

THE ROLE OF INNOVATION IN THE ECONOMIC DEVELOPMENT OF SOUTH KOREA

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Abstract: *The world is constantly changed by new scientific and technical discoveries, which benefit the developers of these technologies, the host states and, last but not least, the users. Of the many areas available, we have chosen the market of smartphones, more specifically the one of Samsung, a company which has constantly evolved and has been able to compete with Apple. This development has not only affected the company, but it also generated an increase in the formation of GDP in South Korea and, as a result, it impacted the country's economic development.*

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JEL Classification: *O1, O3, O5.*

1. South Korea - a short history of a nation's evolution

A nation that has still not yet reached its full potential, with a young and educated population, with an enviable standard of living even for many EU countries. More than 60% of South Koreans have university studies, with an enormous interest in education and school. With a growing GDP, South Korea has a promising future in the coming decades, being a country where you really feel in the future during this century.

Korea belongs to one of the world's oldest civilizations. The national history of the Korean people begins in the second millennium BC, with the founding of the Gojoseon kingdom on the banks of the Liao River in south-east of contemporary Manchuria. Not much is known about Altaic tribes, who were the ancestors of modern Koreans, but we know that in the fourth century, Koreans adopted Buddhism as a religion, along with Chinese writing, both having a profound effect on the native society. We now know, from the rich literature, that the Korean state has maintained its political and cultural independence despite the Mongol invasions of the 13th century and the Japanese invasions of the 16th century. In the fifteenth century, during the reign of King Sejong the Great, the first Korean alphabet, called Hangul, was created.

Korea, one of the oldest nations in the world, was unified for the first time in the 7th century BC. The state was occupied by Japan in 1905 and was annexed to it in 1910.

During the Second World War, Korea was promised independence after Japan's defeat. At the end of the war, Korea was split in two on the parallel of 38° north latitude. Soviet troops occupied the north side and US forces the south. The subsequent reunification efforts were in vain.

In 1947, the United Nations accepted elections for a new government. The elections took place in the south, and on 15 August 1948 the US Army withdrew and the Republic of Korea, with Syngman Rhee as president, was proclaimed.

On September 9, 1948, the government of North Korea, controlled by the Communists, proclaimed the independence of the Democratic Republic of Korea, led by Kim Il Sung. On June 25, 1950, North Korean troops attacked South Korea, trying to rebuild the country's unity.

The North Korean troops crossed the 38th parallel on June 17, 1950. The South Korean army was disorganized and did not have the necessary weapons to face the northern troops, and the American units in the Korean Peninsula did not count many soldiers, so they had to retreat to the south. Then, however, the world reacted to the invasion.

After all the statements of the Americans, it is likely that both Stalin and Kim Il-sung were surprised by the strong reaction of the United States. In fact, if the Soviet Union or China had expected Truman to respond with armed forces, these countries wouldn't have allowed Kim Il-sung to attack.

Also, they would have certainly not allowed the invasion to take place while boycotting the UN Security Council. Since the Soviets were not participating in the meetings of the Security Council, it could adopt a resolution approving a massive contingent to help South Korea.

Before this conflict ended, 50,000 UN soldiers (mostly Americans) were killed, and the two Koreas and China lost hundreds of thousands of soldiers and civilians. The war had never ended. North Korea and South Korea ended an armistice in 1953, but incidents between the two armies have been taking place up to the present day.

North Korea and South Korea became members of the UN in 1991 and signed a peace treaty in December. But the attacks between them continued. North Korea agreed to hold talks with South Korea, China and the US. Thus, negotiations began in Geneva on 9 December 1997.

In 2018, in his New Year message, Kim Jong-Un spoke to improve relations between the two Koreas. "We need to improve the North-South relations that are frozen and make this year a turning point in Korean national history," he said. Following was the acceptance of a resumption of dialogue between the two nations and North Korea's participation in the Winter Olympic Games, which were held in South Korea in early 2018, was decided.

These actions bring hope on both sides of the border that they will be able to reunite their territories, population and resources in the future because Korea's political division has left most coal and metal resources, most forests and hydroelectric power in North Korea. South Korea, on the other hand, has the best land for agriculture and a great workforce.

Education is a priority in the south, students start going to school at the age of six. The school year begins in March and ends in February. In terms of health services there are great many specialist doctors. Tourism is well developed, with Seoul - Toksu Palace, Kyongbok Palace, Changdok Palace, Secret Garden, Capitol Building, Great South Gate, Great East Gate, Seoul Tower. Other attractions include Kyongju Tumuli Park, Star Tower and Kyongju National Museum. The village near Seoul, Suwon, is a "living" museum. Cheju Island and Mount Sorok are also frequented by tourists.

Table no. 1. South Korea in digits

Indicators	Value
Population (2016)	50,9 mil.
Birth rate	16,1%
Mortality rate	6,3%
Population 65 years and older	6%
Population under 15 years	24%
Life expectancy	70 years for men, 77 for women
Rate of urban population	81%
Rate of illiteracy	2%
Univeristăți	127
University teachers	65.000
Students	1.200.000
Public libraries	200

Books in libraries	7.000.000
Physicists	54.000
Hospital beds	182.000
Access to drinking water	80% of population

Source: Romanian Culture Club of Korea, 2017. *Date importante despre Coreea*. [online] Available at: <<http://www.kccro.ro/en/date-importante-despre-coreea>> [Accessed 12 December 2017].

Korea has grown rapidly and has become one of the world's developed countries also because of its interest in education. Thus, as shown in Table 1, the number of students is very high, 1,2 million, with a large number of university professors, over 65,000.

The population the country is a young one, with a quarter of the population under the age of 15 and only 6% of the population aged over 65.

Since the Korean War, South Korea's economy has been relaunched with the help of the US in the mid-1960s, also receiving Japan's help. The annual growth rate was between 7% and 10% from the 1960s to the 1970s. In 1996, the annual growth rate declined, but South Korea was, however, among the developed states of the world. As in Japan, government and industry have played an important role in the country's development. South Korea is the third economic power in Asia, after Japan and China.

The manufactured products have an important role in the country's exports. The post-war industry focused on the manufacture of footwear and textile products. But South Korea has become a developed country, competing with countries like Japan in shipbuilding, automobiles, electronic equipment etc.

Seoul is the main industrial center, followed by Pusan, Ulsan (automobiles, shipbuilding, refineries) and Yochon (steel, petrochemicals) but many natural raw materials have to be imported.

After the Korean War, Korea began to also develop electricity networks, including the construction of nuclear plants, which produce 40% of electricity consumed.

About 21% is arable land; agriculture bringing 10% of national income. Rice is the main plant grown in the summer. Wheat, barley, corn, potatoes and sweet potatoes are planted in the dry season. South Korea's rice production, among the largest in the world, is achieved through intensive fertilization, irrigation, mechanization, and a strong cooperative system. Foods, including meat, are imported in large quantities. Soybeans, cotton, tobacco, ginseng, pigs, goats and silkworms are also grown. Fish, a traditional part of the Korean diet, is mostly fished from the Sea of Japan. Since the 1950s, fish production has significantly increased, South Korea ranking third (after Japan and China) in Asia for fish production. Forests occupy around 66% of the country but intense deforestation has recently begun.

The main rail link connects Seoul, Taejon, Taegu and Pusan. A second main line starts from Seoul and continues south and then to the west, and a third goes to the east coast. A large network of motorways and other transport routes have led to a decline in railways. Roads, metro and many sports facilities were built in preparation for the 1988 Olympics, which were held in Seoul and recently those of January 2018, which were held in Pyeongchang.

The length of the roads is 6,559 km and the length of the railways is 78,833 km. In total there are 11 big ports and 4 big airports. There are also good services in

communications. South Korea has 3 Intelsat stations. Daily publications in South Korea are around 100. There are 84 AM stations and 53 FM stations.

The key to South Korea's success is foreign trade, which has grown enormously since the 1960s. South Korea exports: textile, machinery, ships, electrotechnical products, automobiles, rubber products, canned fish, porcelain, and the main imported products are: oil, petrochemicals, chemicals, raw materials.

2. South Korea and North Korea - countries at opposite poles

After about 70 years of tensions, the conflicts remained constant between South Korea and North Korea. There was no official end to the war, but a truce between them, from which the North Koreans retreated in 2013. The Korean War of 1950-1953 has caused disasters for both sides, and this memory seems to be the reason why none of the two states plan another major attack.

In his memoirs, US President Truman summed up views on this war: *"All the decisions we have made in connection with the Korean War have taken into account this objective: the prevention of a Third World War and the terrible destruction it could bring to the civilized world. This meant that we should not do anything that would give the Soviets the pretext and throw the free nations into an open, large-scale war . "*

But the speculators analyzed the fighting capabilities of the two countries and launched the predictions of a possible war. Who would be declared winner?

Both North Korea and South Korea are currently some of the world's most powerful military forces. With about 3,5 million soldiers, South Korea currently has one of the most numerous armies. Even so, South Korean troops are few compared to the five million North Korean soldiers and other five million available in the event of prolonged war. According to North Korea policy, people must put the army above all, even before the food, fuel and other resources. Enrollment is mandatory so that all North Koreans can have a minimal military experience.

Although it owns 605 combat aircraft and 43 warships, North Korea's technology is outdated and faded compared to the military resources of the southern peninsula. From a technological point of view, South Korea is considered one of the most advanced countries in the world. In addition, gross domestic product is 50 times higher than the one of North Korea, making South Korea's defense investments about five times higher than their neighbor's.

The military alliances played a very important role so far. If the North Koreans can't even count on China, the only foreign support they have received during the Korean War, the strong link between South Korea and the Americans is what would change the fate of a new military conflict. The 30,000 soldiers sent by the United States to the South Korean territory, but also the 3,800 people in Japan and the 5,700 in Guam represent, along with the air force in the region, the detail that could make the difference.

A North Korean attack would give them the surprise advantage, but only for a few days. Placed in the mountains of the border, North Korea's artillery, one of the most powerful in the world with about 10,000 pieces in the arsenal, would remain hard to detect and strong for only four days. Allied air forces would have trouble penetrating North Korea, Pyongyang itself being a real fortress. However, US devices would quickly establish the airborne superiority in the region and destroy the Nordic command points. The next target of the alliance would be North Korea's infrastructure - the destruction of bridges and roads, especially those linking the capital and the border, which

is the strategy that would make Nordic troops unable to withdraw. Also strategic is the stage where Americans would launch humanitarian packages outside large cities to attract non-combatants outside the conflict zones, thus lightening their way to regime representatives.

According to studies by military analysts, despite a successful start, North Korea would lose a possible war with its southern neighbors. That does not mean, however, that they would not be capable of massive destruction of conventional weapons in Seoul, South Korea's capital, just 57 km from the border, and in nearby areas. One of the mysteries of this war remains, however, North Korea's decision to use nuclear weapons. Although North Korea threatens to own them, there is no evidence that they have been successfully tested.

The huge losses left by such a war in the Korean Peninsula would mean for South Koreans and Americans a victory only in history textbooks. In fact, war damage and the cost of rebuilding the North Korean state infrastructure, which the Kim regime ignored for over 60 years, would cost them about 2 trillion \$.

There are many other issues that support the differences between the two countries.

1. Dynasty versus Democracy

Since 1948, North Korea has had only three leaders, while South Korea has had 12.

2. Access to technology

Only 3,2 million people in North Korea have mobile phones (one in ten people). However, there are 58,9 million people in the neighboring country who own such a device.

3. Road conditions

North Korea has about 25,554 kilometers of roads. Of these, only 3% are paved, equivalent to 724 km. It is also estimated that only 11/1000 of North Korean have a car. In South Korea, the percentage of paved roads is 99%.

4. Exports

North Korea is dependent on coal exports to keep its economy afloat. In contrast, South Korea depends on integrated circuits exports.

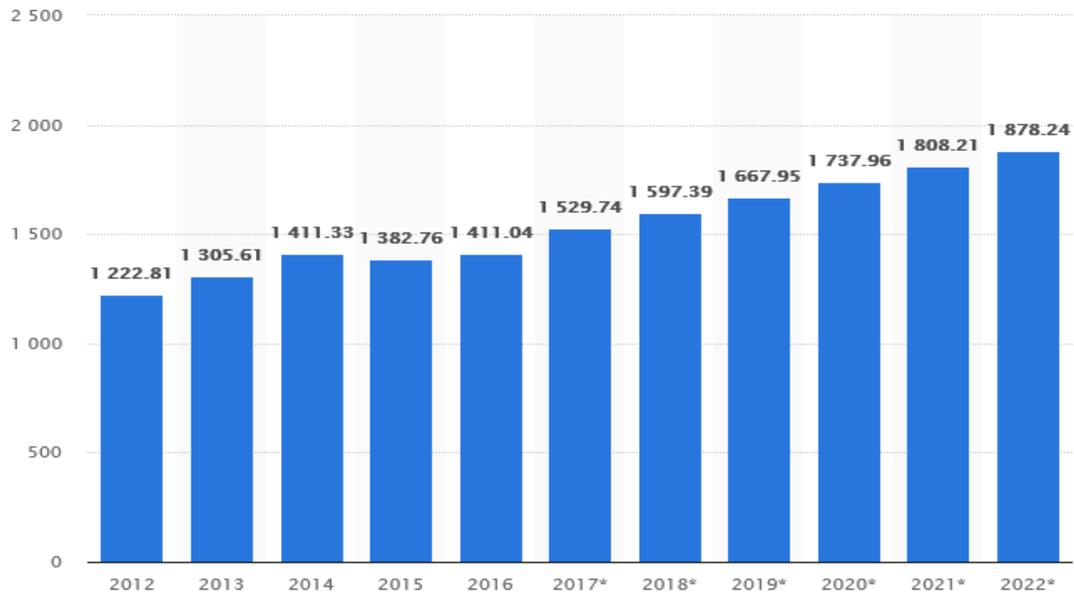
5. Life expectancy

Life expectancy in North Korea is 67 years, and in South Korea it is 77 years.

The differences are extreme in terms of GDP. North Korea has a population of 25 million and a GDP of 40 billion \$ (1,600 \$ per resident), while South Korea has 50.9 million citizens producing a GDP of 1,934 trillion \$, ranking 14th in the world and 37,900 \$ per resident. Practically, the southern economy is 21 times higher than the economy of the north.

The explanation for this big difference is easy. In South Korea there is a market economy, democracy and freedom, while in North Korea there is a centralized economy, communism and an oppressive regime at the extreme.

Chart no. 1. Evolution of Gross Domestic Product in South Korea, 2012-2022 (trillion \$)



Source: Statista, 2017. South Korea: *Gross domestic product (GDP) in current prices from 2012 to 2022*. [online] Available at: <<https://www.statista.com/statistics/263579/gross-domestic-product-gdp-in-south-korea/>> [Accessed 12 December 2017].

The historical evolution of GDP was one of natural growth until 1987, but nothing spectacular. In 1987, South Korea's GDP was somewhere at 100 billion \$, and we can assume that the GDP per resident in the North and South was roughly the same. It is worth mentioning that real data on the economic performance of the North, like any communist country, are questionable. Foreign investment in South Korea began to rise after 1990, and the economy has boosted. When communism flopped, the role of the USSR (Russia) became insignificant in the world and China emerged from the sphere of influence of the USSR and began their own foreign policy.

But still South Korea was not what it is today, it was far from it. In 2007, the US, the old ally of the South, concluded a free trade treaty with it, and since then foreign investment has grown dramatically, propelling the South Korean economy. Russia recovered from the fall and has started to recover global status. In 2016, foreign direct investments in South Korea reached 21 billion \$ (the second consecutive year with over 20 billion \$). During this time, North Korea was under American sanctions and was not allowed to sell or buy anything.

The US and South Korea have been strategic partners since the 1950s, but when the USSR fell, and China became independent, the US felt the need to give economic impetus to its ally. And only in 2007, when Russia was reborn from its ashes, the US helped South Korea become what it is now. Because the US fears nothing more than the Chinese reunification plan of the two Koreas: losing an important ally, a military base, much of the influence it now exerts in the Asia Pacific and an essential military lever against China and Russia if it is the case.

China and Russia are potential candidates for being the world superpower, as they are heads of BRICS countries that have decided to pull the dollar off the market as an international currency (and thus kneel and crash US economy forever). Any failure in any part of the world is potentially disastrous for the United States, and the US war now covers all levels: the attempt to destabilize the BRICS. Since 2016, Brazil has a non-elected pro-American president, appointed by Parliament, after a major corruption scandal that forced the resignation of the elected president, Russia was attacked by Ukraine, China was visited by the South China Sea traffic with the attempt of a control of the traffic of Southern China, where all Chinese export takes place and which the Chinese want to protect at all cost.. India is actively courted by the United States. If Syria had the outcome desired by the US and today Islamic state flags would flutter in Damascus, Iran would be next on the list. and from Iran, the way would be open to "Islamic springs" from the provinces of Russia, which include an important Muslim minority. The American plan to maintain its hegemony over the world does not imply friends, but only vassals and enemies, as it turned out in the recent history of the world.

3. The role of innovation and the implementation of new technologies in economic development and the expansion of the phenomenon of globalization

Globalization means expanding the principles of market economy, democracy, civil society and human rights as a sign of economic and social modernity, without the valuable traditions of every people losing their importance in a modern society. Mentality, according to which the principle "or / or" applies, opposing exclusivity, globalization and localization, diversity, ignoring the role of tradition and continuity, can only be perishable and inappropriate to the realities and prospects of the development of the contemporary world.

Microprocessors and Telecommunications

One of the most important breakthroughs of the last century is the microprocessor, which has made it possible to upgrade high-power computers and reduce costs, enabling companies and individual users to process a much larger amount of information. The microprocessor is also attributed to the evolution of the telecommunications system. In the last 30 years, telecommunications have revolutionized the improvement of satellites, fiber optics and wireless technologies, and now also by the Internet and the international web (network) system. All of these technologies are based on the power of the microprocessor to encode, transmit and decode a huge amount of information that circulates between these electronic networks. The cost of microprocessors continues to decrease as their power increases (a phenomenon called Moore's Law, which states that the power of microprocessors doubles and the cost of production drops by half every 18 months). This means that, and the total cost of communications is decreasing, making the control of a global organization more accessible.

The Internet

The Internet is the last expression of development. In 1990, less than 1 million people were connected to the Internet, while in 2000, over 330 million users were registered, of which over half were only in the United States of America. There are currently more than 3.2 billion global users.

From practically nothing in 1994, the value of transactions made for websites exceeded 300 billion \$ in 2003, only in the US. Companies like Dell Computer make over 4 million \$ a day using transactions based on website sales or creation, while Cisco Systems, a much larger corporation, can make \$ 20 million a day.

At the same time, the value of international transactions concluded through websites increases. From a global point of view, the Internet has an equalizing role. It makes access to information possible as well as transactions, without the impediments created by the time difference, standards, geographical distance. The website allows large or small businesses to expand their businesses at the lowest cost. Through the website, the seller and buyer can meet more easily, regardless of their size, where they are and at any time of the day.

Technology transfer

In addition to the development of communications technology, there have also been some major innovations in its transfer. From an economic point of view, the most important was the development of commercial aircraft and the introduction of containers, which simplifies the transport, loading and unloading of goods from one place to another. Practically, by introducing aero-ships, travel time has been considerably reduced and the planet has become a smaller and more familiar place. From the point of view of travel time, New York is now closer to Tokyo than it was to Philadelphia in colonial times.

Container usage virtually altered transport economy by reducing goods transport costs over long distances. Prior to containerization, the loading and unloading of the goods involved very high costs and a lot of labor involved in the process. Sometimes, it took days or even weeks, to unload the cargo from the ships and then loading into trucks or trains took place. And with that, hundreds of people were needed for the whole operation. Now, all these operations are running in a maximum of 2 days and with only a few people.

As a result of the introduction of the containers, in the 1970s and 1980s international goods forwarding around the world became more profitable, with prices now being particularly advantageous. This contributes to the globalization of markets and production. In the United States, for example, the cost of rail goods transport has fallen from 3 \$ / ton in 1985 to 2.4 \$ / ton in 1997, and only because of the use of containers.

As we say, due to technological innovations, the real cost of processed information and the cost of communications has dramatically fallen over the past two decades. Due to the use of containers, the transport costs associated with the globalization of production have also diminished. These things make it possible for a corporation to lead a globally dispersed production system, facilitating the globalization of production. Transnational companies have numerous subsidiaries all over the world. A satellite communications system enables it to carry out all the activities on a global scale: production planning, accounting costs, financial planning, marketing, public relations and human resources.

Developing of technologies has led, in addition to globalization of production, to the one of markets, as well. If transport cost reduction makes shipping easier around the world, the Internet and the web help create global electronic markets.

Globalization of the world economy is worrying, the loss of national culture and identity is theorized, or even more, the dissolution of nation-states, but this does not seem to be yet an acute problem. The nation states need corporations as much as corporations need countries - markets, to do their business in. Globalization is based on the formation of interdependencies, the connectivity of which is currently becoming increasingly diverse in the context of constantly developing network structures. A part of the quality of life is influenced by the quality of our networks, so by paraphrasing Marshall McLuhan, in the contemporary world, we form our networks and later they form us.

In the economic and business networks, the engine is the technology that can be used normally or abusively. As an example, we mention the case of mobile phones, which, economically and sociologically, are a day to day reality.

Not mobile phones as such, they transform the world as a whole, but small groups of individuals linked and intertwined by technological networks, especially through mobile communications that not only mediate information and analyzes but also behaviors that can be positive or negative. As evidenced by Howard Rheingold, "*the longest-running social effects of technology have always gone beyond the quantitative efficiency of making old products faster or cheaper. The most profound transformational potential of connecting social-human inclinations, to the efficiency of information technologies, is the chance to produce together new things, the potential for cooperation on a scale and in ways that have never before been possible.*"

Through the interdependent and functional networks they create, globalization offers the potential of new and unprecedented economies of scale that obey the laws of mathematics, exponent, and power, denigrating economic considerations that until recently have been considered immutable.

Under the conditions of globalization, based on innovation, information and the communication technology, the principle of efficiency has radically changed in the sense that the more participants in an information network, the chances of economic and social efficiency are greater, provided that the requirements of certain laws globalization-specific. In this regard, it is worth mentioning Newton remark : "to master nature, you must obey it."

Thus, entrepreneurs and inventors can master networks, provided they know their laws and obey them. Knowing the system of laws governing nature, society and the economy is an essential condition for acting transformer, not against, but in the sense of this system.

Even though globalization is governed by the laws of networks that still do not know how future technologies and economic choices will be dimensioning, we can now speculate that it will cause more individuals and institutions to be connected in the future, the more networks.

From a theoretical and methodological point of view, the investigation of the effects of globalization on the dependencies and efficiency of national economies implies a system of quantitative and qualitative tools, techniques and methods, for each analyzed field, so that a complete scoreboard of strengths and weaknesses, opportunities and threats can be seen.

South Korea is one of the most appropriate examples, as we have argued earlier, to support the important role of innovation and introduction of new technologies in economy, with aid of the state, but also with important transnational companies such as Samsung, LG or Hyundai.

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