



CELL PHONES IN NORTH KOREA

Has North Korea Entered the Telecommunications Revolution?

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TABLE OF CONTENTS

INTRODUCTION	7
NEW TRENDS	11
Controversy Over Subscriber Growth	11
Actual Number of Users	14
Who Can Subscribe	15
Handsets	17
How North Koreans Use Cell Phones	19
Rate Plans	21
Coverage and Call Quality	24
North Korea's Mobile Network Technologies	26
SOCIO-ECONOMIC CONSEQUENCES	29
Korean Spring?	29
Economic Beneficiaries	31
THE REGIME'S CALCULATIONS	35
The Great Leap Forward and 'Strong and Prosperous Nation'	35
Surveillance	37
Clawing Back Foreign Currency	40
ORASCOM'S FUTURE IN NORTH KOREA	43
Koryolink's Financial Performances	43
Market Outlook	46
Uncontested Divorce?	47
CONCLUSION	53

INTRODUCTION

The North Korean regime has maintained an iron grip on its society over the past decades by essentially isolating its people from the outside world. However, maintaining a total restriction on information access has become an increasingly tough challenge for the regime since the late 1990s, when a massive number of people starved to death due to a widespread famine. Before the famine, the state dominated food distribution, keeping people subservient and immobile for fear of losing their only access to sustenance. However, since the collapse of the public [food] distribution system (PDS), the government can no longer monopolize the information available to its population, as North Koreans seek ways to survive on their own.¹

With increasing marketization supported by cross-border traders and smugglers, substantial numbers of North Koreans are able to access outside media brought into the country from China. Exposure has not been limited to foreign TV and radio but has also included USB drives, MP3 players, and DVDs containing foreign, mostly South Korean, dramas and movies. In addition, smuggled Chinese cell phones have allowed people in the border areas, where mobile reception from China is available, to talk to relatives and friends in China or South Korea. Many defectors in South Korea communicate with their families back in the North by delivering these illegal mobile phones through brokers. These cell phones have also made it possible for some South Korean organizations to collect information directly from inside North Korea. In an attempt to crack down on the illegal flow of information into and out of North Korea, the North Korean authorities have tried to confiscate cell phones smuggled in from China.²

Concurrent with its crackdown on Chinese cell phones, the North Korean regime has shown strong support for its own domestic cell phone service provided by Koryolink, the North's only official cellular network, since late 2008. While North Korea banned cell phone use and confiscated registered cell phones without compensation within two years of Thai firm Loxley Pacific's launch of 2G GSM mobile service in late 2002, the 3G W-CDMA mobile service by Koryolink has been able to operate uninterrupted by the government thus far.³ Moreover,

¹ Nat Kretchun and Jane Kim, *A Quiet Opening: North Koreans in a Changing Media Environment*, (Washington, DC: Intermedia, May 2012).

² "N. Korea seizes mobile phones to curb news: report," *Agence France-Presse*, May 1, 2011.

³ There was a report in early 2012 that the North Korean government had warned citizens they would be branded as "war criminals" and punished accordingly if caught attempting to defect or use cell phones during a 100-day period of national mourning for the death of Kim Jong Il. Orascom announced that the report was not true. It seems that the ban, if there was

business is now booming for Koryolink, and cell phones have become a daily necessity to its more than two million subscribers, contrary to initial speculation that mobile service would be provided only to a few privileged individuals.⁴ As of the end of the third quarter of 2011, the service is available in Pyongyang and 100 cities, covering 14% of North Korea's territory and 94% of its 24 million people.⁵

This is a remarkable development in a country where the average monthly wage for factory workers is around 3,000 North Korean won, or less than 50 cents at black market exchange rates.⁶ Since the majority of North Koreans cannot afford the prepaid call charges, let alone buy the handsets, the reported subscriber rate has led to controversy. Is this a realistic number? Is there a difference between the number of actual users and subscribers?

Whether or not the two million subscribers is an accurate count, anecdotal evidence suggests a dramatic increase in cell phone users in North Korea. Even the lengthy and bothersome application process and high price of handsets have not suppressed this growing trend. Why are North Koreans so eager to get cell phones? What is the impact of growing cell phone usage on the economy and society? Which segments of the population are most influenced by cell phones and have seen the biggest changes in their lifestyles accordingly?

Meanwhile, mobile telecommunications service is a double-edged sword for the North Korean government. It provides a tool to potentially support economic development, by allowing the state to control production, establish standards, and coordinate between the capital and more remote areas of the country in ways that were not previously possible. This could be an innovative way to increase productivity and efficiency for the dysfunctional planned economy. On the other hand, historically, cell phones tend to strengthen individuality and social movements, provide an opportunity for dissent and eventually lead to political upheaval, such as the 2001 "text-message revolution" in the Philippines and the Arab Spring in the Middle East. How has the North Korean government solved this political and economic dilemma? What are the driving forces for and calculations behind the regime's support of its advanced handheld information distribution system?

Surprised at the pace of subscriber growth, observers question whether this growth is sustainable. What are the potential market drivers and the major challenges for Orascom, the Egyptian telecom company that holds a 75% stake in Koryolink? In addition, Orascom's willingness and ability to maintain its investments in North Korea is another important element for the future of North Korea's mobile telecommunications industry. North Korea and Orascom initially cultivated a relationship built on solid ground, with North Korea granting a 25-year license with exclusive access for four years and with Orascom committing an unprecedented scale of investments in the country's infrastructure. Are there any significant developments that could affect the future of this partnership?

This research is based mainly on interviews with North Korean defectors and South Korean experts with reliable sources in North Korea. From July to October 2013, I conducted in-depth interviews with twelve defectors who are

any, was aimed at illegal Chinese cell phones. See "North Korea cell phone ban report incorrect," *North Korea Tech*, February 15, 2012.

⁴ Orascom Telecom Media & Tech Holding (OTMT), "Koryolink Reaches Two Million Subscribers," OTMT press release, May 28, 2013.

⁵ Orascom Telecom Holding, "Earnings Release Third Quarter 2011," November 14, 2011.

⁶ For average salaries in North Korea, see Andrei Lankov, *The Real North Korea: Life and Politics in the Failed Stalinist Utopia*, (New York: Oxford University Press, 2013), pp.124-6.

now settled in South Korea, on their cell phone usage while in North Korea. The defectors are from Pyongyang, Chongjin (North Hamgyong Province), Musan (North Hamgyong Province), Hoeryong (North Hamgyong Province), Hamhung (South Hamgyong Province), and Hyesan (Ryanggang Province). The interviewees defected from North Korea between March 2010 and March 2013. While the sample size is relatively small, the interviews form some essential themes that are central to the study of cell phone usage in North Korea. I also cross-checked information with defectors who maintain contacts in North Korea. Most of the South Korean experts I interviewed in Seoul in July 2013 had to remain anonymous to avoid exposing their sources.

NEW TRENDS

Controversy over Subscriber Growth

Mobile communications in North Korea had been available strictly for the military and senior Korean Workers Party (KWP) officials until November 2002 when Thai firm Loxley Pacific⁷ launched commercial mobile services in Pyongyang and the Rajin-Sonbong (now referred to as Rason) Special Economic Zone (SEZ) near the Chinese border. Northeast Asia Telephone and Telecommunications (NEAT&T), a joint venture between Loxley Pacific and [North] Korea Post and Telecommunications Corporation, provided 2G GSM service under a 30-year license. NEAT&T expanded its coverage to several major cities, including Nampo and Kaesong, provincial capitals, and major highways between Pyongyang and Hyangsan, Pyongyang and Kaesong, and Wonsan and Hamhung, with the estimated number of subscribers reaching around 20,000 at the end of 2003.⁸ However, North Korea abruptly announced a ban on cell phones across the country and began confiscating devices, following a massive explosion at Yongchon Station in North Pyongan Province in April 2004 that allegedly targeted a train carrying then leader Kim Jong Il and was triggered by a remote-controlled wireless handset.⁹

After a four-year ban on cell phone use, North Korea resumed service in December 2008. The 3G service was launched under the name of Koryolink by CHEO Technology, a joint venture between the Egyptian telecommunication firm Orascom (75%) and Korea Post and Telecommunications Corporations (25%). The Koryolink network penetrated the North Korean market in a relatively short period. The number of subscribers stood at only 1,694 in the first year but rose to 91,000 at the end of 2009. Koryolink reached one million subscribers in February 2012 and hit two million in May 2013, doubling its subscribers in 15 months.¹⁰ As of the end of the third quarter of 2011, Koryolink's network consists of 453 base stations, covering the capital city of Pyongyang, as well as 14 main cities and 86 smaller cities. Network coverage also extends to more than 22 roads

⁷Loxley Pacific is a joint venture between Loxley Teltech of Finland, a subsidiary of Thai telecommunications giant Loxley Public Co. Ltd., and Charunghai of Taiwan.

⁸Stacey Banks, "North Korean Telecommunications: On Hold," *North Korean Review* (Fall 2005): pp.88-94.

⁹Some argue that the regime used the pretext of a train explosion to crack down on the expansion of cell phone use along the Chinese border. See Peter Nesbitt, "North Koreans Have Cell Phones—Why cell phones won't lead to revolution and how they strengthen the regime," Korea Economic Institute, *Joint US-Korea Academic Studies: Emerging Voices*, Vol. 22 (2011).

¹⁰Earnings Releases 2008-2011 by Orascom Telecom; Orascom Telecom Media & Tech Holding (OTMT), "Koryolink Reaches Two Million Subscribers," OTMT press release, May 28, 2013.

and highways. Even though the network covers only 14% of the territory, 94% of the North Korea's population can be served by the established Koryolink network because the majority of the country is mountainous and scarcely populated.¹¹



Source: Orascom Telecom, 2008-2011 Earnings Release; OTMT Press Releases, February 2, 2012 & May 28, 2013

This growth is a remarkable development, considering the authoritarian regime has relied heavily on isolating people from each other and curbing the spread of information as a means of controlling society. Executive Chairman of OTMT, Naguib Sawiris, has taken pride in Koryolink's landmark achievement, explaining, "When we first acquired the license in North Korea, people thought the service will only be provided to a few privileged individuals. We are very proud today to witness our subscriber base in North Korea increasing at a growing rate, emphasizing the right of the North Korean citizens in DPRK to communicate."¹²

Some may describe North Korea's cell phone boom as a "telecommunications revolution," given that only an estimated 10% of North Korea's approximate 1.1 million landline phones are accessible to individuals or households.¹³ According to a *Daily NK* report in 2011, approximately 60% of Pyongyang citizens aged 20-50 use cell phones. For the younger generation in their 20s and 30s, as well as the merchant community, a cell phone is seen as a necessary item.¹⁴ It is noteworthy that, as early as the second quarter of 2010, Koryolink succeeded in penetrating medium to medium-high value customer segments, specifically within the teen and young adult segments.¹⁵

¹¹ Orascom Telecom Holding, "Earnings Release Third Quarter 2011." No additional information on Koryolink's operational performance, except for a brief press release and media interviews, is publicly available, after Koryolink ownership was transferred from Orascom Telecom to Orascom Telecom Media and Technology Holding (OTMT) in 2011.

¹² Orascom Telecom Media & Tech Holding (OTMT), "Koryolink Reaches Two Million Subscribers," Press release, May 28, 2013.

¹³ Alexandre Mansourov, "North Korea on the Cusp of Digital Transformation," Nautilus Institute, November 2011.

¹⁴ Park Jun Hyeong and Lee Seok Young, "Phone Handset Prices Fall as Users Rise," *Daily NK*, May 20, 2011.

¹⁵ Orascom Telecom Holding, "Earnings Release First Half 2010," August 12, 2010.

While statistics are scarce and difficult to verify, anecdotal evidence indicates that there has been a dramatic increase in the number of cell phone users in North Korea. Many foreign visitors have reported seeing ordinary people, including teenagers and construction workers, using cell phones on the streets not only in Pyongyang, but also in other major cities. The gadgets seem to have become a common sight, at least in the major cities.

This boom has occurred despite the fact that an extremely restrictive cell phone regime was again adopted when Koryolink launched their 3G service in late 2008. According to a former Pyongyang resident, the service was initially only available to senior officials at security agencies and their families and officially recognized traders involved in the business of earning hard currency. Party cadres and workers at military factories were excluded from the service for security reasons. In the first year or two of Koryolink service, only powerful people or those who were rich enough to bribe the distributors could acquire the handsets, due to limited supply. A woman who defected from Hoeryong says she managed to obtain a cell phone in 2009, when females were not permitted to subscribe to mobile service, by bribing security officials. Defectors said senior Party, government, and military officials, along with wealthy traders, were the initial customer groups.

As the government adopted a more permissive regime, and as a certain level of wealth began to emerge, ownership of cell phones began to depend more on one's ability to afford them, except for applicants with serious security clearance problems. Party, government, and military cadres accumulated wealth by accepting bribes or engaging in business through their public offices. It is no wonder that "Pyongyang's 'golden couples' consist of a government-official husband and an entrepreneur wife."¹⁶ The rise of informal markets also contributed to the development of a proto-middle class or the new rich who could afford cell phones.¹⁷ For the new rich, cell phones have become not only a symbol of wealth, but also a means of survival. They provide traders with greater mobility and more efficient ways to exchange market information, including prices and exchange rates. Cell phones have become popular not only in major cities, but also in some towns and villages where residents are actively involved in trade with partners in larger cities. For example, residents in rural areas where gold mining or farm produce trade is booming can no longer imagine doing business without cell phones.

A popular financial source for purchasing cell phones is remittances from defectors, mostly those settled in South Korea, to their families left in North Korea. The annual amount of remittances is estimated at around \$10 million.¹⁸ Incoming funds from South Korea have become so significant that they have been dubbed the "Mount Halla Stream," named after the South's tallest mountain.

Prestige is another important driver for the popularity of cell phones among North Koreans. A man from Chongjin who defected in December 2012 said that cell phones had become so popular that a young man without a cell phone was not treated well and could not even find a girlfriend. "Considering the high prices of handsets, it is obvious that only those who 'regularly eat meat' can afford to buy one," he said. Even those without significant income are selling their assets or hard-earned crops to buy handsets to show off their own "wealth" or for their

¹⁶ "Also available to earthlings," *Economist*, February 11, 2012.

¹⁷ For informal economic activities and the new rich in North Korea, see Andrei Lankov, *The Real North Korea: Life and Politics in the Failed Stalinist Utopia*, (New York: Oxford University Press, 2013), pp. 82-93 and 91-2.

¹⁸ "Concern as remittances to N. Korea grow," *Chosun Ilbo*, February 7, 2011.

children who want to bond with their cell phone-using friends. As in other countries, cell phones have become status symbols, signs of prosperity, and one of the most noticeable examples of conspicuous consumption in North Korea.

Actual Number of Users

Although there is growing testimony by defectors and foreign visitors about the boom in cell phone use in North Korea, Koryolink's reported two million subscribers is controversial. Some experts argue that it is unlikely Orascom would deliberately overstate its subscription numbers. As an international telecommunications company, its operational performance reporting has serious implications for its investor relations and tax issues. However, others remain skeptical that the number of actual users has indeed reached two million.

Considering the demographic breakdown of North Korea's 24 million people, this skepticism is not without reason. For example, there are at least one million soldiers in North Korea,¹⁹ who are prohibited from using cell phones for security reasons, and three million children under 10 years of age,²⁰ who may not be old enough to legitimately use cell phones. Subtracting those populations from the two million subscribers means that Orascom is reporting that one out of every ten North Koreans is using a cell phone. Considering Pyongyang is the most wealth-concentrated city in the country, one could believably speculate that at least one out of every five people is using a cell phone in the capital city. Skeptics point out that this does not make sense for a country where GDP per capita is estimated to be as low as \$1,800.²¹

However, one could also argue that the less developed a country is the more likely its people are eager to possess cell phones as an alternative to their dilapidated landlines. In the case of North Korea, cell phones have become one of the most coveted properties, making them the latest and most prevalent example of conspicuous consumption. In addition, low-income people who cannot afford their own cell phones share one with their family, friends, or colleagues. As in other poor countries, if individuals in rural areas were renting out their cell phones, this would expand the number of actual users, despite high associated costs.²²

Some North Korea economy experts attribute the potentially overstated user figures to Koryolink's complicated rate plans. Those with sources in North Korea explain that a growing number of heavy users, such as traders, have started to use more than one phone to save money. While the handsets themselves are expensive, a basic subscription allows 200 "free" minutes per month for a quarterly service charge of around 3,000 won (less than 40 cents at black market exchange rates²³). After using up the 200 minutes, subscribers can only add minutes with top-up cards purchased in foreign currency; these cards can cost as much as 10 to 20 times more than the basic charge (for example, up to \$10 for 200 minutes). Consequently, some users have determined that using more

¹⁹ South Korean Defense Ministry, *Defense White Paper 2012*, December 2012.

²⁰ Central Bureau of Statistics of North Korea, *DPR Korea 2008 Population Census National Report*, 2009.

²¹ 2011 estimate. Central Intelligence Agency, *World Fact Book*, last updated February 3, 2014, <https://www.cia.gov/library/publications/the-world-factbook/geos/kn.html>.

²² Peter Nesbitt, "North Koreans Have Cell Phones—Why cell phones won't lead to revolution and how they strengthen the regime," Korea Economic Institute, *Joint US-Korea Academic Studies: Emerging Voices*, Vol. 22 (2011).

²³ According to *Daily NK*, black market exchange rates in Pyongyang, Sinuiju, and Hyesan steadily rose until reaching \$1=8,000 won in late 2012 and have stayed at the level ever since. See "Market Trends," *Daily NK*, <http://www.dailynk.com/english/market.php>.

than one phone, thereby receiving multiple 200 “free” minutes at the basic rate, is more economical than using only one phone and paying for multiple top-up cards. Of course, this requires extra handsets, but the extra upfront costs can be recovered over time.

Since North Korean authorities do not allow people to own more than one cell phone, registering under family members’ names or other fake names is a common practice. Registering under a fake name also helps create some level of anonymity for more sensitive conversations. Even if the authorities were to detect the conversation by eavesdropping, the identity of the real user would not be revealed. Extra phones, as is the case in most countries, can also be used for illegal or criminal activities.

Another factor potentially inflating Koryolink’s subscriber rate is that there may be a significant number of cell phones distributed by the Party, government, and military organs for official use. Heung Kwang Kim, Executive Director of North Korea Intellectuals Solidarity and a former professor at Hamhung Computer Technology University, argues that up to one quarter of registered cell phones are for official use by the Central Party, state administrative agencies, state agencies with special missions, the police, the military, courts, and so forth.²⁴ He claims that the call time is very limited for these phones. A defector who worked for a trading company in Musan says some trading companies, including Green Pine Association Corporation (Chongsong Yonhap) which is on the UN blacklist, purchased cell phones with their own official funds and provided them to their employees on business trips to Pyongyang and Chongjin. A former Central Party official in Pyongyang explains that senior Party officials are provided cell phones for official use. These testimonies suggest that a certain number of Koryolink customers would use more than one cell phone—one for private and one for official purposes.

Experts note that high-ranking officials rarely use their cell phones for fear of being surveilled by foreign intelligence agencies. A North Korea IT specialist states that there are many inactive cell phone numbers, presumably allocated to the power elite in North Korea. For example, only 800,000 numbers showed active traffic in February 2012 when the Koryolink subscriber rate rose to 1 million. This specialist suspects that part of the 200,000 inactive numbers was reserved for fast-track communication lines going directly to the leadership.²⁵

Who Can Subscribe

Obtaining a cell phone can be a worrisome process. Potential buyers must visit the Communications Technology Management Office (CTMO) in major cities or its branches in smaller cities to obtain an application form. However, bureaucratic inefficiency and corruption often make it difficult for the average person to simply obtain a form. Unless they are in powerful positions or have a network of associates in the CTMO, applicants may have to pay a “processing fee,” preferably in foreign currency, to a CTMO staff member.²⁶

²⁴ Heung Kwang Kim, interview by author, Seoul, South Korea, July 2013.

²⁵ For the reporting system dedicated to Kim Jong Il, see Ken E. Gause, *Coercion, Control, Surveillance, and Punishment: An Examination of the North Korean Police State* (Washington, DC: Committee for Human Rights in North Korea, 2012).

²⁶ Jiro Ishimaru and Jin-su Lee, “Report on Digital and IT Conditions in North Korea (I),” *Rimjin-gang*, June 2012.

Once the form is completed, applicants must obtain a stamp of approval from their workplace or municipal administrative office. This form also requires a stamp of approval by the State Security Department or the Ministry of State Security and the Ministry of People's Security assigned to the applicants' workplace or local people's unit. To gain this approval, applicants must explain to the officers about the purpose and financial source of the purchase. Those who cannot be frank with the officers bribe them or their superiors. One defector said that a person was once jailed after carelessly confessing that he obtained his money through theft. Of course, officers are always looking for any excuse to delay the approval process and extract payments from the applicants.

After all approvals have been acquired, applicants must submit the stamped forms to the CTMO, or its equivalent. Application processing can take up to a month. Defectors from Hoeryong and Chongjin say that at least throughout 2009, security clearance checks were performed only at the local level. However, since then, the stamped form must be sent to the Ministry of Post and Telecommunications in Pyongyang for final approval. Upon receiving notice of final approval, applicants can take the completed application to the post office or telegraph and telephone office and purchase the cell phone of their choice.

If the supply is limited, then an "expediting fee" is required. A defector from Pyongyang said that in the first year of the Koryolink service, some applicants had to pay an extra \$50 to purchase cell phones. A defector from Chongjin claimed some people who bribed the local State Security Department officers were able to acquire a SIM card number from them and easily purchase cell phones at the post office without having to go through the month-long application process.

For those who want to own a cell phone without having to go through the lengthy, bothersome application process, registering under a fake name is available for extra fees. Intermediaries loitering around the CTMO or its branches can shorten the processing period down to one or two days.²⁷ They register tens of phones under bogus names before selling them at higher prices than offered by the Ministry of Post and Telecommunications. Impoverished people in rural areas let intermediaries use their names for registrations in return for a small amount of rice or money. Households without any problem getting official approval mobilize the names of their entire families to acquire phones and then sell them to the intermediaries. Although illegal, the practice has become increasingly common, as the demand for cell phones has risen quickly.

North Korean authorities have responded to the widespread use of illegal phones by removing the restrictive regulations, at least in the border cities with China. According to defectors who continue to contact their relatives in Chongjin and Hyesan, since early 2012, applicants have been able to obtain both cell phones and phone numbers on the same day they register with the CTMO. Another defector who maintains contacts with his sources in North Korea also reports the same deregulations in Sinuiju, Hyesan, Chongjin, and even Pyongyang. Pre-approvals from the security agencies are no longer required. These days, the CTMO passes on all the information to the security agencies for the necessary security checks after the sale. Some CTMO officers can be bribed to sell handsets with registered phone numbers. Then, the buyers can finish the registration procedure and make calls on the same day.

²⁷ Ibid.

At the onset of cell phone use in North Korea, children and youngsters had to register under fake names because only the head of household and his spouse could legally use cell phones. As the demand for cell phones dramatically increased, even spouses were prohibited from registering for a while, due to handset shortages. However, according to defectors who regularly contact sources in North Korea, the authorities now allow the subscription of minors, although the registration procedure is more complicated. In these cases, the head of household needs to accompany the minor and submit additional paperwork to the CTMO for his/her application.

Handsets

North Korean cell phones for Koryolink subscribers are available in four handset types: bar, folding, sliding, and touch screen. The latest touch screen phone is the most coveted because of its convenience, but few can afford it. It costs as much as \$700, while some lower quality phones are available for \$350-400, according to defectors²⁸ and news reports.²⁹ The cheapest bar phone is the most-used type, costing as little as \$150. The purchase price of the handset includes the registration and activation fees. Prices seem to have fallen since the Koryolink service was launched. Handsets were originally put on sale for around \$1,000. A defector from Pyongyang states that in 2010, the bar phone, nicknamed “Handsome Guy,” cost \$250. Additionally, the folding type was the most expensive, costing as high as \$630 and was very much in demand because it was convenient and good for showing off. Interestingly enough, the touch screen phone was less expensive, costing \$380. He says touch screen phones easily broke down and were bothersome because they often became activated while stored in pockets. Touch phones seem to have become more popular, as the quality has improved and the number of younger users has increased.

Although party cadres and the wealthy use western models such as Motorola and Nokia, the majority of cell phones are Chinese brands. The Ministry of Post and Telecommunications imports cheap Huawei and ZTE products from China. The Huawei products that have been introduced to the North Korean market include the T1 (folding) and T3 (folding and sliding), as well as the ZTE models F160 (bar), T95 (bar), T107, and E850 (touch screen). A man who defected from Chongjin in late 2012 says that, according to his friend who works for the Ministry of Post and Telecommunications, most of the Chinese phones were produced and imported from factories in China. Handsets from China are made on a consignment basis and labeled “Made in North Korea.”³⁰

South Korean brands such as Samsung and LG can also be seen on the streets of Pyongyang. According to a defector from Pyongyang, some users in Pyongyang purchased Samsung cell phones from traders and had them fixed to be connected to the Koryolink network. The users were attracted to the designs, and small folding types were the most popular. Of course, they had to bribe officials at the Ministry of Post and Telecommunications to make this work. After that, all they needed was to switch out the SIM cards from their legal phones into the Samsung phones. Some traders also personally fix Samsung phones for their own use. However, if South Korean phones are detected by security officers, they are forcibly collected. Defectors who currently maintain contact with

²⁸ Defected from Pyongyang and Hyesan in early 2012 and from Chongjin in December 2012.

²⁹ “Over 2 Million N.Koreans Have Mobile Phones,” *Chosun Ilbo*, August 5, 2013.

³⁰ “How Widespread Is Mobile Phone Use in N.Korea?” *Chosun Ilbo*, April 23, 2011.

their families in North Korea say that authorities recently have cracked down on illegal users of Samsung phones. Both users and those who help fix the phones are punished. The authorities also encourage people to report any illegal users of South Korean phones.

In April 2010, North Korea announced plans to launch the production of “hand phone terminals” within six months, as domestic demand for wireless communication rose quickly. Although the regime intended to import and assemble parts from overseas (presumably from China), handset production was supposed to eventually become an entirely domestic operation.³¹ Within seven months, the Pyongyang-based Checom Technology Joint Venture Company started to produce hundreds of high-performance cellular phones each month, while also trying to customize their operating systems to satisfy local needs.³² Although it is unclear to what extent North Korea has substituted the imports from China, production in Pyongyang may have contributed to the downward trend in handset prices.

A thriving market in used phones could also be helping to alleviate the cost burden of handsets to some degree. As the number of subscribers increases rapidly, the number of booths selling used phones in the *Jangmadang* (informal market) is also increasing at pace. Although repair services are authorized, transactions of used phones are illegal. The phones purchased at the informal markets are registered under bogus names, and, for their use, illegal top-up cards are also available at the booths.³³ Smuggled handsets from China, usually five times cheaper than legal handsets, were also available until early 2012. Buyers would replace the SIM cards in the smuggled phones with registered ones. However, this practice has been discontinued due to increased censorship by the authorities. A defector who maintains contact with his sources in North Korea has reported that many people have been caught and punished for this practice.³⁴

In August 2013, North Korea unveiled what it said was a domestically produced touch screen phone “Arirang.” *KCNA* reported that Kim Jong Un visited the May 11 Factory to praise officials and employees for “developing an application program in Korean style which provides the best convenience to the users while strictly guaranteeing security.”³⁵ The Arirang is supposed to function as a smartphone, but not much is known about it, other than its high-pixel camera and several application programs. Since North Korean subscribers are not allowed to access the Internet, the application programs seem to be built-in, rather than downloadable.³⁶

Industry analysts suspect the Arirang, built around Google’s Android operating system, is likely to have been manufactured in China and shipped to the factory for inspection before going on sale. Experts believe that North Korea has not secured the relevant technologies required for producing smartphones, including microprocessor units.³⁷ Indeed, the North Korean media only showed footage of the final packaging of the units, without proving

³¹ “N. Korea Plans to Produce Own Mobile Phones to Meet Rising Demand,” *Yonhap News Agency*, April 19, 2010.

³² “North Korea Begins Mass-producing Cell Phones,” *Yonhap News Agency*, November 15, 2010.

³³ “Intermediaries substitute the black market in North Korea,” in Korean, *Daily NK*, January 14, 2013.

³⁴ Interview by author, October 2013.

³⁵ “Kim Jong Un Visits May 11 Factory,” *KCNA*, August 10, 2013.

³⁶ Yonho Kim, “Western media skeptical of North Korea’s development of smartphones,” in Korean, *Voice of America*, August 15, 2013, <http://www.voakorea.com/content/article/1730289.html>.

³⁷ Seongeun Lee, “North Korea introduces smartphone-like handset” in Korean, *Voice of America*, August 13, 2013, <http://www.voakorea.com/content/article/1728367.html>.

their ability to actually produce the phones. Regardless, these new smartphones provide the government the opportunity to rake in more foreign currency, while ultimately seeking to substitute imports. In addition, the news of so-called domestically manufactured touch screen phones is conducive to regime propaganda emphasizing the proud technological developments under Kim Jong Un's leadership.

How North Koreans Use Cell Phones

While previous networks only provided voice service, the Koryolink network supports a variety of services. In the second quarter of 2009, Koryolink introduced free Short Message Service (SMS) for the first time. In the third quarter of 2010, it launched video calling service to high demand, especially from the youth segment.³⁸ Orascom reported that video calling usage quadrupled in June 2011, after it was made available to the entire subscriber base and that "the usage was still accelerating since such move was conducted."³⁹ In January 2011, Koryolink offered Multimedia Messaging Service (MMS) to its subscribers. Orascom reported, "The service was received positively from subscribers and continued to exhibit a healthy growth rate."⁴⁰ In addition, Koryolink provided voicemail, Wireless Application Protocol (WAP), and High Speed Packet Access (HSPA).

None of the defectors interviewed for this report had ever used the video calling service. A former Pyongyang resident said that video calling was 10 times more than voice calling and that he dared not use it. Koryolink seems to be targeting high-end customers for this service. According to defectors, MMS is only available for local data transfer within the same cities or provinces. Long-distance data transfer is either technically not reliable or simply not available. The touch screen phone Arirang is touted to work for long-distance data transfer, but users report that this is not true.

As part of its 3G services, Koryolink has begun a service allowing the reading of *Rodong Shinmun*, North Korea's biggest state-run newspaper, on cell phones. *Chosun Sinbo*, a pro-North Korea newspaper in Japan run by the General Association of North Korean Residents, quotes a Pyongyang resident stating, "It's very convenient being able to read the news every morning on my mobile phone. You can also go back and read all the news from a few months ago, too, which is great."⁴¹ However, some suspect *Rodong Shinmun* is sending out articles via MMS instead of distributing news through its own application program.⁴² One defector reports that application programs (apps) still cannot be directly downloaded to cell phones. Instead, people usually download the apps onto their computers through the intranet and then transfer them to their cell phones.

SMS is also used for regime propaganda and news service. One defector reported that the state-run news agency, the government, and the Party regularly sent group text messages about Kim Jong Un's on-site inspections, the repair of the telecommunications cable system, and other happenings. Koryolink does not charge receivers for the incoming text messages.

³⁸ Orascom Telecom Holding, "Earnings Release Third Quarter 2010," November 7, 2010.

³⁹ Orascom Telecom Holding, "Earnings Release First Half 2011," August 10, 2011.

⁴⁰ Orascom Telecom Holding, "Earnings Release First Quarter 2011," May 18, 2011.

⁴¹ Jong Ik Cho, "Rodong Shinmun on the Move," *Daily NK*, November 28, 2011.

⁴² Evan Ramstad, "News On-the-Go, Even in Pyongyang," *Wall Street Journal*, November 29, 2011.

While more and more functions are becoming available on North Korean cell phones, there seems to be a generation gap in utilizing these services. The defectors in their 40s and 50s that I interviewed tended to limit their cell phone use to voice calls and text messages. In contrast, defectors in their 20s said most youths tend to fully utilize the built-in functions that do not require extra charges. They carry their cell phones for show as well as for taking photos and videos, watching videos, listening to music, and playing games. They are even finding creative ways to use this new technology. For instance, according to a defector from Pyongyang, in 2009 while taking senior examinations, students at Kim Il Sung University—the most prestigious university in North Korea—sent text messages to their friends outside asking for help. Their friends looked up the answers and sent them back in text messages. However, the professors detected this practice, and all of the students involved were punished. After the event, the University authorities banned cell phone use on campus.

Concerning data transfer, the young defectors that I interviewed did not have any experience sending files through MMS. They used Bluetooth to transfer or download games or songs from or to their computers. They claimed that the speed of downloads and transfers was mostly satisfactory although touch screen phones had much better speed.

Although Koryolink offers a variety of services, the North Korean regime does not allow all of the services to be used. North Koreans are denied Internet access, and international calls are blocked. Phone calls are prohibited with foreigners in the country, and foreigners must use a separate network. Data transfer also is tightly controlled. A defector from Pyongyang said that, initially, users were allowed to transfer photos and audio files from their cell phones, but the authorities started to block data transfers in late 2011. A woman who defected from Chongjin in November 2012 explained that her handset did not even have a function for transferring files. According to a North Korea IT specialist who interviewed defectors, it seems that initially the subscribers were not well informed about what the MMS service was or how to use it, and even if they were informed, most of them did not understand the concept of data transfer in general. However, sources in North Korea explain that as an increasing number of subscribers learned about the data transfer functions, authorities took measures to block the functions, including forcing users to return their handsets to disable the functions at the Koryolink shops. A woman who defected from Chongjin in September 2012 reported that people dared not transfer data for fear of being harshly punished. It seems the government belatedly realized the security implications of data transfers.

Furthermore, the police often stop and question cell phone users on the street to search for any “politically inappropriate” content on their phones, especially South Korean content. An officer can confiscate a phone on the spot, at his discretion, and users can be sent to labor-training centers for punishment. For example, according to a defector who regularly contacts his sources in North Korea, 20 college students from Chongjin served time at a labor-training center for listening to and watching South Korean songs and dramas on their cell phones. In response, users now rarely open potentially problematic content on the street. Many youth used to watch South Korean dance videos with sounds muted; this is permitted as long as the video does not contain South Korean songs.⁴³ However, they now refrain from carrying any South Korean content on their phones because the authorities have tightened censorship and forced re-registration to help eliminate inappropriate content. Authorities even confiscate cell phones for no reason and return them to the owners after censoring the phones.

⁴³ “Implications and Prospects of Cell Phone Use in North Korea,” *Monthly NK Vision*, January 2012.

A recent report states that since October 2011, the North Korean government has been promoting a cell phone model called “1913,”⁴⁴ the service for which is limited to the city of registration. In addition, the new model supports only voice and texting capabilities, not video recording and data transfer functions. It comes with only 10-20 MB of internal memory storage, and the SD card slot is blocked. It is suspected that the authorities decided to control information flow by allowing only basic functions on the phone.⁴⁵ Heung Kwang Kim also notes that, in 2011, the North Korean government had started to prepare measures against organizations the Party was not previously aware of. He quotes a witness who graduated from Kim Chaek University of Technology in Pyongyang as saying that some soccer lovers communicated via text messages and ended up organizing a soccer club, which caught the authorities by surprise. He suspects that these unwanted developments might be part of the motivation for the government’s introduction and promotion of the new “1913 phone.”⁴⁶

However, defectors from Pyongyang and Hyesan have claimed they had never heard of the “1913 phone” when they defected in early 2012, although there were phone numbers beginning with the digits 1913. A defector from Chongjin explained that before he defected in November 2011, there were rumors that a cheap phone (\$70) supporting voice call only was about to be rolled out. *Daily NK* has also reported in 2012 that “provincial phones,” the coverage for which was limited to the province in which the phone was registered, were on sale for \$70. The availability of these phones was reported in the context of rapidly growing demand, suggesting this model as an option for low-income customer segments.⁴⁷

The “1913 phone,” or phones with very limited features, may have been introduced at different paces, depending on the service areas. It is still not clear whether the new model was intended to be a tool for controlling information flow or just as a cheaper option for consumers. One defector, who checked with his sources in Pyongyang, Sinuiju, Hyesan, and Chongjin in October 2013, explained that the “1913 phone” is known to be available mainly for the military and State Security Department and that most people have not heard about this model. This special phone, distributed for official use, is designed to meet security needs. However, even military and State Security Department users are unwilling to actively use it because they know this type of phone is subject to easy surveillance.

Rate Plans

All Koryolink cell phones are pre-paid, and subscribers have to pay for extra minutes when the minutes allocated within the basic monthly service charges run out. However, Koryolink has been changing pricing frequently to attract more customers, and sometimes rate plans differ from city to city. For example, a defector from Hoeryong said that she paid a monthly service charge of 12,000 won in 2009, whereas defectors from other major cities paid around 3,000 won every quarter in later years. Rate plans also varied based on the type of handsets the subscribers purchased. These seem to be the main reasons for inconsistent and even conflicting reports on Koryolink’s rate plans.

⁴⁴ At first, Koryolink numbers, with some exceptions, began with the digits 1912, the reputed birth year of Kim Il Sung. As those numbers were taken, 1913 was added. Special registrants’ numbers reportedly begin with 195. See “A brief introduction to North Korean mobile phones,” *New Focus International*, February 5, 2013.

⁴⁵ “New cell phone numbers starting with 1913 in North Korea,” *Radio Free Asia*, July 27, 2012.

⁴⁶ Kim, interview.

⁴⁷ “Phones registered in fake names popular in response to rapidly growing demand” in Korean, *Daily NK*, November 30, 2012.

According to press reports and defectors, the basic service charge is 2,600-3,000 won (less than 40 cents to \$1 at black market exchange rates).⁴⁸ With upfront payment, subscribers are allowed 200 minutes and 20 text messages per month.⁴⁹ Payment frequency is either monthly or quarterly, according to varying defector accounts and press reports. However, a defector who contacted his sources in Pyongyang, Sinuiju, Hyesan, and Chongjin reported that, as of October 2013, a fixed amount for network access is paid every quarter. For incoming calls, receivers pay 20-40% of the call charges; incoming text messages are not charged.

The pricing of pre-paid cards for extended call time is more complicated. Top-up cards are available in amounts of \$10 (600 minutes), \$11 (800 minutes), \$16 (335 minutes), etc., depending on when and where they are purchased. "Price per minute" plans are also available at 4.2 cents per minute or \$8.40 for 200 minutes, for example.⁵⁰ A woman from Hyesan who defected in March 2012 said that she paid 450 won (around 15 cents at the black market exchange rate of \$1=3,000 won) per minute. Normally, top-up cards can be purchased only in foreign currency, including dollar, euro, or yuan, but defectors from Hyesan and Chongjin state that payment in North Korean won was also accepted.⁵¹

Making the rate plans even more complicated is a variety of incentives and offerings provided by Koryolink aimed at attracting more subscribers and maximizing foreign currency revenues. In the third quarter of 2010, Koryolink introduced new tariffs and products that were specifically designed to cater to the needs of lower-end subscriber segments.⁵² In February 2011, with the objective of maximizing foreign currency revenues, Koryolink introduced "Euro Pack" bundles, which offered incentives of free off-peak calls and value-added services for paying in euros.⁵³ Koryolink also launched a Balance Transfer service in June 2011. The service proved to be "a huge success across all base sectors," resulting in nearly 40% of the base using it heavily within two weeks of its launch.⁵⁴

The huge success of the Balance Transfer service could reflect that there had been considerable repressed demand due to high rates. Despite the rapid growth of customers, the average monthly usage per Koryolink customer, or Minutes of Usage (MOU),⁵⁵ remains stagnant. It is noteworthy that the MOU has hovered around 300 minutes per customer, since reaching 120,000 subscribers in the first quarter of 2010. This means Koryolink customers are paying for a mere 100 extra minutes after using up the 200 free minutes, assuming that the reported MOU includes the basic 200 minutes. There seems to be a deep-rooted barrier to active usage of cell phones among the people.

⁴⁸ According to *Daily NK*, black market exchange rates in Pyongyang, Sinuiju, and Hyesan stayed around \$1=3,000 won throughout 2011 and steadily rose until reaching \$1=8,000 won in late 2012.

⁴⁹ Defectors, interview by author, July-September, 2013; Sung Jin Lee, "Pyongyangites taking to mobile phones," *Daily NK*, August 17, 2009; "Cell Phones All the Rage in Pyongyang," *Chosun Ilbo*, June 20, 2011; "A brief introduction to North Korean mobile phones," *New Focus International*, February 5, 2013.

⁵⁰ "Topping-up a North Korean cell phone," *New Focus International*, July 8, 2013.

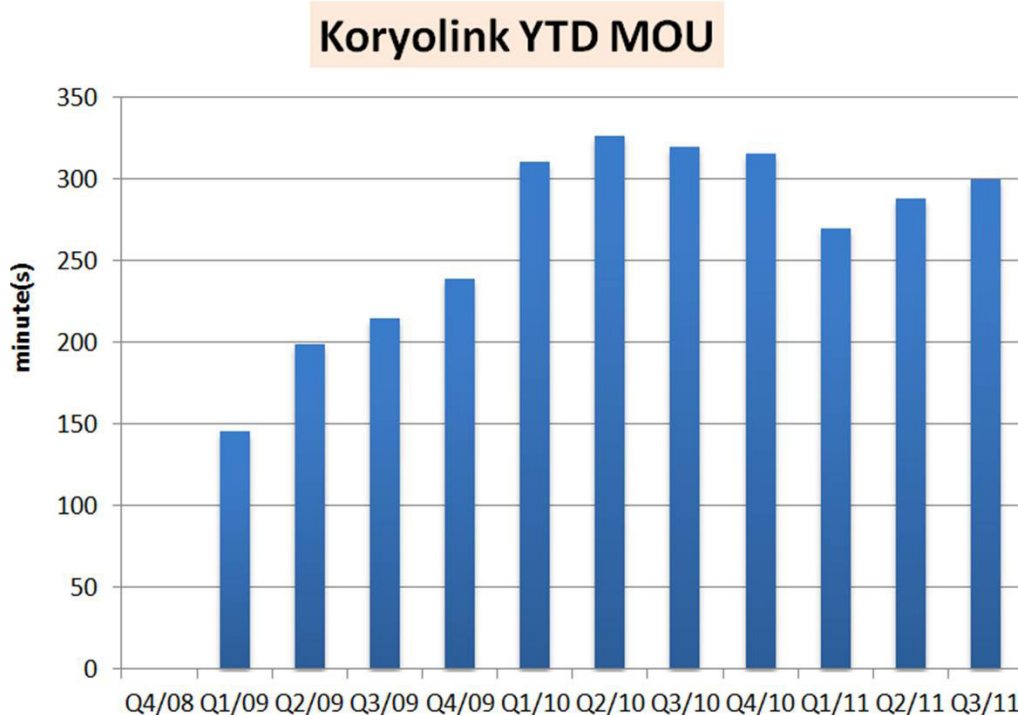
⁵¹ Defected in March 2012 and November 2011, respectively.

⁵² Orascom Telecom Holding, "Earnings Release Third Quarter 2010."

⁵³ Orascom Telecom Holding, "Earnings Release First Half 2011."

⁵⁴ *Ibid.*

⁵⁵ Average airtime minutes per customer per month. This includes billable national and international outgoing traffic originated by subscribers (on-network, to landline, and to other operators). This also includes incoming traffic to subscribers from landline or other operators. Orascom Telecom Holding, "Earnings Release Third Quarter 2011."



Source: Orascom Telecom, 2008-2011 Earnings Releases

Despite Koryolink's flexible rate plans, many North Koreans still cannot afford the pre-paid cards for extra minutes. All of the defectors I interviewed complained about the miserly allocation of call time. Contrary to their initial expectations, keeping a cell phone turned out to be much more expensive than buying one that cost hundreds of dollars. They said most users made every effort to use their phones sparingly, making their calls as short as possible, so they would not have to purchase top-up cards. People who work for government organizations or enterprises try not to use their own cell phones but prefer to make calls from their office landlines instead. A former government official from Pyongyang said that whenever he received calls on his cell phone, he told the callers to call his office line instead. To avoid double charges, people try to use public phones or private landline phones when making calls to a landline. A story by a defector who left North Korea at the end of 2012 is very revealing: "Even if you use the phone sparingly, it's hard to make the allowance last even 15 days. South Koreans show off with designer items, and cell phones do the same job in North Korea. So, plenty of people carry around a cell phone that doesn't work or that they can't actually afford to use. It's very much a bragging item."⁵⁶

This situation has led to a new kind of extortion and bribery in North Korean society. In one interview, a former mid-level Party official from Pyongyang stated that his superiors and other powerful people had demanded he transmit hundreds of minutes from his top-up cards to them. In addition, officials often make public comments that they have run out of the free minutes to push their subordinates into topping-up their bosses' phones to buy better treatment. Additionally, defector accounts in *New Focus International* reported:

⁵⁶ "Topping-up a North Korean cell phone," *New Focus International*, July 8, 2013.

That is why officials can show off on the street by talking on the phone for a long time. The rest of us have to make our point and quickly hang up, but the officials are not restricted in the same way because they can exploit their position. Ownership of a cell phone divides between poor and rich, but the difference is even bigger in terms of the allocation of call time.⁵⁷

Coverage and Call Quality

The North Korean government was very selective and cautious in choosing the desirable coverage area in 2002-2004 when 2G mobile service was provided. NEAT&T launched the GSM service in Pyongyang, several major cities, including Nampo and Kaesong, provincial capitals, and major highways. The government's goal was to cover the entire nation with mobile telecommunications service by 2007, or within five years.⁵⁸ When mobile service was resumed in 2008, North Korea decided to expand the coverage more rapidly, with a goal of having mobile service available nationwide by 2012, or within four years.⁵⁹ Indeed, in less than three years, Koryolink's network coverage was available to 94% of the population of North Korea, with subscribers in Pyongyang, as well as in 14 main cities and 78 smaller cities.⁶⁰

In the first years of service, Pyongyang and its nearby major cities were the only cities where cell signals were strong enough for cell phone usage. One defector said he did not have any connection problems in Pyongyang, except for in the subway. However, cell signals were too weak to make consistent calls in smaller cities such as Sinuiju, Hyesan, Musan, Hoeryong, and Chongjin. A defector from Hoeryong has said that in 2009, even in the same apartment building, the call quality varied from floor to floor. Defectors have complained that calls were often disconnected, and connections were very unstable in the outskirts of the city. Even worse, it was difficult to get good connections outside the major cities.

A defector from Musan attributed the poor call quality and disconnections to the authorities' jamming aimed at illegal Chinese phones and to a shortage of cell towers. A defector from Hoeryong said that, as far as she knew, a 30-meter high cell tower was the only one that covered the entire city in 2009. The weak and erratic electricity supply was also identified as a reason for communications equipment failures. Deep-rooted bureaucracy makes problems worse. When a signal tower develops a fault, the authorities charged with making repairs are known for passing the responsibility on to another department.⁶¹

A defector who regularly contacts his sources in North Korea reported call quality and connections improved in major cities but that there are still certain areas where connections cannot be made. He said that the quality of connections still differs from area to area. A woman who defected from Hamhung in January 2013 said that calls

⁵⁷ *Ibid.*

⁵⁸ Marcus Noland, "Telecommunications in North Korea: Has Orascom Made the Connection?" *North Korean Review*, Vol. 5, No. 1 (Spring 2009): pp. 62-74.

⁵⁹ Stated by an official of CHEO Technology JV Company that runs Koryolink. "North Korean mobile telecommunications service hit 20,000 subscribers in 3 months," in Korean *Yonhap News Agency*, April 6, 2009.

⁶⁰ Orascom Telecom Holding, "Earnings Release Third Quarter 2011."

⁶¹ "Topping-up a North Korean cell phone."

were sometimes disconnected when traveling by train and that, usually, connections were unstable in hilly areas. She complained that, even in her house, call quality varied depending on from which corner of the house the call was made.

In the first years, connections seemed to be limited to the area where the phones were registered. Some defectors claimed a cell phone registered in Pyongyang did not work in other cities until 2010. Some defectors said they were able to make stable long-distance calls, although some background noise was heard. A South Korean expert says that he witnessed a North Korean making a long-distance call from Mt. Kumgang to Pyongyang in 2012.

Although Koryolink does not provide international calling service to domestic subscribers, one can cross the border and make or receive calls in the Chinese border area where mobile reception from North Korea is available. However, jamming makes such activity difficult. The North Korean government is very sensitive to and cracking down on the illegal Chinese phones that receive signals from towers just beyond the border. The government operates powerful jammers in the border area to block the use of illegal Chinese cell phones, which also disrupts phone calls made on the Koryolink network. This is believed to be the main reason for complaints about poor call quality and disconnections by Koryolink users in border cities. Defectors suspect that the authorities have a ship in the middle of the Yalu River, near Sinuiju, that shoots jamming beams vertically.⁶²

A primitive, but creative, way to make “international” calls is being developed by defectors settled in South Korea and their Chinese and North Korean brokers. The brokers, or “remittance helpers,” play the role of telephone operators between the defectors and their families in North Korea. For example, a call recipient in Haeju, South Hwanghae Province, 100 kilometers south of Pyongyang, goes to a broker in town, and using the Koryolink network, the broker calls a second broker in Hoeryong, North Hamgyong Province, a border city located opposite Jilin Province, China. As soon as the second broker receives the call, he calls the remitter in Seoul with his illegal Chinese cell phone. The second broker physically aligns the microphone of each phone with the earphone of the other phone so the remitter and recipient can talk to each other and confirm the remittance.⁶³ Jae-pyong Seo, Secretary-General of the Committee for the Democratization of North Korea, says that when the real time “international” call is not available, the recipient has the broker in town record a confirmation voice message and send it to the second broker in the border area. Again, the second broker physically aligns the microphone of each phone with the earphone of the other cell phone, so the remitter can hear the recorded message.⁶⁴

According to *Chosun Ilbo* reporting, in early 2013, North Korea decided to allow international calls in the Rajin-Sonbong (Rason) SEZ near the Chinese border, in a bid to attract foreign investment.⁶⁵ Dr. Bong-hyun Cho of the IBK Economic Research Institute in Seoul said China requested the international calling service based on agreements between the two countries, although North Korea was reluctant to accept the request for security

⁶² See also “Sustained Presence of North Korean Ships in Yalu River Raises Eyebrows,” *Radio Free Asia*, July 23, 2013.

⁶³ Hyun-jung Ryu, “A Study on North Korea’s Dual Network of Mobil Telecommunications System using Actor-Network Theory,” in Korean (M.A. Thesis Paper, University of North Korean Studies, 2012). For how the remittance works, see Chico Harlan, “North Korean defectors learn quickly how to send money back home,” *Washington Post*, February 15, 2012.

⁶⁴ Jae-pyong Seo, interview by author, Seoul, South Korea, July 2013.

⁶⁵ “Over 2 Million N.Koreans Have Mobile Phones,” *Chosun Ilbo*, August 5, 2013.

reasons. He expects that Koryolink international calling service will be available to foreigners, after it ensures security measures but that in Rason, it will not be easy for the North Korean government to prevent its citizens from using the service.⁶⁶

Indeed, since January 2013, North Korea has started to allow foreigners to bring their phones into the country and buy a local SIM card at the airport in order to make and receive international calls and to call other foreigners in Pyongyang. SIM cards cost about \$67, and the call rate is as high as \$6.60 a minute to call the United States.⁶⁷ However, foreigners cannot call local North Koreans, as they are on a separate network. Foreigners can make calls to Japan and the United States, but not South Korea.

For the first time, foreigners have also been allowed to get uncensored 3G data since March 2013. Internet access, including Twitter and Skype, are available on the network. Although North Korea reportedly cut off mobile Internet service for short-term tourists in mid-March 2013, foreign journalists invited to cover the commemoration of the 60th anniversary of the conclusion of the Korean War were able to upload photos and videos on Twitter and Instagram from inside North Korea.

Although foreigners' calls to South Korea are blocked, there seems to be a way to get around the technical barrier. A Chinese businessman, using his Chinese phone with a SIM card bought in Pyongyang, reportedly had no problem making a call to his colleague in Seoul with a Chinese phone on roaming service.⁶⁸ A defector in Seoul collecting internal information on North Korea also communicates with his sources in Pyongyang in a similar way.⁶⁹

North Korea's Mobile Network Technologies

North Korea's first choice for its national industrial standard for mobile telecommunications service was the Global System for Mobile Communications (GSM) system. Some experts argue that North Korea's initial preference was the Code Division Multiple Access (CDMA) system because GSM is more vulnerable to outside monitoring. The Kim Dae-jung administration in South Korea was willing to cooperate on the introduction of a CDMA system in 2002, which was initially supported by Kim Jong Il, as this is the system used in the South. However, primarily for security reasons, North Korea decided to erect technical barriers between the country's mobile communications network and that of its southern rival. In addition, the United States objected to North-South cooperation on a CDMA system, based on the grounds of international patent infringement and COCOM export restrictions, under the Wassenaar Agreement. However, the US could not block the installation of a GSM system based on non-proprietary technology in North Korea.⁷⁰

⁶⁶ Dr. Bong-hyun Cho, interview by author, Seoul, South Korea, July 2013.

⁶⁷ Jean H. Lee, "North Korea loosens restrictions on foreign mobile phones," *Associated Press*, January 22, 2013.

⁶⁸ Yunseok An, "Pyongyang-Seoul mobile connection confirmed" in Korean, *No Cut News*, February 26, 2013, <http://www.nocutnews.co.kr/Show.asp?IDX=2415713>.

⁶⁹ "Pyongyang-Seoul mobile connection available" in Korean, *JTBC*, February 26, 2013, http://news.jtbc.co.kr/article/article.aspx?news_id=NB10246099.

⁷⁰ Noland, "Telecommunications in North Korea: Has Orascom Made the Connection?" pp. 62-74.

In 2008, North Korea followed in China's footsteps and decided to replace the 2G GSM platform with the 3G Wideband Code Division Multiple Access (W-CDMA) standard which offered higher data transmission rates and greater network security. Beijing announced in May 2008 that three 3G networks were allocated to China's three largest mobile operators—China Mobile, China Unicom, and China Telecom. In December 2008, North Korea launched its only 3G mobile network almost a year before the official launch of 3G in China.⁷¹ Whereas CDMA technology was patented by the US firm Qualcomm, W-CDMA technology was not subject to the Qualcomm patent.⁷²

In preparing for the introduction of mobile telecommunications, North Korea made considerable investment in a fiber optic network to connect all cities and counties throughout the nation in the 1990s, even during the "Arduous March" period, in part with the help of UNDP and investment by Loxley. By 2002, North Korea had established a backbone fiber optic network for the entire nation, installed digital transmission equipment in all provinces, and completed the construction of infrastructure facilities for digital mobile communications.⁷³ Since mobile signals are routed through fiber optic cables between cell towers or base stations, the backbone fiber optic network effectively laid the foundation for the mobile communications industry and facilitated Orascom's operations in North Korea.

North Korea relied heavily on Huawei Technologies, the largest networking and telecommunications equipment supplier in China, for procuring its mobile telecommunications equipment. Following Kim Jong Il's visit to Huawei Technologies in 2006, the Ministry of Posts and Telecommunications and Orascom used the Huawei equipment to install Koryolink cell towers.⁷⁴ Orascom provided technical guidance and training to North Korean technicians and sent them to the provinces. As of May 2011, Koryolink employed some 20 Egyptians and more than 200 North Koreans—most of the expatriates worked in management and the majority of North Koreans worked as technicians and service personnel.⁷⁵ Although North Korea was not capable of developing 3G mobile technologies on its own, it had secured highly skilled technicians, mostly graduates from Kim Chaek University of Technology, Heechon Industrial University, and other major colleges with departments devoted to wireless communications and electronic automations.

North Korea IT experts in Seoul point out that Orascom seemed to depend on high-powered elevated cell towers, instead of installing densely-spaced ones. Heung Kwang Kim says that Orascom usually installed high cell towers with huge transmitting power to cover a large area. In cities where existing lofty TV towers or transmitting towers for international calls were available, high-powered equipment, including mobile telecommunications antennas and digital signal converters, was attached to the towers.⁷⁶ In 2008, Orascom installed telecommunications antennas in the upper floors of the 105-story Ryugyong Hotel in Pyongyang.⁷⁷ In an effort to keep the costs down in rural areas, North Korea also took advantage of existing TV towers by attaching mobile signal transmitters to them.⁷⁸

⁷¹ Mansourov, "North Korea on the Cusp of Digital Transformation."

⁷² Noland, "Telecommunications in North Korea: Has Orascom Made the Connection?" pp. 62-74.

⁷³ Mansourov, "North Korea on the Cusp of Digital Transformation."

⁷⁴ Ibid.

⁷⁵ "The pyramid builders of Pyongyang," in German, *German Financial Times*, May 8, 2011, <http://www.ftd.de/it-medien/it-telekommunikation/:agenda-die-pyramidenbauer-von-pjoengjang/60048145.html>.

⁷⁶ Kim, interview.

⁷⁷ Noland, "Telecommunications in North Korea: Has Orascom Made the Connection?" pp. 62-74.

⁷⁸ "North Korea goes all out for subscriber growth," in Korean, *Radio Free Asia*, May 12, 2011, http://www.rfa.org/korean/in_fo-

This approach is not only cost-effective, but also technically reasonable, given that most of North Korea's population lives in the plains. This makes it possible for the Koryolink network to cover where 94% of the population lives with only covering 14% of the total land mass. Orascom does not need to worry about signal interference because there are only a few high-rise buildings in most of the cities. Without these conditions, Orascom would have needed to install a number of cell towers and repeaters to amplify the signals. North Korea seems to have adopted this approach when it planned to install 70 meter high steel towers for the installation of mobile telecommunications antennas and digital signal converters, so as to provide mobile telecommunications in provincial capitals and along major highways nationwide by September 2003.⁷⁹

The side effect of this approach is that shadow areas exist where cell phones cannot connect to any transmission tower. Usually, densely-spaced towers ensure uninterrupted service by making handover or handoff take place when users move from one cell to another. However, relying on a limited number of large cells supported by high-powered transmitters causes breaks in the service, especially as users move outside city limits. One can expect that Orascom would install repeaters, which cost much less than cell towers, to address the shadow area problem, but it is unclear how responsive Koryolink is to its customers' needs and complaints in a country like North Korea.

[cus/cellphone-05122011103457.html](https://www.voicematters.org/cus/cellphone-05122011103457.html).

⁷⁹ Mansourov, "North Korea on the Cusp of Digital Transformation."

SOCIO-ECONOMIC CONSEQUENCES

Korean Spring?

When the Koryolink service was introduced in North Korea, cell phones immediately became a symbol of status and power. Initially, only officials at central government organs, senior military officials, and wealthy traders were able to access the handsets and service. As the handsets became more available, cell phones became a measure of wealth among the people. A defector from Chongjin said, for instance, that those who possessed cell phones were accused of being selfish and greedy at a people's unit meeting when they were reluctant to make forced donations to a railroad construction project. Cell phone users were also frequent targets of robbery. Robbers stabbed the users or even set fire to their houses. The defector explained that one cell phone thief who mistakenly snuck into a police station chief's house was shot to death. To avoid being robbed, the defector did not dare to use her cell phone in public. She carried the phone only for showing off when meeting with trading counterparts.

Thanks to the recent rapid penetration of cell phones into North Korea, senior Party officials and ordinary people alike use cell phones on the streets. Cell phones have become a tool for supporting one's prestige. As in other countries, cell phones have become a status symbol, a sign of prosperity, and one of the most noticeable examples of conspicuous consumption in North Korea.⁸⁰ Even those without any means of significant income manage to find ways to buy the devices, for fear of being isolated from the community and chastised by the mobile "haves." Some people without their own cell phones brag about cell phones borrowed or briefly taken without notice from their friends. Among the younger population, cell phones have come to be a fashion accessory, causing more children to try to get their own cell phones by pressuring their parents. Cell phones are becoming more and more a tool to gain fellowship in society, especially among the younger generations, although this may still be limited to the residents of major cities.

⁸⁰ Migrants in China purchase cell phones priced far beyond their means, and some poor Africans make cell phones out of wood or carry a broken one just for display. See Jonathan Donner, "Shrinking Fourth World? Mobiles, Development, and Inclusion" in *Handbook of Mobile Communication Studies*, edited by James Everett Katz (Cambridge, MA: MIT Press, 2008), p. 32.

The new frenzy for cell phones in North Korea opens a door to a digital society where social networking could potentially develop. Cell phones tend to augment human interactions by chatting, gossiping, and socializing on the phone. However, it is unlikely for social networking to make its way into a society like North Korea where the cost of entry into the technological realm is prohibitive and where government resources limit the access and use of mobile services. Until access and use of mobile services become more common and aimed at enabling anytime-anywhere affordable conversations, social networking will still be a far off dream.

Defectors have admitted that cell phones made their daily communications with family, friends, colleagues, and fellow traders faster and more convenient. However, calls were usually reserved for important or urgent messages or emergencies. Improving or maintaining relationships in the social sphere was not the primary concern for acquiring a cell phone. After purchasing cell phones at a cost hundreds of times greater than the average monthly wage, many North Koreans cannot afford the top-up minutes. They usually finish their calls within a minute, in order to best use their 200 free minutes. Even the youth, who tend to be inattentive to call times, usually limit their calls to brief communications with their parents. Except for traders who rely heavily on cell phones for business, cell phone calls are primarily for local, proximate interactions.

Rallying friends of similar tastes via cell phones is rare, although a few cases, such as the aforementioned formation of a soccer club, have emerged. This luxurious use of cell phones seems to be limited to the privileged Pyongyang citizens, and such use is easily detected and blocked by the authorities.

One interesting finding is that cell phones function more as a personalized mobile entertainment device than a mobile communications device, especially among the youth. They usually carry their cell phones for taking photos and videos, watching videos, listening to music, and playing games. South Korean pop songs and dance videos transferrable from computers to handsets are particularly popular among young users. Cell phones have become an important part of the advanced media technologies that spread outside information to the youth. However, tightened censorship has intimidated people into refraining from enjoying foreign content.

As is the case in other countries, cell phones in North Korea have become a device for showcasing the owner's personality. North Koreans decorate their handsets with a variety of accessories or dolls sold in the informal markets. Some North Koreans demonstrate their personalities with ringtones of pop songs.⁸¹ Taking and sending photos or videos can be a meaningful way for content producers to express themselves. These trends have the long-term potential for encouraging, especially among the youth, individualism and self-expression—elements essential to developing a democratic society.

As the nationwide network has become available, cell phones have dramatically enhanced the speed of information circulation in North Korea. Even rumors or news that the state media does not report can be circulated more rapidly and extensively to people who are otherwise unable to gain information outside their own neighborhoods. Potentially, news about what happens in other provinces can be delivered in a moment via

⁸¹ Nesbitt, "North Koreans Have Cell Phones—Why cell phones won't lead to revolution and how they strengthen the regime."

cell phones. This is especially applicable to information on informal economic activities. Traders have strong motivation and resources to exchange information critical for their businesses, along with expanding social relationships and new ways of connecting.

In other countries, mobile networks have been proven to strengthen social movements and be crucial in overthrowing undemocratic governments. Cell phones and texting played an important role in the “People Power” revolutions of 1986 and 2001 in the Philippines.⁸² Effective use of social media on cell phones was a crucial element of the Arab Spring, the spread of pro-democracy movements in North Africa and the Middle East starting in late 2010. However, the nature of the enhanced information flow supported by mobile networks in North Korea is not likely to bring about a “Korean Spring.”

Koryolink is a walled garden. Users are not allowed to make or receive international calls, and Internet access is denied. It is hard to imagine that calls and text messages are not monitored by the security agencies. All of the defectors I interviewed agreed that users would never say anything politically inappropriate or sensitive via cell phone, believing every single call is under surveillance. One defector explained, “It is stupid to criticize the regime on the cell phone, which does more harm than good, when the call rate is exorbitant.” The authorities ignore people talking about officials taking bribes or alleged embezzlements, but criticisms about the supreme leader or the Party are not acceptable and subject to harsh punishments.

Some argue that the dramatic explosion of cell phone use has made it more difficult for the Ministry of People’s Security (the formal police apparatus) and the State Security Department or the Ministry of State Security (which functions as secret police) to monitor every single call, although, traditionally, most communications, including landline telephone calls, fax, and mail, were routinely under surveillance.⁸³ However, as defectors have testified, cell phone users are confident that the security agencies are capable of complete monitoring, regardless of technical feasibility. Pervasive government censorship made cell phone users practice self-censorship to avoid any risk.

Economic Beneficiaries

Cell phones have introduced innovative trading techniques to the informal markets in North Korea. Since long before the Koryolink network became available, North Korean cross-border traders had been using illegal Chinese cell phones to communicate with their Chinese counterparts. Cell phone use expedited the exchange of information on market conditions and allowed expedient monitoring of exchange rates. In the 1990s, when the public distribution system (PDS) collapsed, smuggling goods to and from China provided a reliable alternative. Defectors have said that one could feed oneself if he or she acquired a cell phone. As the North Korean informal markets expanded, Chinese cell phones became more and more popular among traders seeking profits in the smuggling trade.

⁸² Howard Rheingold, “Mobile media and political collective action” In *Handbook of Mobile Communication Studies*, edited by James Everett Katz (Cambridge, MA: MIT Press, 2008), p. 230.

⁸³ Mansourov, “North Korea on the Cusp of Digital Transformation.”

The official Koryolink network has equipped domestic market traders with greater mobility. The wholesale and retail traders at the informal markets are now able to collect market information at an unprecedented speed and respond to changing market conditions promptly. Buyers and sellers often complete their bargaining over the phone, even before the goods are taken to market. Jae-pyong Seo said that many wholesale and retail traders at the informal markets in Pyongyang, Nampo, Pyongsong, and Chongjin transferred photos of sample goods to their counterparts before confirming their orders, although this is no longer the case since the government has blocked that service. These days, a trader cannot compete in the market without a cell phone.

Cell phones are also convenient tools for long distance trade. Without having to meet, traders often can determine not only quantities and prices but also shipping and delivery methods over the phone. International shipping services such as FedEx or UPS service are not available in North Korea. Instead, train conductors take orders from traders privately in return for kickbacks and receivers pick up packages at the platform of a pre-arranged train station. It has become a common sight for passenger trains to be filled with more packages than passengers.⁸⁴ Privately owned and operated trucks, usually used vehicles imported from China, are also available for transport services.⁸⁵

Some long distance traders still carry their goods to the market. However, because of the dilapidated and inefficient train system, it usually takes several days to arrive at their destinations, especially in winter when power shortages are common. During travel, traders call their counterparts to check prices, but sometimes prices fluctuate to the point where one cannot make any profit. In those cases, long distance traders call their counterparts in the nearby areas and travel farther if the prices are right.

Traders are not the only group to benefit from mobile technology. Consumers benefit from this new trend of informal economic activity as well. The new mobile network has enabled traders to respond promptly to price differences around the country, which ultimately has resulted in price stabilization and has played a role in suppressing sharp price increases. In the 1990s, long distance traders enjoyed profit margins of more than 30%, but these days, with the rapid circulation of information supported by cell phones, it is very difficult for traders to make those big profit margins. In fact, traders selling Chinese manufactured goods have started complaining that the prices in the general market in Pyongyang are almost the same as in China.⁸⁶

Cell phones have already become a crucial part of the private money transfer system for North Koreans. The most popular channel is remittances from defectors, mostly those settled in South Korea, sent to their families left in the North. The Ministry of Unification in Seoul estimates the annual amount of remittances is around \$10 million.⁸⁷ This informal system is mainly operated by a chain of brokers relying on their Chinese cell phones and bank accounts in South Korea and China.

⁸⁴ Seong-ha Joo, "Miniature of the North Korean society: Food chain in the running train" in Korean, *Donga Ilbo*, May 8, 2013, <http://blog.donga.com/nambukstory/archives/56522>.

⁸⁵ Andrei Lankov, *The Real North Korea: Life and Politics in the Failed Stalinist Utopia*, (New York: Oxford University Press 2013), p. 85.

⁸⁶ "Cell phone makes excessive profits decline" in Korean, *Radio Free Asia*, February 1, 2013, http://www.rfa.org/korean/in_focus/cellphone-02012013162245.html.

⁸⁷ "Concern as remittances to N. Korea grow," *Chosun Ilbo*, February 7, 2011. Incoming funds from South Korea have become so significant that they have been dubbed the "Mount Halla Stream," named after the tallest mountain in South Korea. See Ju-min Park, "Insight: A secret plea for money from a mountain in North Korea," *Reuters*, July 11, 2012.

Defectors wire money to bank accounts held by Chinese-Korean brokers, and the funds are relayed to brokers in the border area, with instructions to deliver it to specific families. Once the intended recipients, who already know the money is coming by communicating beforehand with the remitter via the Chinese mobile network, receive the money, the North Korean brokers and the recipients confirm the transfer by calling the remitter with their Chinese cell phones.

Although brokers typically charge up to 30-40% in fees, transfers are fast and efficient. It typically takes 15-20 minutes for the recipient to receive the money. However, the majority of the transactions take place in the border area because the communications rely on the Chinese mobile network.

The private money transfer service can be extended to North Koreans living further inland. This extended service is supported by the burgeoning domestic private money transfer system. North Korean brokers in the border area and inland further south are the new rich—the “masters of money” (*donju*) who have amassed a great amount of wealth through trading in the informal markets. As discussed in the previous section, brokers in the border area play the role of telephone operators between the remitters and recipients by physically aligning the microphone of each phone with the earphone of the other phone when confirming the transactions.

The domestic private money transfer system originated from deep distrust in the official banking system and has been facilitated by the Koryolink network. North Koreans, having suffered from severe inflation for decades, do not see the merits of depositing their cash in banks. They would rather hide money under the floorboards or under the mattresses in their houses. This distrust in the official banking system was reinforced by the disastrous currency reform (or revaluation) in 2009 that wiped out the savings of informal market operators by drastically devaluing the won and limiting the amount of old currency that could be exchanged for the new one. This mistrust is not limited to private market players. The North Korean government also forced trading companies to deposit all foreign currency earned in the bank. However, most companies refused to follow this order and held on to their foreign reserves in cash to avoid complex deposit and withdrawal processes.⁸⁸ Why consider money transfers through the banking system when the banking system is drained of deposits?

At the beginning, traders were the main customers of the private money transfer service. For example, a wholesale trader in Sinuiju would send goods imported from China to his counterpart in Pyongyang by train. The Pyongyang wholesaler would sell the goods to vendors at the local informal markets and then send the funds from the sale back to his counterpart in Sinuiju through a local *ikwanjib* (remittance house run by *donjus*). The trader in Sinuiju would receive the funds from his local remittance house, which would then be confirmed through phone calls between the traders. The remittance houses have their own clearing systems and provide money transfer services both with and without the trade of goods.⁸⁹

⁸⁸ “Unstable continue after Kim Jong Il’s death,” *NK Brief*, Institute for Far Eastern Studies, December 28, 2011.

⁸⁹ Seong-ha Joo, “The best-selling good at North Korean *jangmadang* is apple vinegar made in South Korea,” in Korean, *Monthly Shindonga* (November 2009): pp. 314-329, http://shindonga.donga.com/docs/magazine/shin/2009/11/05/20091105050016/20091105050016_1.html.

Remittance houses have become more popular as the number of Koryolink subscribers has grown. Jae-pyong Seo explains that the new rich, securing at least 100,000 yuan, had formed a nationwide network providing money transfer services for individuals.⁹⁰ In the past, carrying the money in a bag was the only way to deliver funds to recipients, which risked robbery or extortion by corrupt officials. Now, remitters only have to call recipients to let them know the information about the amount and the broker who will disburse the money. The remittance fees are 3-10%, depending on the situation.⁹¹

⁹⁰ Seo, Interview.

⁹¹ "North Korean *donjus* provide money transfer service with cell phones," in Korean, *Radio Free Asia*, June 28, 2013.

THE REGIME'S CALCULATIONS

The Great Leap Forward and Building a “Strong and Prosperous Nation”

By introducing mobile telecommunications service North Korea has shown its willingness to use telecommunications as a tool to support the development of the nation. Cell phones allow the state to control production, establish standards, and coordinate between Pyongyang and more remote areas of the country in ways that were not previously possible.⁹² This could be an innovative way to increase productivity and efficiency for the dysfunctional planned economy. For example, direct contact via cell phones allow for micro-coordination with increased timing and location flexibility. In addition, security services are equipped with a rapid internal system of identifying and investigating suspicious persons, which helps them easily remove disruptive elements of society.

As early as the 1990s, North Korea identified information technology as a key component of national science and technological development, realizing that it would stay underdeveloped and unable to compete with its southern rival, given its archaic and dilapidated information technology infrastructure. In a letter to the National Conference for Telecommunication Employees in 1993, Kim Jong Il emphasized the importance of modern telecommunications not only as a primary instrument of ensuring timely vertical communication for the central management of state affairs, but also as a way to provide more self-reliant and creative living conditions for the general population.⁹³ The government also mobilized resources to establish a fiber optic network infrastructure for the entire nation, even during the “Arduous March” period.

At the turn of the twenty-first century, North Korea began to combine its information technology strategies with the national goal of becoming a “Strong and Prosperous Nation,” first introduced in 1998. In early 2001, the leadership concluded that it could achieve this goal by making a great leap forward in information technology. In

⁹² Scott Thomas Bruce, “A Double-edged sword: Information technology in North Korea,” East-West Center, *Asia Pacific Issues*, No. 105 (October 2012).

⁹³ Mansourov, “North Korea on the Cusp of Digital Transformation.”

launching a “new thinking” campaign, Kim Jong Il exhorted the people to bring about radical transformations in the fields of economy, science, and technology.⁹⁴ As pointed out by Alexandre Mansourov, a Visiting Scholar at the US-Korea Institute at Johns Hopkins School of Advanced International Studies,

As a laggard in the global digital revolution, Pyongyang enjoys key advantages of backwardness—dramatic savings on initial R&D costs in the IT sector, the opportunity to leap-frog from exclusive reliance on obsolete and scarce landlines (which carry traditional telephone traffic for a meager 1.1 million customers in a country of 24.5 million people) to world-class 3G mobile communications...⁹⁵

The year 2001 was also a turning point for implementing this long-term plan. After visiting the Pudung Industrial Complex in Shanghai, China in January 2001, Kim Jong Il ordered the Party to introduce mobile telecommunications service in Pyongyang by April 15, 2002, the 90th birthday of his late father Kim Il Sung. Following Kim’s instructions, the North Korean government suggested creating a nationwide mobile telecommunications network in its 2001 long-term plan for developing the IT industry. The plan envisioned a network covering Pyongyang and Rason by August 2002 and the entire nation by 2007.⁹⁶

Although the leadership initiated mobile telecommunications service, North Korea demonstrated inconsistent policies, mainly due to concerns raised by the military and security agencies. For example, North Korea abruptly banned cell phones across the country and began confiscating devices, following a massive explosion at Yongchon Station in North Pyongan Province in April 2004, which allegedly targeted a train carrying Kim Jong Il with a remote-controlled wireless handset. Security services also restricted long-distance landline calls in November 2007, while the Korea Post and Telecommunications Corporation signed a communiqué to cooperate with Orascom Telecom earlier in the year⁹⁷ and while negotiations on launching a 3G service were ongoing. Preventing the leak of national secrets was cited as the reason for restricting calls only to authorized persons and cadres.⁹⁸

However, an overwhelming political mandate prevailed over the concerns raised by security services. The mobile telecommunications service and ensuing foreign investments represented symbolic achievements of a “Strong and Prosperous Nation,” a goal to be realized by April 15, 2012, the 100th birthday of Kim Il Sung. It is not a coincidence that, at first, Koryolink phone numbers began with the digits 1912, the reputed birth year of Kim Il Sung. Orascom was also aware of the political implications of their investments in North Korea. Khaled Bichara, Chief Executive Officer of Orascom Telecom, said, “We see that there is a very big plan for an economic boom. They are really looking to have, by 2012, a much stronger economy. We believe that mobiles and eventually international communication will definitely be part of this.”⁹⁹

⁹⁴ “The Twenty-First Century is a Century of a Grand Transition and Creativeness” *Rodong Sinmun*, January 4, 2001.

⁹⁵ Mansourov, “North Korea on the Cusp of Digital Transformation.”

⁹⁶ *Ibid.*

⁹⁷ “Korea, Egypt Cooperate in Post and Telecommunication,” *KCNA*, January 19, 2007.

⁹⁸ *North Korea Today*, in Korean, newsletter published by Good Friends, No. 95 (November 9, 2007): pp. 2-3, <http://www.good-friends.or.kr/download/newsletter/newsletter95.pdf>.

⁹⁹ Heba Saleh and Christian Oliver, “N Korea network expects millions of users,” *Financial Times*, February 2, 2010.

The Orascom Group's massive investment plans had the potential to mitigate the fiscal constraints the North Korean economy faced and induce a much-needed influx of foreign investment. In July 2007, Orascom Construction announced a \$115 million investment in Sangwon Cement. In January 2008, Orascom Telecommunication announced that it would invest up to \$400 million in the joint venture subsidiary, CHEO Technology, to be operated under the brand name Koryolink—\$200 million over the first year and \$100 million in each of the succeeding two years. This represents the largest non-Chinese, non-South Korean investment in North Korea. In addition, in 2008, Orascom Telecom took on the rebuilding of the 105-story Ryugyong Hotel, which was suspended for nearly 20 years due to funding problems and mismanagement. The urgency of the construction work stemmed from the fast-approaching 100th birthday of Kim Il Sung. It was reported that “The authorities wanted Pyongyang to look like a modern, thrusting capital city, even if the superficial improvements are only a mask.”¹⁰⁰

Along with the Ryugyong Hotel, mobile telecommunications service represented a great symbol of modernity for the long-isolated and impoverished state. Since the 2000s, the annual Joint New Year's Editorial that outlines the country's policy priorities for the coming year has repeatedly emphasized the importance of scientific and technological goals and achievements of the state, including the development of information technology. As noted by Scott Bruce, a Project Manager at CRDF Global, “The provision of technology is one way that North Korea demonstrates that it is a normal, modern state.”¹⁰¹

The technological modernity propaganda played the role of bolstering legitimacy for the regime and the emerging new leadership in the post-Kim Jong Il era. Defectors admitted that when the Koryolink network launched, they felt proud of their country, in the sense that it had finally joined the global trend of modern communications technology, allowing people to enjoy the benefits of modernity that other countries took for granted. According to one defector, a family member of a high-ranking government official, there was a rumor among the elite that the newly named successor Kim Jong Un would try to introduce a new cult around himself, partly supported by mobile telecommunications. Indeed, propaganda materials distributed to people in early 2011 claimed that the successor had been thoroughly conversant with the global trend of informatization since high school and that mobile telecommunications service had been realized, thanks to his bold initiatives.¹⁰² The new leadership propagandized that North Korea was on the way to joining the ranks of developed countries, with mobile service being clear evidence of the new development.

Surveillance

It may sound ironic that the North Korean government has decided to allow the general population to access mobile telecommunications services when the authoritarian regime heavily depends on surveillance of its people to control information flow. Long before North Korea and Orascom signed the contract in late 2008, it was well

¹⁰⁰ “Will ‘Hotel of Doom’ ever be finished?” *BBC*, October 15, 2009.

¹⁰¹ Bruce, “A Double-edged sword: Information technology in North Korea.”

¹⁰² “North Korean mobile network expands to counties,” in Korean, *Radio Free Asia*, February 10, 2011, http://www.rfa.org/korean/in_focus/cell_phone-02102011113753.html.

known that cell phones and texting played important roles in the “People Power” revolutions of 1986 and 2001 in the Philippines. Why would North Korea introduce such a potentially dangerous, subversive device that could be conducive to undermining regime stability?

Many suspect that the North Korean government had secured the technologies necessary to monitor mobile calls and text messages before launching mobile services. It is unimaginable that the authorities were not confident enough in their surveillance capabilities and ability to prevent any hostile activities to the regime. Cell phones also tend to betray users’ private thoughts on a public network more often than landline phones.¹⁰³ It would also be a safe guess that Orascom is required to transfer relevant call data to North Korean security agencies. Naguib Sawaris, told *Euromoney* that “we have met all their concerns security-wise.”¹⁰⁴ According to an executive at a South Korean conglomerate that once considered providing mobile service to the North, the North Korean side requested the South Korean provider to also offer monitoring and surveillance technologies.¹⁰⁵ In late 2012, the South Korean Marine Corps Command reported that the North Korean military monitored cell phone and radio traffic up to 140 km south of the Military Demarcation Line, providing a key indicator as to the North’s monitoring capability.¹⁰⁶

Both the Ministry of People’s Security, the formal police apparatus, and the State Security Department or Ministry of State Security, which functions as secret police, monitor telephone conversations on a daily basis.¹⁰⁷ However, the security agencies may not have enough resources and manpower to conduct real-time monitoring of all the calls made by more than two million subscribers. It is more likely that the agencies focus on the Party, the government, military cadres, foreigners, and individuals requiring special attention. The general population is subject to random sampling and keyword searches. A North Korea IT specialist has said that the security agencies must have an automated mechanism that detects certain keywords and code words across all traffic.

Although real-time eavesdropping on entire calls may not be available, every conversation seems to be recorded and stored in a database. A former agent of the Ministry of People’s Security said that the subscriber service data of who called whom, when, and where is stored for three years at the Communications Interception Bureau of the State Security Department. Even voice conversations are automatically transcribed, a feature which was not technologically possible when the 2G GSM service was introduced to North Korea. The former agent, himself, had an opportunity to read the transcribed texts for a special investigation, after receiving approval from multiple agencies, including the Central Party, the local branch of the State Security Department, and the Ministry of People’s Security assigned to the accused. He claimed that official reading of records was allowed only for crimes of national importance.

¹⁰³ Nesbitt, “North Koreans Have Cell Phones—Why cell phones won’t lead to revolution and how they strengthen the regime.”

¹⁰⁴ Eric Ellis, “Orascom: How do you solve a problem like Korea?” *Euromoney*, February 2011.

¹⁰⁵ “North Korean cadres engaged in cell phone business” in Korean, *Chosun Ilbo*, May 15, 2013, http://news.chosun.com/site/data/html_dir/2013/05/14/2013051402983.html?c_inside_sub.

¹⁰⁶ “North Korea monitors cell phones and radios in Baikryongdo, Kimpo, and Kanghwa,” in Korean, *Donga Ilbo*, November 16, 2012, <http://news.donga.com/3/all/20121116/50885710/1>.

¹⁰⁷ For the functions and structure of the security agencies, see Gause, *Coercion, Control, Surveillance, and Punishment: An Examination of the North Korean Police State*.

The North Korean authorities have secured other tools to monitor users effectively. Text messages are subject to real-time monitoring, probably because it is relatively easy to do. A defector observed a large electronic display board at a control center that showed text messages sent by users in real time. The messages included every subject, from jokes to adultery.¹⁰⁸ Defectors say that those who were aware of this monitoring system, or at least suspected that their text messages would be recorded, restrained themselves from sending text messages. Unlike landline phones, a user's location is traceable using the location data generated from cell phone tower triangulation or GPS. The former agent said that his colleagues called the cell phones "cowbells" and would not carry them.

Data transfer is also tightly monitored. A former agent of the Ministry of People's Security says that the State Security Department was capable of screening photos and audio files transferred through the mobile network, although he did not know how it worked. Another defector from Pyongyang recalled that when personally questioned by the authorities in 2011, he found that the State Security Department was aware of the contents of data he transferred.

The authorities may also have expected that self-censorship would prevail among cell phone users. As discussed in a previous section, there is a strong belief among North Koreans that the authorities observe and tap all communications. The presumption that a contemplated act of protest and dissent will be crushed immediately instills "a climate of fear." This pervasive fear makes people believe that the authorities see and hear everything.¹⁰⁹ It is true that North Koreans have become more willing to discuss potentially dangerous matters, and the limit of what is permissible has widened in the last 15 to 20 years.¹¹⁰ However, North Koreans still have a natural proclivity to avoid any risk when using telephones.

Still, there is a loophole that the security services cannot completely close. Human networks can utilize cell phones to leak out internal information about North Korea. For example, underground reporters can record data to a memory card on their own phones and then transfer the cards to the users of illegal Chinese cell phones who convey the information to the foreign media.¹¹¹ Although there is no evidence that the steady leak of information is undermining regime stability, this must be a source of anxiety for the North Korean authorities, who admit damage has been inflicted on the regime's information security by the heavy reliance on Chinese cell phones by defector networks.¹¹²

¹⁰⁸ Ryu, "A Study on North Korea's Dual Network of Mobil Telecommunications System using Actor-Network Theory," p.53.

¹⁰⁹ Andrew Scobell, "Kim Jong Il and North Korea: The Leader and the System," US Army War College Strategic Studies Institute, March 2006.

¹¹⁰ Lankov, p. 91.

¹¹¹ Alexander Martin, "Mobile Phones Proliferate in North Korea," *Wall Street Journal*, July 27, 2012.

¹¹² In February 2010, the State Security Department and Ministry of Public Security warned in a joint statement that South Korea's "plot to overthrow our system, employing all manners and means of spying, is spreading from the periphery of our territory and deeply inland." See Choe Sang-hun, "North Koreans Use Cellphones to Bare Secrets," *New York Times*, March 28, 2010.

Clawing Back Foreign Currency

The North Korean government reaps massive, undue profits by selling cell phones to subscribers at much higher prices than the acquisition prices. For example, handsets bought for less than \$100 from China sell for about \$300.¹¹³ A man who defected from Chongjin in late 2012 said that he found the luxurious handsets selling for \$700 in North Korea were of lower quality than the ones sold for less than \$200 in Seoul. North Korea also has a 25% stake in the joint venture that runs Koryolink and receives profits from phone bills. South Korean experts estimate that with two million cell phones sold, as of 2013, the North Korean government has raked in \$400-600 million from the cell phone business.

To take advantage of the favorable market situation, the government has started manufacturing handsets, in an effort to substitute imports from China. The Pyongyang-based Checom Technology Joint Venture Company began to produce handsets in 2010, and North Korea unveiled what it said was a domestically-produced touch screen phone, Arirang, in 2013. Domestic handset production must have allowed the government to gain greater profit margins. In addition, the authorities' recent decision to shorten subscription procedures and repeal the pre-approval requirements in some areas, as previously discussed, may be partly related to efforts to claw back foreign currency from the people.

It is not clear whether raking in foreign currency was a top priority for the regime when it decided to launch mobile services. However, Dr. Chang-hyun Jung, an adjunct professor at Kookmin University, points out that it is obvious that the cash-strapped government is using the handset business as a way to legitimately collect a huge amount of foreign currency from the people, thanks to strong demand.¹¹⁴ Even without subsidies for the cost of handsets, a common technique in other countries to boost demand, the new frenzy for cell phones makes North Koreans voluntarily hand over privately hoarded foreign currency to the government. As a result, Korea Post and Telecommunications Corporation has emerged as one of the most promising foreign currency earning institutions and, therefore, one of the most preferred government agencies among the cadres.¹¹⁵

The implication here goes far beyond an exploitative regime that extracts undue revenues from its people. The North Korean government is developing a new way to procure hard currency from its own population. The economic crisis in the 1990s encouraged foreign trade as a means of survival, which led to a growing inflow of foreign currency. Foreign currency has been used as a store of value and has increasingly played the role of a medium of exchange and a unit of account.¹¹⁶ The use of foreign currency has accelerated since the confiscatory revaluation of the North Korean won in 2009. With personal savings wiped out, the public lost faith in the won. In addition, a surge in trade and smuggling with China led to a rise in the use of the yuan. US dollars and Chinese

¹¹³ Hae-in Shin, "N.K. desperately collecting foreign currency," *Korean Herald*, November 2, 2011.

¹¹⁴ Dr. Chang-hyun Jung, interview by author, Seoul, South Korea, July 2013.

¹¹⁵ Ryu, "A Study on North Korea's Dual Network of Mobil Telecommunications System using Actor-Network Theory."

¹¹⁶ Seok Ki Lee, Suk-Jin Kim, and Moon-Soo Yang, "Dollarization in North Korea" in Korean, Korea Institute for Industrial Economics and Trade, (December 2012): pp. 168-9, https://www.kiet.re.kr/part/sDownload.jsp?s_idx=34903.

yuan have become more preferred currencies than North Korean won, even in domestic transactions. The amount of hard currency in circulation is estimated at \$2 billion out of an economy worth \$21.5 billion, a stark illustration of the extent to which the regime has lost control over the economy.¹¹⁷

Of course, the state has taken a variety of measures to stamp out foreign currency use, including criminalizing it in 2012 and making its circulation punishable by death. However, these unrealistic measures did not last long, as the regime, for the first time, faced strong backlash from the people, as well as from the officials who were supposed to implement the orders. Realizing it had no choice but to capitulate, the state now seems to actively seek ways to collect hard currency dispersed around the country to secure its finances. As an increasing number of ordinary people kept foreign currency and the measures taken against the trend turned out to be ineffective and even meaningless, the government itself created markets to absorb the foreign currency circulated among the people.¹¹⁸

The operation of state-run supermarkets is another example of the government collecting foreign currency from its own population. Since early 2012, North Korea has been expanding retail distribution networks centered in Pyongyang, including the Kwangbok Area Supermarket, Pothonggang Meat and Fish Shop, and Mansugyo Meat and Fish Shop. With the full approval of North Korea's leadership, a new culture of commerce is springing up in Pyongyang. In addition to domestic goods, American, European, and Japanese items also are bought by the rich who are flush with hard currency.¹¹⁹ Rüdiger Frank, a German economist who visited Pyongyang in September 2012, found that shops had mushroomed in Pyongyang and other major cities. He wrote: "[P]rices are horrendous; three kilograms of apples cost as much as one (official) month's wages. But the fact that even things like bananas are being sold is remarkable. The problem does not seem to be access any more, as was the case in classical socialist economies. All that counts now is having the right amount of the right currency."¹²⁰

The regime seems to be trying to make an alliance with the "market forces," including the new rich, by providing them with a variety of ways to spend their money. In the past, local supplies of consumer goods were so limited that even the rich had to procure them from China. Now, the state is promoting a new consumerism aimed at absorbing hard currency from the unofficial economic sector, thereby securing its finances and exercising more control over the economy.

¹¹⁷ John Ruwitch and Ju-min Park, "Why North Koreans crave US dollars, yuan," *Reuters*, June 3, 2013.

¹¹⁸ Lee, Kim, and Yang, 2012.

¹¹⁹ Jean H. Lee, "China brings supermarket concept to North Korea," *Associated Press*, February 25, 2012.

¹²⁰ Rüdiger Frank, "An Atmosphere of Departure and Two Speeds, Korean Style: Where is North Korea Heading?" *38 North*, October 2, 2012, <http://38north.org/2012/10/rfrank100212>.

ORASCOM'S FUTURE IN NORTH KOREA

Koryolink's Financial Performance

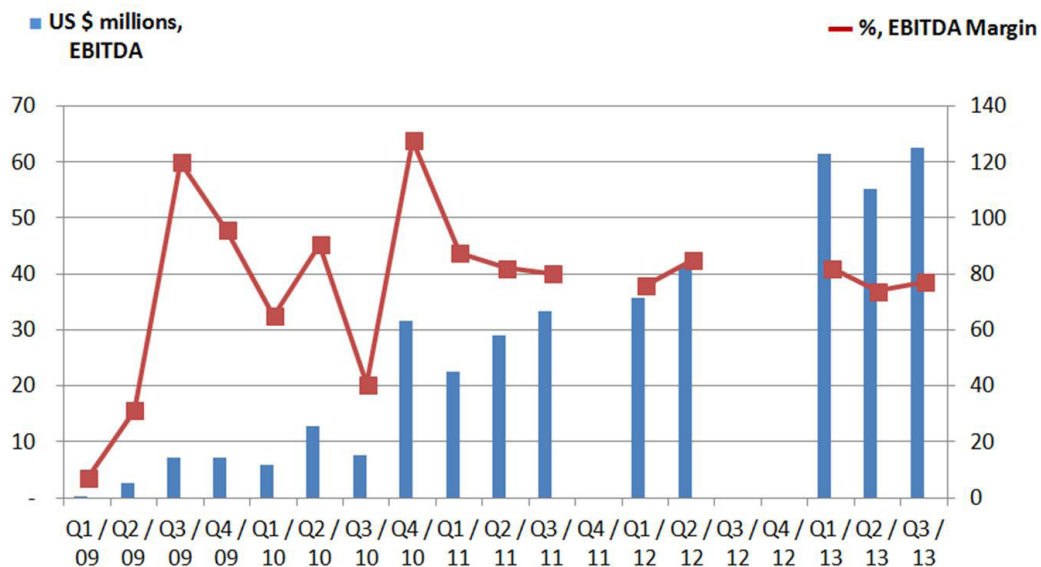
With its record subscriber growth, Koryolink has shown a steady increase in revenues. Quarterly revenue passed \$10 million in the second quarter of 2010 (less than 2 years after its launch) and reached \$81 million in the third quarter of 2013. Koryolink also showed an upward, although fluctuating, trend in earnings before interest, taxes, depreciation and amortization (EBITDA), a way to measure the cash flow of a company's operation. Quarterly EBITDA jumped from \$312,000 in the first quarter of 2009 to \$62 million in the third quarter of 2013.



Source: Orascom Telecom, 2008-2011 Earnings Releases; OTMT, 2013 Consolidated Financial Statements and Review Report

Experts pay special attention to the relatively high EBITDA margin (EBITDA divided by total revenue), a measurement of a company's operating profitability. In the first three quarters of 2011 leading up to the demerger,¹²¹ Koryolink earned gross margins of 80% or higher, making North Korea, by far, the most profitable market where Orascom operates. Some speculate that this was one of the reasons Orascom decided to retain Koryolink in the demerger deal.

Koryolink Quarterly EBITDA & EBITDA Margin



Sources: Orascom Telecom, 2008-2011 Earnings Releases; OTMT, 2013 Consolidated Financial Statements and Review Report

Performances of Orascom Subsidiaries in Q3 2011

	Koryolink (North Korea)	Diezzy (Algeria)	Mobilink (Pakistan)	Banglalink (Bangladesh)	Telecel Globe (Africa)
Revenue (\$M)	41.4	486.6	281.4	129.3	21.3
Year over Year (YOY) revenue increase	125.0%	9.5%	5.5%	7.2%	-23.9%
EBITDA margin	80.0%	59.1%	41.0%	33.4%	32.8%
Subscribers	809,000	16,288,615	33,415,696	22,139,953	2,825,000

Source: Orascom Telecom, *Earnings Release Third Quarter, 2011*, November 14, 2011.

¹²¹ In October 2010, WIND TELECOM, the parent company of Orascom Telecom announced that it had signed an agreement with VimpelCom to combine the two groups, creating the world's sixth largest mobile telecommunications carrier by subscribers. After the deal, Orascom Telecom was split into Orascom Telecom and Orascom Telecom Media and Technology Holding (OTMT), which was established in November 2011. As a result of the demerger, 75 percent ownership stake in CHEO Technology, the joint venture company running the Koryolink network, was transferred from Orascom Telecommunication to OTMT.

However, there are some aspects of the financial status of Koryolink that need to be reviewed carefully. First, Orascom's reports are based on the "official" exchange rate between the North Korean won and the US dollar—135 won per dollar—when the black market rate is currently around 8,000 won per dollar.¹²² This means the basic quarterly charges (around 3,000 won) paid in won are reported as dollar revenues. The accuracy of the reports depends on the exchange rates at which Koryolink is allowed to convert its won into dollar revenues by the North Korean government. So far, details of sales in won are not publicly reported.

In addition, even Orascom's auditors raised concerns about the "cash deposits" that are under strict restrictions imposed by the North Korean government. The auditors described this as "Emphasis of Matters" in the review reports, pointing out that Koryolink's assets include cash balances in North Korean won equivalent to \$422 million, when its net assets stood at \$512 million, as of September 30, 2013. The reports explain, "The deposits are subject to restrictions on use for certain operating and capital expenses in local currency only. The funds cannot be converted into Euro and cannot be repatriated overseas."¹²³

Orascom reported this issue in its 2010 Annual Report when the deposit amount was \$28 million. During the earnings conference call in March 2010, a participant asked, "There was an issue about the money transfer out of Korea. Has this been resolved yet? Because you were pending your expansion on it; this was something." Khaled Bichara answered:

On North Korea, just to be clear, [as with] any startup operation, the money is usually going—holding to operation, not the reverse. Our agreement with the North Korean government is we have the right to transfer some money if we eventually generate excess money....And, again, we are ongoing to be working with the government to evolve our agreement.¹²⁴

The cash deposit issue was envisioned in the early years of Orascom's operation in North Korea, and \$422 million is not enough for Orascom to exercise its agreed-upon rights.

Tax exemption is another issue that an auditor raised in the review report: "Koryolink enjoys a tax exemption for a period of five years, ending on December 15, 2013. After the exemption period, the subsidiary net profits will be subject to tax, according to the tax rules applicable to foreign investment in North Korea."¹²⁵ Furthermore, the auditor underlined the fact that North Korea was subject to international sanctions which restrict financial transactions and the import and export of goods and services, including those required to operate, maintain, and develop mobile networks. The auditor warned that if international sanctions were subject to enhanced

¹²² According to *Daily NK*, black market exchange rates in Pyongyang, Sinuiju, and Hyesan steadily rose until reaching \$1=8,000 won in late 2012 and have stayed at the level since then.

¹²³ Orascom Telecom Media and Technology Holding S.A.E., "Condensed Consolidated Interim Financial Statements and Review Report for the Period Ended September 30, 2013," November 13, 2013.

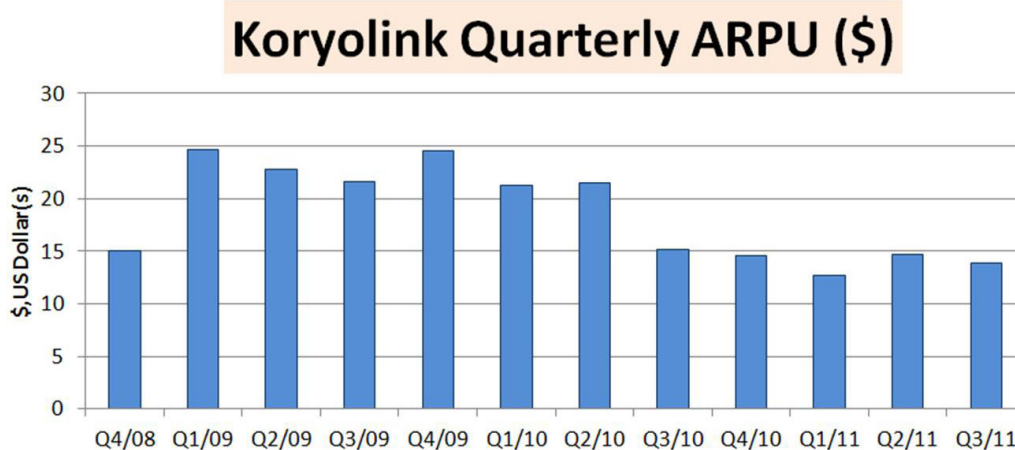
¹²⁴ Q4 and Full Year 2009 ORASCOM TELECOM SAE Earnings Conference Call, March 16, 2010. Transcript available at http://www.orascomtelecom.com/files/financial/729979349_ORASYP-Transcript-2010-03-16T14-00.pdf.

¹²⁵ Orascom Telecom Media and Technology Holding S.A.E., "Condensed Consolidated Interim Financial Statements and Review Report for the Period Ended September 30, 2013."

enforcement, Koryolink would not be able to finance its operations, transfer funds to and from Orascom, or operate its mobile network in North Korea. In this context, impairment of financial assets of \$9.1 million was paid in 2012, in relation to the investment in North Korea, due to uncertainties regarding its recoverability.¹²⁶

Market Outlook

North Korea's mobile phone penetration rate remains at 8% of the nation's estimated population of 24 million, as of May 2013, while South Korea has reached 110% at the end of 2012, indicating many users in the South carry more than one handset.¹²⁷ Since the Koryolink network offers coverage to areas where 94% of the North Korean population lives, there is significant potential for greater penetration. Some experts expect the number of subscribers could reach as many as five million, a penetration rate of 20%, assuming every household in the North has one cell phone.



Source: Orascom Telecom, 2008-2011 Earnings Releases

However, this rosy outlook depends on how quickly Koryolink service will be rolled out to lower income customer segments, particularly the rural poor. Koryolink's operational performance has already reflected this challenge. Koryolink saw the revenue from each subscriber, or average revenue per unit (ARPU), fall from the 20s and remain in the low 10s, as it introduced new tariffs and products designed to cater to the needs of lower-end subscriber segments, starting in the third quarter of 2010. The new marketing strategy led to an increase in sales outside Pyongyang that reached nearly 50% in September 2010. Koryolink admitted that drops in ARPU typically take place when enlarging the consumer base through the expansion to lower-end market segments.¹²⁸

The biggest challenge for Koryolink in expanding its subscriber base seems to be the exorbitant cost of handsets. Although some lower income subscribers manage to find ways to obtain handsets for conspicuous consumption, this may not be a sustainable trend, unless the North Korean government changes its pricing policies to

¹²⁶ Orascom Telecom Media and Technology Holding S.A.E., "Consolidated Financial Statements and Auditor's Report for the Period from Inception (29 November 2011) to 31 December 2012," March 31, 2013.

¹²⁷ International Telecommunication Union (ITU), *Mobile Cellular Subscription 2000-2012*, http://www.itu.int/en/ITU-D/Statistics/Documents/statistics/2013/Mobile_cellular_2000-2012.xls.

¹²⁸ Orascom Telecom Holding, "Earnings Release Full Year 2010," April 18, 2011.

accommodate more buyers. It will be interesting to watch whether the import substitution production of handsets will have a significant impact on pricing. In addition, more affordable rate plans, especially for top-up cards, would encourage more potential users to subscribe to the service.

The economy of small cities is also an important factor for Koryolink subscribership. Some experts estimate that the maximum number of subscribers in Pyongyang, with a population of two million, is around 1.5 million—this assumes that there are two users per household, with Pyongyang most likely approaching its full subscribership. Furthermore, there are only three other major cities with a population of more than 500,000 in North Korea: Hamhung, Chongjin, and Nampo.¹²⁹ Pointing to these market restraints, some experts predict that the subscription rate will remain stagnant after hitting three million. Therefore, sustainable subscriber growth would need to be supported by small cities and rural areas. This, in turn, depends on the pace and scale of development of local economies, including the informal markets, a deciding factor for Koryolink's further capital investments in North Korea.

The North Korean government's regulation of cell phone use is another potentially important challenge for market expansion. A defector from Hoeryong, a northern city bordering China along the Tumen River, said the authorities abruptly suspended mobile service in 2010, in an effort to crack down on users of the illegal Chinese network. A blanket ban was imposed because it was very difficult for the security agents to distinguish between legal and illegal users on the streets. There was even a rumor that the authorities would confiscate the legal North Korean devices. This may be an isolated case, but it is not clear to what extent the security services will tolerate the widespread use of cell phones, especially in the border areas. If they find some technical loopholes that raise security concerns, another suspension of service is likely to happen.

In terms of market drivers, the growing merchant community has the biggest potential. They increasingly consider cell phones as necessary items for trading. A defector who used to travel between Pyongyang and Hoeryong for trading in 2009 said she recovered the purchase cost of her handset in three months, thanks to a 30% increase in revenue. The demand for cell phones is likely to show steady growth as they become an integral part of traders' competitiveness. Some experts also pay attention to the young users who tend to be proficient in the use of technology and fascinated by new electronic devices. Cell phones have become fashionable and many youth strive to obtain their own by pressuring their parents who may not be rich enough to buy phones for their children. It is no wonder that Koryolink has launched a marketing campaign targeting youth.

Uncontested Divorce?

At the beginning, North Korea and Orascom cultivated a relationship built on solid ground. North Korea granted Orascom a 25-year license with exclusive access for four years—the license representing the largest non-Chinese, non-South Korean investment in North Korea. In return, Orascom Group announced a \$115 million investment in Sangwon Cement and a plan to spend \$400 million on the mobile network. Orascom also took on the renovation project of the 105-story Ryugyong Hotel, in preparation for the 100th birthday of Kim Il Sung.

¹²⁹ "Nampo is the most densely populated city in North Korea," in Korean, *Voice of America*, May 21, 2012, <http://www.voakorea.com/content/dprk-cities-demography-152323315/1367245.html>.

High-level personal exchanges between the North Korean leadership and Orascom top management were critical for the deal. Naguib Sawiris made at least four visits to North Korea between 2007 and 2011, consummated with a “cordial talk” and dinner with Kim Jong Il in January 2011.¹³⁰ Kim expressed his satisfaction that Orascom’s investment was making successful progress in different fields, including telecommunications. It was the first time the state media reported on the hosting of a foreign businessman by Kim Jong Il, outside of the South Korean Hyundai Group.

However, Orascom has shown some dissatisfaction with the North Korean government, as its business expands in the country. First, Orascom’s exclusive rights were not applied to the sale of handsets, which could have generated hundreds of millions of dollars in profits. In addition, it is not certain whether and at what exchange rate the basic service charges paid in won will be eventually converted into hard currency and repatriated. As of September 2013, Koryolink has cash deposits equivalent to \$422 million that are subject to restrictions on use for certain operating and capital expenses except in local currency only.

Thus, Koryolink’s profit opportunity depends heavily on North Korean policies and the leadership’s unpredictable will. Until the repatriation issue is resolved, it is hard to imagine that Orascom will make a large-scale direct investment in North Korea. It is not surprising that Chairman Sawiris told *Reuters* that he would not invest more in the one-party state until dividends are retrieved.¹³¹

Orascom Telecom earmarked investment of \$200 million, inclusive of the license fee, over the first year. However, the capital expenditure mainly focused on network rollout and quality improvement nationwide reached only \$27 million in 2009.¹³² Orascom Telecom announced in 2008 that it “intends to invest up to \$400 million in network infrastructure and license fee over the first three years,”¹³³ but as of March 2013, the total amount of investments, more than four years after the launch, was only \$270 million.¹³⁴ (Capital expenditure in the period from inception, November 29, 2011, to the end of 2012 was \$54 million.¹³⁵) Orascom Telecom seems to be trying to hedge its bet by “committing only half of its investment at the outset and making additional investment conditional on its assessment of conditions going forward.”¹³⁶

Additionally, Orascom’s investments in completing the Ryugyong Hotel’s facade did not generate profit. Having invested \$180 million, Orascom had the right to operate the hotel while Kempinski, a German luxury-hotel manager, handled management.¹³⁷ The renovation was completed in the summer of 2012, and Chairman Sawiris made his plan public to relocate Koryolink headquarters into the hotel when it was planned to partially open in July or August of 2013.¹³⁸ However, the monster pyramid hotel that would monopolize all business in Pyongyang, as Kempinski CEO Reto Wittwer predicted at a Seoul business forum in 2012, remains the tallest unoccupied

¹³⁰ “Kim Jong Il Receives Egyptian Businessman,” *KCNA*, January 24, 2011.

¹³¹ Michael Georgy and Yasmine Saleh, “Tycoon Sawiris to invest in Egypt, fears economic collapse,” *Reuters*, November 15, 2013.

¹³² Orascom Telecom Holding, “Earnings Release Full Year 2009,” April 19, 2010.

¹³³ “Egyptian firm says it wins mobile phone license in N Korea,” *Agence France-Presse*, January 30, 2008.

¹³⁴ “OTMT stresses feasibility of N. Korea investments,” *Mubasher*, March 18, 2013.

¹³⁵ Orascom Telecom Media and Technology Holding S.A.E., “Consolidated Financial Statements and Auditor’s Report for the Period from Inception (29 November 2011) to 31 December 2012.”

¹³⁶ Noland, “Telecommunications in North Korea: Has Orascom Made the Connection?” pp. 62-74.

¹³⁷ Sangwoon Yoon, “Kempinski to Operate World’s Tallest Hotel in North Korea,” *Bloomberg*, November 1, 2012.

¹³⁸ Simon Montlake, “Pyongyang Calling for Egyptian Telecoms Tycoon Naguib Sawiris,” *Forbes*, November 18, 2012.

building in the world. Kempinski put plans to open the hotel on indefinite hold, announcing that there was no possibility to enter the market at that time, as North Korea threatened to wage war on South Korea.¹³⁹ Although Orascom's investment in the Ryugyong Hotel is compensated by mining rights, raw materials, commodities, and commodity exchanges, it is not clear whether the deal was fair for Orascom or even profitable, given the international sanctions against North Korea. Some South Korean experts suspect that Orascom may have spent almost all the revenues it earned in North Korea on the renovation project.

South Korean experts had also heard complaints from the North Korean side about Orascom's 'lukewarm' investments: Orascom has made far less investments than it committed in return for the exclusive rights to operate the mobile network. The North Korean side argues that the actual amount of investments by Orascom does not match what has been reported by the media. The North's complaints include allegations that Orascom is obsessed with selling its stake in Sangwon Cement to make profits. One expert reported a rumor that Orascom managed Kim Jong Il's secret fund and that the fund was being returned to North Korea disguised as investments. This was part of the rationale as to why North Korea felt Orascom still owed more, so the rumor goes. The rumor originated from a report that Ri Chol, Kim Jong Il's secret foreign fund manager, introduced Orascom to North Korean leadership while serving as the North Korea Permanent Representative to the United Nations in Geneva. The expert said that the rumor, if true, might partly explain North Korea's seemingly unfair demands for further investments by Orascom.

Why did Orascom decide to enter the North Korean market in the first place? Orascom Telecom's decision is understandable, considering its reputation for making profits from risky markets such as Algeria, Pakistan, Iraq, and Bangladesh—locations where other service providers fear to tread. Chairman Sawiris said the North Korean venture was "in line with Orascom's strategy to penetrate countries with high population and low penetration by providing the first mobile telephony services."¹⁴⁰ However, he seemed to bet on a very optimistic outlook for the North Korean market. He told the *Financial Times*, "when the Berlin Wall fell down, and that happened, nobody thought that it could happen, and it happened. So the potential is very easy. I believe very genuinely in the wish of the leadership in [North Korea] to convert from the communist economic system to the open market economic system."¹⁴¹ He also seemed to bet on the eventual reunification of the Koreas leading to a dramatic inflation of Koryolink's value. He told *Euromoney*, "If there is reunification, then I will be the incumbent of North Korea, and my value will be something like [South Korean carriers] SK Telecom or Korea Telecom."¹⁴²

However, demand for telecommunications services between the two Koreas is unlikely to emerge in the near future, unless there are major breakthroughs in inter-Korean relations. The Kim Dae-jung administration and South Korean telecommunications providers explored the possibility of telecom cooperation with the North in 2002 when the two Koreas discussed launching a CDMA network in the North Korean market. However, the project never took off because of Pyongyang's security concerns about South Korea controlling its telecommunications infrastructure and US opposition, based on international patent infringement and COCOM export restrictions

¹³⁹ Andrew Morse, "Doomsday Scenario for North Korean Hotel?" *Wall Street Journal*, April 10, 2013, <http://blogs.wsj.com/korearealtime/2013/04/10/doomsday-scenario-for-north-korean-hotel/>.

¹⁴⁰ Tarek Al-Issawi, "Orascom Telecom's Sawiris Signs North Korean Deal," *Bloomberg*, December 15, 2008.

¹⁴¹ Andrew England, "Contrarian investor eyes Cuba," *Financial Times*, May 15, 2008.

¹⁴² Ellis, "Orascom: How do you solve a problem like Korea?"

under the Wassenaar Agreement. According to some South Korean experts, South Korean providers also had limited interest in the North Korean market, due to weak demand and purchasing power, but reluctantly followed the Kim administration's initiative.

Furthermore, there is no guarantee that Orascom will be able to resell its license to South Korean telecommunications providers after reunification. A South Korean IT specialist said that South Korean providers must have prepared plans to build emergency landline and mobile telephony in North Korea, in case of a sudden reunification. The network of railway and electric power transmission lines will most likely be utilized for the projects. He added that South Korean providers may not expect any role to be played by Orascom in this picture because it would be more efficient to simply replace the deficient Koryolink network than to repair and upgrade it.

It is noteworthy that North Korea expressed its interests in cooperating with the South on CDMA when Loxley was already providing mobile service in the Rajin-Sonbong Special Economic Zone under a 30-year license and seeking to expand its service to Pyongyang and Nampo. North Korea might have intended to let Loxley, who remained passive in investments, and South Korean providers compete against each other. What is also interesting is that North Korea bothered to approach and negotiate with an Egyptian telecom company when inter-Korean relations culminated in a summit meeting in October 2007. One could argue that North Korea was more interested in assured large-scale investments than in the mobile telecommunications project, itself.¹⁴³

Orascom's exclusive rights are one of the most important touchstones of their future relations with North Korea. The exclusivity had expired at the end of 2012, after the four-year period from launch. Orascom has not made any official announcement about whether and to what extent the rights were renewed, but Chairman Sawiris told *Forbes* that "Koryolink received written confirmation that for an additional period of 3 years (until 2015), no foreign investors will be allowed in the mobile business. However, we are continuing to expand our network and services to further solidify our position [in order] to be ready for any possible competition."¹⁴⁴

Although Koryolink was able to renew its exclusive rights, it is not clear whether the contract will remain intact throughout the three-year period. When granted the extension of exclusivity, Orascom reportedly made a commitment to fulfill the unexecuted investment obligations. Before entering the North Korean market, it promised to complete these investments by the end of 2012, although it has failed to do so.¹⁴⁵ South Korean experts say that one cannot exclude the possibility of North Korea repudiating the new exclusivity contract with Orascom and making another contract with a new service provider, most likely from China. They suspect Orascom might also be seeking an exit strategy, while slowing down its investments in North Korea.

¹⁴³ Ho-yong Choi, "Trends of North Korean Mobile Phone Business and Review of Related Laws" in Korean, *Journal of Radio Spectrum & Communications*, Vol. 10 (February 2009), http://www.kca.kr/open_content/bbs.do?act=file&bcd=radiotrends&msg_no=8369&file_no=1.

¹⁴⁴ Montlake, "Pyongyang Calling For Egyptian Telecoms Tycoon Naguib Sawiris."

¹⁴⁵ "Will the exclusivity contract between North Korea and Orascom be broken?" in Korean, *YTN*, January 6, 2013, http://www.ytn.co.kr/_ln/0104_201301060403189807.

There may be some conditions binding North Korea and Orascom to discourage defection from their agreements. For example, Marcus Noland raised the possibility of a turnkey mechanism that, if withdrawn, would have great impact on the value of the network to North Korea.¹⁴⁶ However, South Korean experts warn that all previous foreign investors who failed in the North Korean market also believed that things would be different for their investments.

¹⁴⁶ Noland, "Telecommunications in North Korea: Has Orascom Made the Connection?" pp. 62-74.

CONCLUSION

The North Korean mobile telecommunications market has seen dramatic subscriber growth over the last five years, contrary to initial speculation that mobile services would be limited to the elite. Although North Korea is one of the world's least-penetrated markets, with a penetration rate of around 9%, the influx of mobile handsets could potentially undermine the authoritarian regime's social control system. However, North Korea seems to be far away from the threshold of a telecommunications revolution, and the regime remains stable, with no social disruption caused or supported by the mobile network.

Despite the large number of subscribers, the actual number of users is still controversial. In spite of much anecdotal evidence and growing conspicuous consumption, inactive numbers and distribution of cell phones for official use suggest that the number of actual users may be much fewer than what Orascom has reported. In addition, the prohibitive top-up rates have made general users reserve their calls for important messages or emergencies. New digital social networking remains an unreachable luxury for the general population, and traditional self-censorship prevents politically sensitive conversations from taking place on cell phones. Consequently, a "Korean Spring" is unlikely in the near future.

It is noteworthy that cell phones have introduced meaningful changes to private economic activities. The nationwide mobile network has allowed traders greater mobility and rapid exchanges of market information. They are able to make more profits by responding to changing market conditions at an unprecedented speed. This has led to the suppression of sharp increases in prices, to the benefit of consumers. Cell phones have also facilitated a burgeoning private money transfer system among traders, with clientele expanding to include recipients of money remitted from their defector families in South Korea.

The government is another major beneficiary of mobile telecommunications. It has effectively secured an additional layer of surveillance, by monitoring calls and text messages. Although the security services may not be capable of conducting real-time monitoring of millions of calls, they have the technology to record and store the call data for investigations and for monitoring text messages. With the launch of the Koryolink network, the regime claimed victory in achieving a "Strong and Prosperous Nation" and technological modernity. Orascom's massive

investment commitments were conducive to these efforts. Furthermore, the regime raked in a considerable amount of foreign currency, estimated at \$400-600 million, from the exclusive sale of handsets and a 25% stake in the joint venture CHEO Technology.

These findings cannot be explained by either engagement optimism or imminent collapse and desperation theories.¹⁴⁷ There are no signs that North Korea introduced cell phones as a means of reforming or opening up to the outside world. Cell phones are seen as expressions of the regime's confidence in its ability to control the society, rather than a sign of capitulation to market forces or a de facto breakdown in the information barrier. The regime managed the pace and scale of mobile telecommunications service in a careful and measured way, while entrusting the nascent middle class or the new rich with more freedom of communication than ever before.¹⁴⁸ Heavy cell phone users like entrepreneurs, have a stake in preserving the status quo, as long as the regime does not attempt to disrupt their telecommunications tools or seize their wealth.¹⁴⁹ Cell phones are an effective means of utilizing marketization for maintaining and solidifying regime stability.

Although tightly controlled and monitored by the regime, the Koryolink network could potentially widen the loopholes of information flow to and from the outside world. A primitive, but creative, way to make "international" calls is in the making, mainly employed to send remittances from defectors in South Korea to their families left in North Korea. If the brokers find more profit opportunities, they could manage to figure out more creative and safer ways to make international calls, circumventing technical barriers and the monitoring system. A defector in Seoul has already overcome this technical barrier by connecting to foreign phones with SIM cards bought in Pyongyang. The fact that millions of handheld cameras and digital voice recorders are also in circulation should be another source of anxiety for the regime.

The North Korean mobile communications industry may have crossed the Rubicon, and the regime may no longer be in a good position to roll it back without paying a severe political price.¹⁵⁰ However, Orascom's future in the North Korean market is a crucial factor in the path of the industry. Orascom seems to have put too much emphasis on market preemption in North Korea and made investment commitments that could not be fulfilled as scheduled. Whether Orascom and the North Korean government will figure out a creative way to maintain and develop their cooperative relationship remains to be seen.

¹⁴⁷ For competing hypotheses about cell phone introduction in North Korea, see Nesbitt, "North Koreans Have Cell Phones—Why cell phones won't lead to revolution and how they strengthen the regime." *Joint US-Korea Academic Studies: Emerging Voices Vol. 22, 2011 Special Edition*, Korea Economic Institute.

¹⁴⁸ Peter Hayes, Scott Bruce, and Dyana Mardon, "North Korea's Digital Transformation: Implications for North Korea Policy," Nautilus Institute, November 8, 2011.

¹⁴⁹ "Rumblings from below," *Economist*, February 9, 2013.

¹⁵⁰ Mansourov, "North Korea on the Cusp of Digital Transformation."

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