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CONTINUAL GROWTH, INHIBITORS, AND IMPLICATIONS OF INFORMATION COMMUNICATION TECHNOLOGY IN SOUTH KOREA FROM A NORTH AMERICAN PERSPECTIVE

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Abstract

Despite their late development into the information communication technology (ICT) market, several countries in continental Asia have emerged as technological and industrial leaders in the world. With its information communication technology (ICT) initiatives and policies, South Korea has emerged from its chaotic history as one of Asia's most advanced ICT economies. It could be argued that South Korea has made the same technological progress in 30 years that took the United States to do in over 100. However, rapid growth cannot be achieved without difficulties along the way. The current research presents the ICT growth of South Korea along with factors inhibiting future growth. While South Korea has advanced through government initiatives and diligence among a hard-working society, new initiatives, including the Blue Ocean strategy must be established in order to sustain its competitive advantage. A review of inhibitors limiting continued growth is presented with recommendations for overcoming these limitations.

Keywords: Information Communication Technology, Growth and Inhibitors.

# 1	INTRODUCTION

Asian countries such as China, Japan, and South Korea once lagged behind the West in information community technology (ICT). In spite of their late development and entry into the market, the Asian countries have been able to take the lead as technological and industrial powerhouses with the implementation of the 4G technology by its wireless operators and with the assistance of government ICT initiatives and policies. Among the Asian countries, South Korea has emerged as one of Asia's most impressive post-crisis growth surprises (McKinsey Quarterly, 2010). New figures released by the International Telecommunication Union (ITU), an agency under the United Nations, rank South Korea as the world's most advanced ICT economy (ITU, 2011).

Having suffered massive damage to its economy and infrastructure from not only the Japanese occupation but also World War II and the Korean War of the 1950s, South Korea was able to slowly transform its war-ravaged agricultural economy to an industrial powerhouse. The South Korean government quickly implemented initiatives in its infrastructure for export-led growth with the help of the United States government. The South Korean government was able to modernize and industrialize quickly by leveraging information and communication technology, and by laying the foundation for its Internet infrastructure. The government's direct intervention of spurring the economy's growth has been stimulated by implementing the economic policies through strong incentives to businesses among other policies. The result was exponential – South Korea's gross domestic product (GDP) expanded by more than 9% yearly between the mid-1960s and the mid-1990s.

South Korea has gone from being an underdeveloped country with a chaotic history, at best, in 1980 to one of the world leaders in technology today (Hwang and Jun, 2008). This transformation occurred very rapidly, and when compared to the United States, one could argue that South Korea has made the same progress in 30 years that the United States did in 100 years. Granted, South Korea was able to take advantage of the progress already made over the previous half century; nonetheless, it took a lot of hard work and dedication for the country to position itself where it is today. According to Hwang and Jun (2008), South Korea had a wired phone penetration rate of 7.2% in 1980 and by 1987, there was an average of one phone per household. South Korea has also made great strides in the area of fiber optics and LAN connectivity by having the highest penetration of fast speed networks as seen in Figure 1.

In the 1990s, the Korean government began promoting privatization and deregulation, particularly with the information technology sector. Thus, a series of ICT initiatives were launched, beginning with Cyber Korea 21 program in late 1990s, bringing together government functions related to ICT and the broadcasting sectors. The government's rationale for this policy of nationwide promotion of information and communication technologies is that a country with a lack of natural resources, like South Korea, must move quickly toward a knowledge-based economy if it is to compete with established economic powers (NCA, 2002).
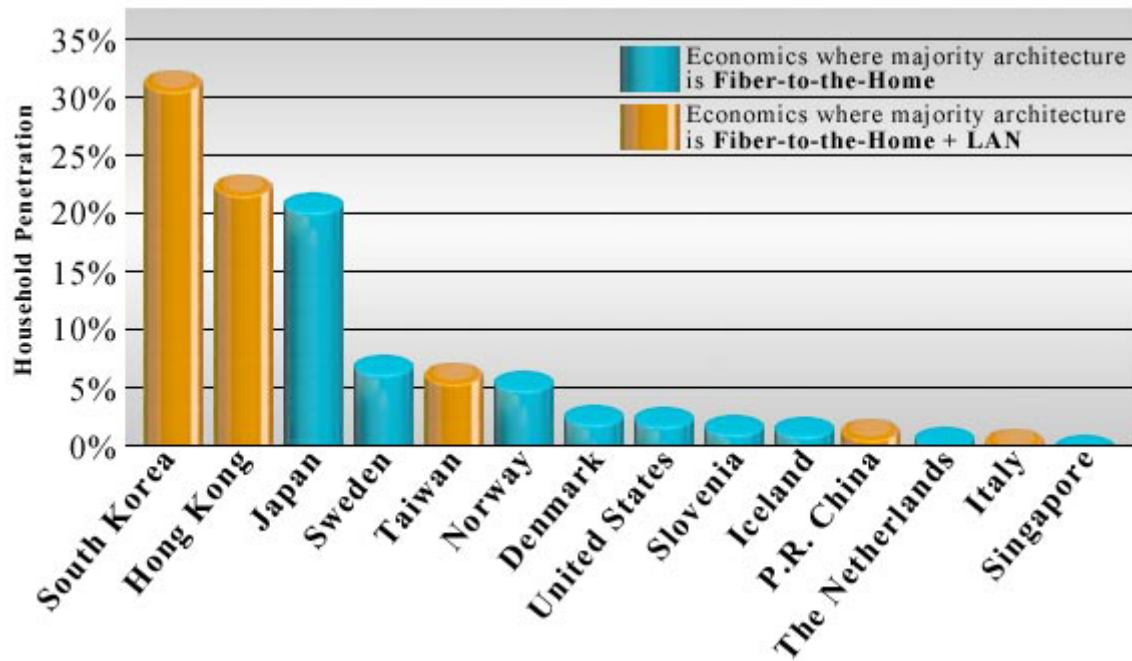
Figure 1.   Economies with the Highest Penetration of Fiber-to-the-Home / Building + LAN

The government had established the Ministry of Information and Telecommunications (MIC) in 1994, with the goal to pursue a policy of high-speed telecommunication infrastructure as a foundation to build a "knowledge-based society." By the 21st century, more than 48% of South Korea's real GDP was spent on the ICT industry with an increased focus on promoting the latest technological developments and infrastructure. The Korean National Information Society Agency (NIA) established the Korean Information Infrastructure initiative (KII) in 1994 to advance the nation's IT infrastructure. Soon thereafter, the government followed KII with a series of programs that combined government loans with private sector contributions, including Cyber Korea 21 in 1999, e-Korea Vision 2006 in 2002, Broadband IT Korea Vision 2007 in 2003, and the Broadband Convergence Network (BcN) and IT 839 initiative in 2004 (also called the "u-Korea Master Plan") (Freedom House, 2011).

With one of its latest initiatives rolling out, "u-Korea Master Plan", South Korea seeks to build the first ubiquitous society and position itself as a world leader in information technology (Lee et al, 2008). The country not only has the highest number of broadband connections per capita in the world, but also the world's highest rate of WiFi hotspots per capita, with 55,000 hotspots in place throughout the country as of 2010 (Yonhap News, 2010). The figures fall just behind the United States with 94,000 hotspots and China, which has 81,000 such zones. According to the regulatory body, the Korea Communications Commission (2011), there were over 51 million mobile phone subscriptions as of 2012, exceeding the total population of 49 million. Based on the mobile operators' forecasts, the number of smartphone users reached 30 million by 2012, and in Seoul, more than 80% of residents will own a smart gadget by 2015 (Yonhap News, 2012). This initiative includes innovative services

such as WiBro, digital multimedia broadcasting (DMB), telematics, RFID, and W-CDMA. In terms of mobile devices, South Korean global company Samsung has improved sales and become number one worlwide while the average mobile device sales in general has fallen. Table 1 shows recent worldwide mobile terminal sales to end users.

Company	2012 Sales	2012 Market Share (%)	2011 Sales	2011 Market Share (%)
Samsung	90,432.1	21.6	69,827.6	16.3
Nokia	83,420.1	19.9	97,869.3	22.8
Apple	28,395.0	6.9	19,628.8	4.6
ZTE	17,936.4	4.3	13,070.2	3.0
LG Electronics	14,345.4	3.4	24,420.8	5.7
Huawei Device	10,892.2	2.6	9,026.1	2.1
TCL Communications	9,355.7	2.2	7,938.9	1.9
HTC	9,301.2	2.2	11,016.1	2.6
Motorola	9,163.2	2.2	10,221.4	2.4
Research in Motion	7,991.2	1.9	12,652.3	3.0
Others	137,233.4	32.8	152,989.7	35.7
Total	**419,007.90**	**100.0**	**428,661.15**	**100.0**

Table 1.   Worldwide Mobile Terminal Sales to End Users (thousands of units)
Source: Gartner (August 2012)

South Korea's growth is not limited to just telecommunications; they have also developed one of the world's most connected societies with the fastest average Internet speeds in the world. Currently, all primary, middle, and high schools have access to broadband with all major cities being connected by fiber optics. Current Internet speeds in South Korea reach up to 100 Mbps with an increase to 1 Gbps by 2012. There was a reported 3 million Internet users in 1998, which increased to 40 million users - by 2012. Korea's technological advances have also been magnified by national exposure that the country has received over the past three decades. By hosting the Olympics in 1988 and co-hosting the World Cup in 2002, Korea has gained further international attention to the success and advancements in the technology sector propelled forward as a country. Further exposure has been demonstrated by winning the bid to host the 2018 Winter Olympics. In addition, many Korean global companies such as Samsung Electronics, LG, Hyundai Motor, SK Holdings, POSCO, and KIA have become familiar household names due to their success with their product penetration in various markets throughout the world as well as through the marketing publicity through endorsements of professional athletes. However, rapid progress cannot be achieved without some mistakes and growing pains along the way. The purpose of this paper is to present ICT growth, factors affecting ICT growth, inhibitors, and implications of Korea's ICT.

2   FACTORS AFFECTING GROWTH AND INHIBITORS

There are several factors that can be attributed to the growth of ICT in South Korea as well as inhibitors that must be overcome to sustain growth in the future. Over the past decade, numerous studies have dealt with ICT hotbed, and lead in mobile services in South Korea (Lee, 2003; Shim, 2005). The current section evaluates these growth factors and inhibitors in order to evaluate the growth of South Korea and make recommendations for future advancements. The case of South Korea also could serve as an example for other countries as they continue to make social, technological and economical advancements.

2.1   Factors affecting ICT Growth

2.1.1   *South Korea's test bed for ground-breaking technologies*

Korea's broadband network is the fastest and most developed in the world. Korea is the optimal test bed for ground-breaking technologies. Of particular note, out of all of eBay's 40 operations around the world, Korea is the third largest market in revenue for eBay Inc., only behind the U.S. and Germany. In the cellular phone field, QualComm, Inc. chose South Korea to be a test bed for Code Division Multiple Access (CDMA) technology, since Korea was an ideal size for test bed and reception check, due to the high population density and the country 's small territory size.

2.1.2   *Korean consumers' early adopter behavior*

In general, Asian people are early adeopters. Among Asians, most Korean people are culturally similar in their penchant for fashion, brand name retail items. When one looks at a faster growing rate of fashionable goods market in South Korea, such as Zara, H&M, and Forever 21, it is easy to tell how early and widespread the Korean consumers' adoption is. The Korean consumers' behavioral patterns are those of early adopters' technology.

2.1.3   *Speed-up and hurry-up culture*

Korean people live in an intense "speed-up and hurry-up" culture where all processes are sped up. It is a fast paced society that has been built on rapid growth and explansion. This view also applies to a wide range of behavioral patterns from acquiring the latest model of mobile devices, smart phones, and digital multimedia broadcasting. This hurry up culture circumvents the early adopter nature of Korean culture.

2.1.4   Korean parents' support of their children's needs in ICT and Korea society's education value

The Korean parents' primary focus is on furthering their children's education, like most Asian parents. The parents' support of their children's wants and needs includes not only their children's pricey handsets, but also extends onto their children's cell phone bill. This is driven by their desire for parents to want their children to be the best. The need to attend the best school, have the high grades and spend long hours studying to achieve these goals push parents to keep thier children up to date with the latest and greatest technology available.

2.1.5   Pervasive and ubiquitous technology infrastructure

The required technology infrastructure is pervasive in South Korea. South Korea was the first country to commercialize CDMA. With standardization, South Korea was able to differentiate itself from other countries. Ubiquitous Korea Plan aims for a friendly government that meets citizens' needs through constant wired and wireless access that is incorporated into their daily lives. It is the desire of Korean government to be the first truly uquibitous society in the world.

2.1.6   Korean government's aggressive ICT planning

With the Korean government's push and drive to meet huge consumer demand for electronics, Korean conglomerates ("chaebols") use aggressive IT planning to implement cellular technology and the Internet. The Korean government's initiatives have permeated through every segment of telecommunication, which has worked well to ensure that ICT has been growing steadily .

2.1.7   Population density with excellent reception and advanced voice quality

As mentioned earlier, South Korea is densely populated compared to the widespread and vast land of the Western hemisphere.The smaller land size and close proximity of cell towers provide most Korean people with an excellent cell phone reception and advanced voice quality. The cost per customer due to highly dense population allowed for cheaper implementation giving South Korea a significant competitive advantage over larger countries that are more spread out such as the United States.

2.1.8   Korean government's subsidies to support development and to foster new technologies

The Ministry of Education as well as theScience and Technology of Korea decided to allow cellular service operators to subsidize handsets to support development, foster new technologies, and to encourage new services.

Over the past three decades, Korea has made tremendous headways in the ICT sector with much success. However, there are five major inhibitors to Korea's ICT continued growth. The authors' analysis indicates that the following factors are inhibitors to Korea ICT's continued growth.

2.2   Factors Affecting Inhibitors

2.2.1   Lack of Access for Foreigners

One problem facing Korea internally is the lack of access to products and information for foreigners. In 2012, Korea's population exceeded 50 million people with more than 1 million being foreigners. By limiting access to foreigners to several products, services, and information, a large number of potential customers are being overlooked. For instance, there are three major cell phone providers (i.e., KT, SK Telecom, and LG) in Korea and only one of them offered service for foreigners until 2012. That means that there were over one million customers that the other two companies were not trying to capture. As the world continues to globalize, local companies should also prepare to compete in a global market by offering products and services to foreigners and compete against foreign products. Additionally, numerous websites in Korea are inaccessible to foreigners due to the unavailability of English translations on their websites. In 2011, only 20 of the top 40 most visited websites in South Korea were locally owned and operated. Due to expanding globalization of other websites and web services, these Korean companies are not only failing to capture a global market but are also losing traction in their own market. Table 2 lists the top 20 most visited Korean websites and their ranking on the Top 40 list in South Korea as of 2011 and how thier ranking has shifted by the beginning of 2013. As of 2013, only 10 of the top 50 most viewed websites were locally owned and operated. The table also depicts which websites has the availability of English translation for non-Korean speakers.

As shown in Table 2, only six out of Korean hosted websites listed offer English translations. This further limits the access to information, products, and services in Korea as it looks to expand globally. Additionally, many websites that offer English translations often suffer from either outdated English translation of their websites, or the sites have many English mistranslations, which leads the information to be confusing at times. This problem became the disastrous misfortune of one major Korean company known as Cyworld as it tried to enter the global market. Cyworld difficulties will be dicussed more in the next section.

Website	2011 Rank	2013 Rank	English Available
Naver.com	2	5	No
Daum.com	4	9	No
Nate.com	8	22	No
tistory.com	11	18	No
Cyworld.com	13	85	No
Chosun.com	14	28	Yes
Donga.com	16	21	Yes

Blog.me	19	49	No
mk.co.kr	20	63	Yes
dcinside.com	22	66	No
hankooki.com	23	59	No
gmarket.co.kr	24	39	Yes
hankyung.com	27	60	No
auction.co.kr	28	54	No
egloos.com	29	74	No
mt.co.kr	30	50	No
cafe24.com	31	97	No
asiae.co.kr	32	83	No
paran.com	35	NA	No
me2day.net	38	NR	Yes
ppomppu.co.kr	NR	45	No
11st.co.kr	NR	51	Yes

Table 2.   *A Comparison of Top Korean Websites From 2011-2013*

NA – Not Available (website no longer exists)

NR – Not ranked in the top 100

2.2.2   *Inability to Operate in a Global Environment*

The early 2000s gave rise to a new form of communication in the area of social networking. Korea was ahead of its time with the development of Cyworld, an online community site, in 1999. In the U.S. market, Facebook joined the social networking realm in 2004 when MySpace was at the forefront. In 2006, Cyworld decided to enter the global market, which was also the same time that Facebook opened its doors to the public, allowing access to anybody with a valid email address. Three years later, Cyworld closed their doors in the United States market due to their inability to acclimate the American market to its Korean-style social networking (Ali, 2009). Other reasons for Cyworld's failure in the U.S. market include many spelling and grammatical errors on the website due to poor English translations and the inability to connect to Cyworld Korea (Chen, 2009). Cyworld had the potential to compete with Facebook before its popularity exploded, but due to Cyworld's inability to operate in a global environment, it turned out to be an opportunity that was missed. As of 2013, Facebook flourished as a global social networking site with over 980 million users as of January 2013, including 9.8 million users (27% increase over the past six months) in South Korea (Socialbakers, 2013). A listing of the top 10 most visited websites in South Korea is displayed in Table 3.

Website and Rank	Origin	*Page Views	*Views/User	*Time on Site
1. Baidu.com	China	+10.47%	+3.49%	-2%
2. QQ.com	China	+1.79%	-11.32%	-10%
3. Google.com	U.S.	+17.4%	+13.1%	+12%
4. Facebook.com	U.S.	+12.6%	+10.35%	+9%
5. Naver.com	Korea	-3.01%	+6.5%	0%
6. Youtube.com	U.S.	+9.37%	+3.5%	+7%
7. Taobao.com	China	+34.28%	+3.1%	+4%

8. Google.co.kr	Korea	+6.4%	+28%	+8%
9. Daum.net	Korea	-7.47%	+6%	0%
10. Google.com.hk	Hong Kong	+6.4%	+28%	+8%
85. Cyworld.com	Korea	-32.99%	-24.16%	-3%

Table 3. *Website Rankings in South Korea and Usage Statistics*

*Percent change over three previous months

Cyworld was previously the dominant social networking site in South Korea but has fallen significantly and is currently the 85th most visited website in South Korea compared to Facebook that ranks number four. Statistics outlining the page views, views per user and total time on each website over the previous three months are also displayed. The most significant change among the websites listed is the dramatic increase in Facebook usage compared to the dramatic decrease of Cyworld usage. Facebook users spend an average of 30 minutes per day on the website compared to only 5 minutes per day for Cyworld users (Alexa, 2013). China's Baidu and Google from the U.S. has over taken Korea's Naver.com as the dominant search engines and are currently ranked first and third respectively on the top visited websites in South Korea.. Seven of the top ten most viewed websites in South Korea are non-Korean companies (note: Google.co.kr is an American-based company operating locally in South Korea).

2.2.3   Lack of Nourishing Creativity and Insightfulness

It is understandable that there would be difficulties at times competing in a global market considering the rapid growth of Korea within the past 30 years. While a handful of major companies such as Samsung, LG, Hyundai, and KIA are flourishing, other companies are still trying to gain traction to carve out a global footprint. Now that Korea has positioned itself as a global contender in the technology arena, it's time to shift away from solely working hard and copying what others have done and creating an environment for it to nourish creativity and insightfulness in order to rise to the top. In order to do this, Korea's youth will need to learn to think more creatively and out-of-the-box rather than only working diligently.

Historically, the Korean education system has been based on Confucianistic ideology articulating traditional values coherent to societal expectations (Shin and Koh, 2005). The educational foundation is based on replication and reiteration of knowledge rather than the development of new ideas. The Korean education system has created uniformity within the educational programs with the primary focus aimed at preparation for the college entrance examination (Kim, 1999). Many students participate in additional studies through private lessons after the completion of their normal school day. Private lessons are viewed as an effective means for preparing students to gain higher scores on the College Scholastic Ability Test for entering college (Kwak, 2004). These private lessons often provide repetitive drills that help students memorize knowledge needed for standardized tests.

2.2.4   Lack of Creativity and Differentiation Strategy to Copy

As mentioned above, curriculum is developed to prepare students solely for taking the college entrance examination, often neglecting to enhance student's creativity and critical thinking abilities (Kim, 1999). This has developed an atmosphere where success is often sought after through an individual's ability to copy an existing strategy and do it better than others rather than creating a new strategy. It is common to see a copy strategy rather than a differentiation strategy. For instance, if there is a coffee shop in an area that is successful, then others will open up coffee shops in the same area with the belief that they, too, will have the same success. Over time, the market gets saturated with coffee shops, leaving very few with the ability to be successful. Instead of differentiating themselves from other coffee shops, owners will attempt to compete by lowering prices until profits are diminished and/or they are no longer able to operate. Restaurants and coffee shops in Korea have a high turnover rate with very few operating longer than one year.

2.2.5   Severe Imbalance between Hardware and Software Sectors

The burgeoning growth of the ICT sector became increasingly imbalanced as the government's initiatives placed an overemphasis on the hardware sector, which led to the weak performance of the neglected software sector. According to Jung (2009), this is the reason why Korean handset makers hold roughly 25% of the global market share while Korea's telecommunications services and software sector account for a mere 2% of the global market. For the past several decades, the growth of the ICT industry has stemmed from too much concentration placed on the hardware sector, which focuses on expanding wired and wireless telecommunication network penetration rather than the software sector, which creates innovative applications and value-added services (Jung, 2009). To correct this severe imbalance between the disproportionately placed concentration between the hardware and software sectors, the Korean ICT industry as well as the Korean government must shift its focus from the continued constructing of the network infrastructure to leveraging cutting-edge services and applications to its advantage. This method will be conducive to providing a balanced approach in enhancing the competitiveness among the players in the market and increase innovation in areas of opportunities such as content, applications and solutions, as well as expanding the scale of ICT infrastructure, with a balanced focus on the hardware and software sector, for the country, industry as well as the consumer.

3   TWITTER, GOOGLE, IPHONE/IPAD, AND FACEBOOK ENVIRONMENT

There has been a burgeoning virtual explosion with the smart technology over the past decade. The technology provides instantaneous mobile access to any app or feature at the touch of a finger. It is undeniably one of the most influential modern-day inventions that have become available to this

generation. Smart technology-based products are not only multi-functional but also versatile devices, as it provides real-time accessibility to anyone, any time, anywhere and anything in addition to time-saving applications. With users' physical worlds and virtual worlds intertwining, users increasingly find themselves immersed in the Twitter, Google, iPhone/iPad, and Facebook environment, with an increasing need to stay connected to others via the most currently updatedsmart technology. The smart technology-based products are widely used in Asia, North and South America, Europe, and depending on other regions. Korea is no exception in this regard. Within the U.S., organizations are using this technology to reach their customers and connect with them more intimately than ever before. The use of organizational Facebook pages and smartphone applciations has further increased the customer relationship management focus that is fueling customer centric trends in business.

Additionally, a number of business schools in the United States, Europe, and Pan-Pacific have begun testing and incorporating mobile devices, particularly iPads and Android tablets, into teaching and learning in a classroom setting. University administrators want to see if the use of such devicesis really the next stage in the evolution of teaching and learning. Recently, Angst and Malinowski (2010) found it striking that students feel that the iPad: i) encourages exploration of additional course topics, ii) provides new functions and tools, iii) helps time management, iv) increases learning, and v) makes courses more interesting. In addition to understanding electronic learning devices, more practically oriented ICT education (capstone courses such as ICT projects) should be delivered to course curriculum.

It makes sense that students will gravitate toward using social media. The 21st century workplace most definitely demands such skills as social media, business analytics, cloud computing, and mobile technology. Many students, if not most, are consumers of social media, mobile technology, business analytics, and cloud computing. What Korean students possess, which is beneficial in the global market, is their strong command of the English language. Many Korean students have spent countless years studying and perfecting their English ability with a great number of students going abroad for additional learning. This knowledge of a global perspective and cultural diversity provides a unique opportunity for the future of Korea as it continues to grow globally.

While South Korea is a world leader in technology, many organizations have fallen behind in the implementation of technology within their organizational structure. The lack of globalization is currently putting local companies at a competitive disadvantage as international companies continue to enter the Korean market. The penetration of Twitter, Google, iPhone and Facebook (TGIF) has overwhelmed many companies trying to compete while non-competing companies have failed to use these technologies to thier advantage.

4　　IMPLICATIONS AND RECOMMENDATIONS

While South Korea as a country has been a beacon for technological advances, many local companies have fallen behind in implementing these opportunities into their corporate strategy. With high speed internet and ground breaking mobile technology at their disposal, many Korean companies

still do not have a web presence use to engage and build relationships with their customers. Many of the companies that do have a presence on the Internet do not offer an English version needed to compete in a global environment. During the early years of the Internet in the U.S., many companies gained a competitive advantage by creating a website to provide access to company information or products to their customers. More recently, it has become a competitive disadvantage for companies that do not have a web presence.

Companies in South Korea that create a web presence can enjoy a local competitive advantage against other Korean companies the same as U.S. companies did in the early years of the Internet. However, due to mass globalization as a result of Internet technologies, local companies are forced to compete in a global environment due to their customers having access to alternative products from around the globe. This is further fueled by the hurry-up culture of South Korea and customers wanting instant access to information and products at their own convenience. Local companies risk losing customers to international companies due to not having a web presence. Therefore, it is recommended that companies in South Korea divert more attention to implementing new technologies to engage their customers beyond their physical locations. In addition, creating an English version, and even translations in other languages, would help further reach customers and grow local organizations as South Korea continues to globalize.

The next recommendation revolved around the educational system in South Korea as they seek to build upon their recent success and look to the future. While it took hard work and diligence for South Korea catch up in their development and become a world leader in technology, measures must be taken in order to continue the success that has already been achieved. Currently, the Korean education system is build around memorization and hard work. These are virtues that helped South Korea get to where they are today. While hard work and diligence can be useful as a follower trying to gain ground on the leader, it takes innovation and creativity to maintain a leadership position when there is no one left to follow. Now that South Korea has become a leader in technology, the education system needs to start providing the youth with skills needed to be the future leaders of business. Many Korean students possess the ability to be innovative and creative; they just need the curriculum to help bring those abilities out nurture their creativity. As early adopters of technology, many Koreans have shown the willingness to be a leader and use technology. The education system needs to take advantage of these characteristics and utilize the technology available to foster creativity. With exchange programs already in place, Korean students can learn from a global perspective and increase their leadership abilities to further guide South Korean companies in the future as global leaders.

5   CONCLUSION

As discussed earlier, the Korean government's commitment, economic policy initiatives, and push for IT strategy and long-terms goals have led the country to be the center of innovation for the 21st century. This presents opportunities for the cutting-edge consumer whose early adopter behavior lends itself to ever-changing decisions. This provides a perfect testing ground for Korean handset

manufacturers, to mobile operators, to test the latest form of technological development. The adversities faced by Korea's ICT sector will benefit the less developed countries or other developed countries to take note of the important factors to advance a country's ICT business.

Although there are some inhibitors, successful ICT stories in Korea provide implications regarding the potential of the government's initiatives, future trends and differences in propelling the ICT sector forward, shifting to mobile data applications. Since Korea is a leader in every segment of telecommunications, social networking, and broadband technology, exploring the Korean ICT success and inhibitors will reveal meaningful trends in this area, particularly for less developed countries. Just as business has evolved and grown in Korea, it will also have been beneficial for the education system to also grow and nurture the creativity of its youth who will be the future business leaders of Korean organizations. Especially, South Korea incoming government announced plans for the named Ministry of Future, Creativity and Science. Although there is growing concern over a supersize Ministry of Future, Creativity and Science to be established, the authors believe the pros outweigh cons.

We're in a stage of radical change and heightened competition, especially ICT. Recent news on Google's purchase of Motorola, and Apple's lawsuit against Samsung showed clearly the uncertain future of the mobile and smartphone market. In fact, it is hard to predict the future trends of the global mobile market. However, we should understand how important it is to have a "must-have" patent for each country's growth. For instance, interoperability within the mobile operating systems standard is a good example (e.g., Google's widely accepted Android). In sum, understanding the factors which are affecting the growth and inhibitors of ICT will give good implications for developing and less developed countries.

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