense ramifications for domestic as well as cross-border e-commerce for South Korea.

Implications & Challenges Ahead

From the rapid development experiences of South Korea's e-commerce and ICT, some general policy implications and challenges ahead specific to South Korea could be drawn. E-commerce is characterized by non-face-to-face transactions to make it difficult for consumers and sellers to establish mutual trust early on. In e-commerce, consumers make purchases without directly identifying and examining the products they are buying. Due to this particular characteristic of e-commerce, it is of utmost importance to confirm the identities of the parties to transactions; thus, electronic authentication is a key factor in ensuring the reliability of e-commerce and needs to be addressed at the very beginning stage, and further needs to avoid any Internet hacking. It is very important to enforce a stricter policy not to allow any illegal counterfeited goods according to the intellectual property law.

To ensure the vitalization of the e-commerce industry, balanced development of infrastructure, social, and institutional systems is necessary. A massive proliferation of smartphones has given developing countries greater opportunity to share in the benefits of e-commerce. In this respect, e-commerce promotion policies in developing countries should prioritize the institutional systems that help build trust between buyers and sellers.

In addition, consumers in an e-commerce world face reliability issues that arise from purchasing products online. Therefore, e-commerce can never be vitalized unless the credibility of purchases is ensured. In order to establish an institutional system to resolve the credibility issue, developing countries should prioritize introducing e-authentication and consumer protection measures so as to foster trust between consumers and sellers.

Given proliferating global value chains where foreign value added keeps rising, cross-border e-commerce is one of the best ways to foster the growth and development of small companies. By joining in the cross-border value chains through e-commerce connectivity, SMEs are able to become the “micro-multinational” company. This would be achieved if governments put in place a supportive regulatory framework clearly aimed at fostering the growth of smaller firms. For this to happen, developing countries need to take a holistic approach to e-commerce by encompassing government, consumers, and e-service providers. In this regard, regulations must support the following activities: 1) delivery of goods including small-size and small-value shipments by new vendors and suppliers, 2) the delivery of services via the Internet, 3) smaller firms to access the widest range of Internet providers and information flow as freely as possible, and 4) timely payment in an affordable manner. In sum, regulations must be made clearly, simply, and as transparently and online as possible.

While e-commerce is making South Korea's retail sector grow quickly, traditional retailing channels are suffering. Consumers tend to go to traditional stores for window shopping but purchase goods at online retail sites for the best deals. One of the biggest trends in online retailing is convergence with other platforms. Internet portal sites, social network services, TV home shopping, etc. now all have online shopping functions and the popularity of their platforms is increasing since consumers want one-stop shopping that includes product reviews and price, purchasing, and paying with new online payment solutions associated with the platforms. It is important to induce this convergence phenomenon effectively.

Consumers who purchase goods online are becoming increasingly concerned with the preservation of relevant electronic records, misuse of electronic documents, and newly emerging issues in relation to advertising, shipping, prepayment, and so on. To deal with such issues, consumer protection must be exercised by providing institutional tools to prevent potential harm to consumers. In order to promote consumers' trust in e-commerce, developing countries should also adopt a subscription withdrawal measure and an escrow system and establish organizations such as an electronic trade dispute settlement committee to mitigate consumer harm in

e-commerce.

In order to minimize the current ongoing downside risks of slower growth and rising unemployment in an inclusive growth policy framework, South Korea faces several critical challenges. The first is related to how to maximize the renowned ICT capacities to trigger innovative growth. The second is how to ensure active participation in the rising supply chains, especially on the part of SMEs. In this regard, prevailing digital divide issues need to be addressed for the low-income bracket and unskilled and non-digitalized SME sectors.

Traditionally, large companies in South Korea have dominated its foreign trade because they have the capacity to transport and market their goods across borders. However, the rise in e-commerce means that micro-enterprises and SME platforms could be activated to ensure micro-trends such as micro-lending, micro-payments, micro-work and micro-multinationals across borders without the infrastructure of a large company. Many of South Korea's existing SMEs still have outdated technologies. According to the 2016 annual sample survey conducted by the Ministry of SMEs and Startups covering 124,165 SMEs, 25% of them have not yet installed a digital automation system while another 33% have just started to introduce a smart factory concept at a preliminary stage. As digitalization spreads, unskilled factory workers will lose their jobs to machines but the number of people qualified to work with these machines remains insufficient. Therefore, an innovative growth strategy should address skills training and digital manpower development.

The biggest problem with South Korea's e-authentication policy is the mandatory use of specific technologies, most heavily ActiveX technology which serves to hinder the development of new technologies and the growth of the industry in general. Therefore, developing countries should maintain technology neutrality and the dynamism of their private sectors, even when government intervention is necessary to establish trust between consumers and sellers early on.

E-commerce and e-finance development calls for the introduction of Internet only banking. Recently, purely Internet banking has been authorized for a couple of service providers as a preparation for industry 4.0. Actual launching of Internet only banking should be expedited with a proper legislative backup. Finally, South Korea should utilize its world-ranked ICT capacities, including the recent launch of 5G networks, to ensure innovative and sustainable growth.

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