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A Double-Edged Sword: Information Technology in North Korea

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SUMMARY With North Korea's tightly controlled and isolated population, the rise of information technology—specifically cell phones and an intranet—is an unprecedented development. In the last decade, a domestic intranet was launched and a cell phone network was created. Both of these form a closed, domestic system, which the regime hopes will allow for productivity gains from increased coordination and the sharing of state-approved information, while keeping out foreign influences. North Korea is now confronted with the challenge of how to reap the economic benefits of an IT system, while avoiding the social instability that may accompany it. The country has made a fundamental shift from a state that limits access to information technology to ensure the security of the regime, to one that is willing to use it as a tool, at least among a certain privileged class, to support the development of the nation. Although North Korea is stable for now, over the next decade, information technology has the potential to transform the state and it also creates a strong incentive to integrate North Korea into the dynamic economies of Northeast Asia.

North Korea is the most isolated country on Earth. This isolation is not an accident; the North Korean government traditionally considered control over information to be a necessity for the survival of the regime. The Democratic People's Republic of Korea (hereafter DPRK or North Korea) is a closed state that restricts the movement of its population and does not permit communication with the outside world. Possession of foreign media is a crime, and radios are hardwired to only receive government-run media. Select officials are approved to travel internationally on state business, but are closely monitored and, with the system of familial punishment still practiced in North Korea, they understand that their spouses, children, and parents will all face the consequences of their actions abroad.

Foreigners who visit Pyongyang experience a Potemkin city. Every site they see has been carefully staged for them. They are not permitted to leave the hotel on their own, and their tours primarily consist of granite memorials to the regime's own imagined significance. Most importantly, they are not allowed to interact with North Koreans other than their state-approved minders.

Cell Phones, the Internet, and Political Control

With such a tightly controlled and isolated population, the rise of cell phones and expanded access to an intranet within the country is an unprecedented development. Although the DPRK had aspirations to develop a modern IT (information technology) infrastructure, until recently, these aspirations were always held in check by the regime's desire to maintain control of its population. Third-generation cell phones were introduced into the country in 2008 through a joint venture with the Egyptian company Orsacom. The cell phone system, known as Koryolink, allows North Koreans to communicate with one another, but does not allow calls outside of the country or even to the limited number of resident foreign diplomats and NGO workers within the country. More than one million North Koreans have now subscribed to Koryolink.[1] Although the number of cell phone users in North Korea is much smaller than those in South Korea (where the 103 percent penetration rate means that there are literally more cell phones than people), mobile phone users in the DPRK use their phones about as often as their cousins to the south.[2]

More than one million North Koreans have now subscribed to the cell phone system

The DPRK launched a domestic intranet, called Kwangmyong, in 2002. This intranet is available to social elites in North Korea and includes message boards and chat functions. Its use has been encouraged among university students, scientists, and engineers to exchange information.[3]

Some super-elites in North Korea have access to the fully uncensored Internet. These North Koreans are very few in number and very high up in the North Korean government. More have limited access to the Internet to gather data on the United States, the Republic of Korea (South Korea), and other governments and militaries; identify data that could populate the DPRK intranet; and maintain the network of propaganda websites that North Korea aims at the outside world. Air Koryo, North Korea's state-run airline, even has a Twitter account.[4] North Korean officials stationed abroad also have some access to the Internet, although their activities are usually closely monitored by in-house staff at the embassy, consulate, or business that they operate.[5]

Although this digital revolution is unprecedented, it impacts less than 5 percent of the DPRK population. Mobile phone and intranet users in North Korea are universally privileged, urban North Koreans. The monthly costs for cell phones are around US$14, making Koryolink too expensive for most residents of a country with an average GDP of less than $2,000 a year.[6] Additionally, power is often unavailable outside of the cities in North Korea, making cell phones impractical to charge and use except in urban areas. North Korea has ensured that the access to communications technology is limited to those who have the most stake in the continued survival of the regime.

Nonetheless, this increased access to information technology in North Korea has significant implications for the future of the state. With a million

mobile phones in private hands, the number of conversations in North Korea has expanded beyond the capacity of the State Security Department to monitor. This is likely to force the state to automate surveillance systems where possible and prioritize what communications to spy on. Likewise, the intranet, while tightly controlled and populated with only select content, allows North Koreans to seek out information to which they would otherwise not have access. North Korea has made a fundamental shift from a state that limits access to information technology to ensure the security of the regime, to one that is willing to use it as a tool, at least among a certain privileged class, to support the development of the nation.

IT has been identified by the North Korean government as a key component in plans for science and technological development

Who Benefits?

The decision to expand the use of information technology in North Korea was based on a mix of economic and social factors. The economic imperatives for the DPRK involve productivity gains domestically and attracting investment internationally. Socially, North Korea has come to the conclusion that it can control, or at least mitigate, the social disruption caused by such a system. In short, the perceived financial benefits for North Korea expanding the use of this technology were too high for the state to ignore, so it worked to build a system that minimized the threat to the regime.

One motivating factor for North Korea is to use its intranet as part of the national effort to build a strong and prosperous country. Before the advent of these technologies, limited access to telecommunication systems and the bureaucratic competition for their control made their usefulness to direct projects almost impossible.[7] Cell phones and an intranet allow 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.

That said, these technologies will have their optimal impact only if the DPRK opens to the outside world. Among the key requirements for IT investment to result in productivity growth in a developing country are infrastructure, human capital, and openness to the global economy.[8] Although North Korea has a highly literate population, its investment in its telecommunications infrastructure has been limited, and the state has actively avoided economic integration with the outside world.

Information technology has been identified by the North Korean government as a key component in DPRK plans for science and technological development. The use of IT systems allows the DPRK to import information that can reform industry, expand the economy, and raise the standard of living in North Korea. In the article "On Effecting a Drastic Turn in Land Management to Meet the Requirements for Building a Thriving Socialist Nation," Kim Jong-Un called for the use of the Internet to acquire scientific information from abroad that would aid DPRK development.[9] The intranet allows North Korea to import and disseminate technical documents while remaining closed to external influences.

North Korea seems to also hope that the development of cell phones and the Inter- and intranet will result in an increase in foreign direct investment (FDI) and a much-needed influx of foreign currency. North Korea is looking at the examples of countries such as China and Vietnam that have found it necessary to increase access to IT services to attract investment. To attract FDI, however, North Korea must also commit to economic reforms to create an economic climate friendly to foreign investors, something North Korea seems ambivalent about doing. One of the biggest complaints Chinese investors have about working with North Korea is the ban on cell phones.[10] Since Koryolink mobile phones cannot call outside of North Korea, the system will have to be relaxed, at least for foreigners, to facilitate trade. The expansion of information technology in North Korea can lead to substantial economic benefits for the state, but only if the DPRK relaxes the internal controls on its economy and opens up to the outside world.

In addition to the economic benefits, there are political benefits the North Korean government can

reap from the adoption of information technology. First, the North Korean state has tied the development of science and technology to legitimacy as a nation. The annual Joint New Year's Editorial, in which the Korean Central News Agency (KCNA) and the three main state-run newspapers in North Korea outline the country's policies for the year, contains a section on the scientific and technological goals and achievements of the state. These achievements include the nuclear power program, the satellite program, and the development of information technology. The provision of these technologies to a portion of the population is a way that North Korea demonstrates that it is a normal, modern state.

Information technology offers much-needed economic benefits to the state, but could potentially be used to disrupt state control

Second, the introduction of cell phones and a controlled intranet allows the DPRK government to create a domestic network that it can control as an alternative to the foreign media that is seeping into the country. A recent InterMedia study found that increasing numbers of North Koreans have been exposed to foreign media, in particular DVDs from South Korea, which "provide compelling and credible portrayals of South Korea's material affluence and personal freedoms."[11] Some of the expectations for modern goods and services created by foreign media can be mitigated by allowing North Koreans access to modern communications technology in a manner that is controlled and monitored by the State Security Department.

Accompanying the expanded access to state-controlled information technology has been an attempt to clamp down on forbidden foreign media. Surprise inspections of households have increased, and new security services have been established to focus on the possession of foreign DVDs.[12] The songs, videos, and discussion forums on the North Korean intranet, accompanied by increased risks for those who access foreign media, may be an attempt to limit the viewership of South Korean and Chinese movies and television.

Despite the challenges of foreign investment in North Korea, Orsacom has found Koryolink to be a lucrative enterprise. Whether Orsacom has additional motivations for investing in North Korea is unclear. Some have argued that Orsacom is part of a deep relationship between Egypt and North Korea; others have speculated that Orsacom is positioning itself to have a role in telecommunications on the Korean Peninsula post reunification. Either way, the venture has been highly profitable. In the third quarter of 2011, Koryolink earned around US$41.5 million in revenue, with relatively low operating costs.[13]

The Mosquito Net

Information technology is a double-edged sword for North Korea; it offers much-needed economic benefits to the state, but could potentially be used to disrupt state control. To reap the economic benefits of an IT system while avoiding the social instability that comes with it, North Korea has developed what Kim Hung-Kwang, a North Korean scientist who worked on information technology before his defection, called a "mosquito net." This system which will "attract the inflow of foreign investment while simultaneously blocking the infiltrations of foreign ideas, news, and culture."[14] The Koryolink cell phone network and intranet both create a closed, domestic system, allowing for productivity gains from increased coordination and the sharing of state-approved information, while keeping out potentially corrosive foreign influences. Both systems are also easily monitored by the government.

Kim Hung-Kwang expects this mosquito net system to eventually be extended to the Internet at large. He believes the DPRK will develop its own Internet browsers and hardware with built-in controls (much like the radios hardwired to government-controlled frequencies) and permit "North Korean Internet users to access the Internet within specific time and limited hours, and with restricted sources and defined ranges, and only for public benefits."[15] This is very similar to the way entities involved in trade or collaboration with foreign groups are currently allowed access to e-mail. The e-mail is screened by the state, and, if it is deemed acceptable, it is allowed to reach the e-mail account of the recipient. Those recipients are allowed to go to a monitored,

state-controlled location for a select amount of time and check that e-mail.[16] By exercising this kind of control, North Korea is isolating its population from the impact of these innovations while still trying to reap the economic and social benefits.

It is also worth noting that these information technology systems can be used as a tool for control by the North Korean government as much as they have the potential to disrupt the regime. IT systems also allow regimes new means of surveillance, censorship, and propaganda. For example, Koryolink users receive daily texts of North Korean propaganda.[17] The discussion boards on the *Naenara* (My Country) intranet site are undoubtedly closely monitored by the North Korean State Security Department. Finally, given that the state has control of the network and towers, North Korea could easily close down the communications network in the event of an emergency. Kim Sang-Myung, a North Korean defector and chief of the North Korea Intellectuals Solidarity, notes that North Korea has watched and learned from countries like China and Vietnam that offer controlled access to the Internet.[18]

North Korea is isolating its population from the impact of these innovations while still trying to reap the economic and social benefits

In 2011, KCNA published a picture of Kim Jong-Il meeting with Orsacom founder Naguib Sawiris, demonstrating that the Koryolink joint venture had been blessed by the Dear Leader himself. The presence of Chang Song-Taek, vice director of the Workers' Party of Korea, which oversees internal security, demonstrated that the Koryolink venture had been approved by the state security services.

If text messages can be tracked, the internet can be quarantined, and e-mail accounts can be data-mined, what is the real transformative potential of the expansion of Internet technology in North Korea? First, the advent of information technology means that the State Security Department in North Korea has given up on total information control. Before Koryolink, private telephones were rare and users often had to produce an ID and pay a deposit to use a public phone.[19] The limited access to the phone system meant that "the State Security Department monitored most communications on a daily basis, eaves-dropping on most landline telephone calls, checking every fax and incoming email."[20] Now, however, there are too many communications for the government to track and the state will have to focus on certain groups to monitor, probably senior government and military officials and foreigners. In short, the North Korean surveillance state is downgrading from total to effective control of information within the country.

Second, information can be disseminated and horizontal networks can be developed in ways that were not possible before. The elite that have access to the North Korean intranet can now actively search for information on science and technology as well as other issues.[21]

Third, North Koreans looking for information from outside the DPRK to support the economic development of the country is a significant change. In the short term, this allows information to enter into North Korea that would have otherwise been kept at an arm's length in the name of *juche* (the philosophy of national autonomy and autarkic self-reliance that is a core ideology of the North Korean state). In the future, it opens the door for a wider range of joint partnerships and capacity-building projects with foreign governments and NGOs.

A Pyongyang Spring?

The North Korean regime has survived by restricting the flow of information to its citizens; however, the rumors of its impending collapse due to the advent of mobile technology and the intranet have been greatly exaggerated. The social structure, system of surveillance, and configuration of the IT system make the notion of a Pyongyang Spring unlikely in the short term.

Songbun, the complex, hereditary North Korean caste system, limits the impact of these new technologies in North Korea. The class distinctions are often based on family history and, as Robert Collins notes is his recent study of the system, "stratifies each North Korean resident as a political asset or liability to the socialist revolution and the regime in general and to the ruling Kim family specifically."[22] Songbun

is generally a one way street; a North Korean can be demoted to a lower rung on the class system, but it is virtually impossible to climb the ladder.

After the collapse of the public distribution system in the 1990s, the songbun system effectively turned into a loyalty-based triage system for resources and economic opportunity. The songbun system controls travel, work assignments, access to healthcare, and even food in North Korea. Low class North Koreans are selected for heavy labor jobs such as mining. High class North Koreans are more likely to be accepted into a college. This system is further reinforced by other control mechanisms including mandatory self-criticism, political study sessions, familial punishment, and a surveillance network that includes both monitoring of internal communications and a network of government informants across the country.

North Korea intends to respond to the advent of IT by restricting its use to the most elite 5 percent

Songbun means that those North Korean elite who have access to the intranet or mobile technology are those who have been judged to be the most loyal to the state. For North Koreans with a low rank, often isolated in the countryside, this digital revolution is meaningless. They will not have access to a cell phone, Internet, or intranet at any point in the foreseeable future, nor are they likely to engage with the horizontal networks created by the spread of information technology.

Elites in North Korea continue to see their best interests in the continued survival of the regime. This assessment is by no means unanimous, but it is true for most of the North Korean elite. The rise of markets in the DPRK has led to the development of a proto–middle class in North Korea, with the ability to gain wealth and access the trappings of modernity, like cell phones, usually only reserved for the elite. For now, the relationship between the economic and political elites seems to be complementary, and there have been no reports of frictions developing between the groups.

In short, just as the regime was able to weather the death of 5 percent of its population by forcing the poorest and least-trusted elements of its underclass to bear the brunt of environmental disaster, North Korea intends to respond to the advent of information technology by restricting its use to the most elite 5 percent of the population who have the most stake in the survival of the regime as it currently exists.

Over the long term, the combination of increased economic opportunity from the markets, rapid spread of foreign media, and proliferation of information technology could force the North Korean regime to reform or collapse. As the InterMedia study notes, the rich who have more access to foreign media are more likely to have more favorable attitudes toward the United States and South Korea.[23] However, in the short term, these North Koreans are attempting to secure economic opportunity within the state, not mobilize politically. Furthermore, it is hard to imagine a political disruption over the short term, especially given that the North Korean system does not allow a mechanism for political change. Cell phones, markets, and foreign DVDs may be the sprouts that will eventually lead to the transformation of the state. For now, however, their influence on the North Korean state is subtle and the country remains stable.

IT and the Future of North Korea

North Koreans have become information seekers. The country has committed to looking outside its borders for information on development at the highest level of the state. Horizontal networks are forming that were previously unthinkable. Finally, although the state has worked to neuter the technology to limit the potential for social unrest, the North Korean security services are no longer able to monitor all conversations within the state. This is a fundamental shift in North Korea. This means North Korea has crossed the "digital Rubicon" and cannot revert to the old ways of doing things.[24]

The advent of information technology in North Korea also creates new options for US policy toward North Korea. Policy options include circumventing the North Korean IT system using Koryolink or smuggled cell phones to get information into and out of North Korea. An alternative would be to

engage with the North Korean IT sector to encourage its development, an operation with the potential to transform the state over the long term. A third strategy would be to feed technical data that outlines best practices for economic development into the DPRK intranet via research networks to build collaboration between North Korea and other countries.

For now, North Korea is stable. However, over the next decade, especially if accompanied with market reforms and increased openness to the outside world, information technology has the potential to fundamentally alter the state and it also creates a strong incentive to integrate North Korea into the dynamic economies of Northeast Asia.

Notes

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[13] Orsacom's earnings before interest, taxes, depreciation, and amortization was US$33.2 million, making it the most profitable of Orsacom's operations. See: "Earnings Release: Third Quarter 2011," Orsacom Telecom, November 13, 2011.

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