Knowledge Management and Transfers between North and South Korea at the Kaesong Industrial Complex

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ABSTRACT

The countries of North Korea and South Korea entered into an agreement in 2002 to develop a Special Economic Zone in the Kaesong Industrial Region of North Korea. The resultant Kaesong Industrial Complex, or KIC, was designed to attract South Korean investment and supply South Korean firms with inexpensive North Korean labor to be directed with South Korean management, in return for hard currency payment of land rents and employment for North Korean workers. Other KIC competitive advantages include proximity to the Seoul consumer market and a workforce that speaks a common language. However, North Korean labor had little experience with high-technology machinery, and initially began manufacturing very low-technology, labor intensive goods such as cookware and watches. North Korean governmental concerns slowed management’s efforts at knowledge management and transfers, placing barriers between management-worker interactions. Recently, the North relaxed many of these restrictions, and by several anecdotal accounts, knowledge transfers is increasing at many firms. This paper looks at the knowledge management and transfers at the KIC, and its future as knowledge management is implemented.
INTRODUCTION

North Korea is commonly viewed, especially by western media, as a rogue saber-rattling nation, with its leader Kim Jong-Il hell-bent on disrupting world peace and civility with its neighbor South Korea with its massive army and nuclear program. Foreign newspaper headlines also carry the news on the latest natural or man-made disasters and aftereffects north of the 38th Parallel that divides the two Koreas, emphasizing the autarkic North Korean economy and self-imposed ideologies that may have led to environmental issues or failures to feed many of its citizens. Few western media outlets report positive news out of North Korea, especially when it fails to reinforce long-held outside views of the country.

However, North Korea in recent years has embarked on an economic odyssey into capitalistic opportunities, although with a socialist twist, designed both to generate profits for the country and create a cooperative project with its politically-separated sibling South Korea to promote peace and understanding between the two countries. In the last decade, North Korea has ventured forth into a series of reforms that adds “profit maximization” onto its centrally-planned statist system (Woo 2006). The mechanism to accomplish these reforms has been the experimentation in market-based principles through the development and implementation of a series of Special Economic Zones (SEZs). Although early SEZ versions may have been less than successful for various reasons, those attempts served as valuable proving grounds for the latest North Korean SEZ, the Kaesong Industrial Complex (KIC). This latest SEZ concept, one that combines foreign (primarily South Korean) enterprises using its own management versed in the current management principles, combined with plentiful and hard-working North Korean labor that is adapting to new technologies with facility, may serve as a model to replicate across the country. However, due to the interests of the North Korean government, barriers need to be
identified and overcome to facilitate the knowledge transfer and management of tacit and explicit knowledge that is necessary to operate a knowledge-based industry such as manufacturing. This paper looks at the knowledge management process as it relates to the development capacity through knowledge management and transfers in North Korea, and how it affects the national development of North Korean workers, specifically at the KIC.

The ironies in the political and economic interactions between North Korea and South Korea is many (Myers 2010; Haggard and Noland 2007; Martin 2006; Hunter 1999). The two Koreas remain officially at war with each other as its 1953 Armistice that ended its post-WWII civil war has never been fully negotiated into a permanent peace treaty, yet South Korea is North Korea’s second-largest trading partner. North Korea maintains a million-man army and a military nuclear program aimed at the South, ostensibly for use in a forcible reunification of the two countries, yet in the late 1990s it suffered through a famine that killed an estimated ten per cent of its population (Haggard and Noland 2007). North Korean government officials continue to denounce the South Korean mercantilist system, yet it is heavily dependent on aid from the South to feed its people as its manufacturing and agricultural systems have failed from misguided management and technological obsolescence. South Korea, for its part, claims that it is preparing for a possible reunification and subsidizes North Korean refugees, but then fails to integrate those refugees into its society (Kim and Jang 2007; Lankov 2006).

It was not always this way. Initial post-WWII land and labor reforms brought by founder and Great Leader Kim Il-Sung (who officially remains the “Eternal President” by North Korean law after his death in 1994) following the defeat of the Japanese colonialists brought a new vitality to its manufacturing and agricultural base, and spotted North Korea to a higher per capita
income over the South. After an early failure at capitalism that gave way to military rule, South Korea labored to find its economic footing well into the 1980s before shedding its military government with the election of President Kim Young-Sam in 1987. By this time, South Korea had embarked on an export-driven mercantilist economy that focused on the subsidization and development of select national champions in large multi-national *chaebols* (large conglomerates usually controlled at the time by a founding family) with international brands such as Samsung, Hyundai, or Lucky-Goldstar (LG) that operate over varieties of businesses (Seliger 2006). North Korea, on the other hand, opted for an economic model in the mid-1950s based on a concept developed to maintain its communist national sovereignty known as *juche*, a philosophy of self-reliance and self-development. However, with the South’s explosive growth in the 1980s and the break-up of the North’s main trading partner the Soviet Union in the early 1990s, the South’s economy rapidly overshadowed that the North. By 2010, the South Korean economy would surpass one trillion in GDP, and have a per capita income of US $30,200 (PPP), nearing Japan’s per capita income of $34,200 (CIA 2010). North Korea, however, would become one of the poorest countries in the world. Economic figures from North Korea are notoriously unreliable (its self-reported per capita income figure to the United Nations is $2,500 per person), but widely reported figures estimate that many North Koreans away from the Pyongyang capital earns less than $2 U.S.D. per day (CIA 2011; Haggard and Noland 2007). Poor economic conditions combined with environmental disasters have brought famine and health instability to many residents not connected to the Communist Party or military. Severe malnutrition is pervasive in the current generation. North Korea maintains tight restrictions on the distribution of food aid within its borders, and is estimated to divert almost thirty percent of foreign food aid to its military (Haggard and Noland 2007). Most North Koreans must develop trading skills to barter.
what food is available for goods that are often smuggled in from China. To keep information about the outside world away from its citizens, the government tightly restricts modern communication, including strict restrictions on civilian cell phones and internet (although there is a state-developed intra-net that can access only government-approved content). Travel within the country for North Korean citizens is restricted without a police permit.

With few assets to market on for world trade following previous sovereign defaults and a monetary unit worthless on the international monetary market, North Korea is alleged to engage in illicit activities such as the intellectual property infringement of trademarked products such as pharmaceuticals, engage in currency counterfeiting, and the manufacture of narcotics for distribution through organized crime channels in Japan and China, to generate access to hard currencies that are tradable on the world market. Despite these allegations, along with a high percentage of political prisoners in Soviet-style gulags and an up-coming change of power from leader Kim Jung-II to third-generation personality cult figure Kim Il-Un, the Kim dynasty remains popular with the public. As it does not look like North Korea will become a failed political state, action on both sides of the Demilitarized Zone (DMZ) have been taken to shore up the North’s deficient economy.

**SPECIAL ECONOMIC ZONES IN NORTH KOREA**

North Korea has made several attempts to engage with outside countries that could utilize its competitive advantages through its inexpensive labor and proximity to the large Asian consumer markets. For its part, North Korea failed to utilize any local knowledge abilities to gain any competitive advantage in markets on its own during the early part of its existence, relying instead on the Soviet Union and later to a lesser extent, China, to heavily
subsidize its manufacturing and agriculture base. The collapse of the Soviet satellite system in the early 1990s, and a later falling-out-of-favor with China, forced North Korea to develop new methods of generating hard currency for international trade. Building on examples from China and Vietnam, the North Korean government with personal encouragement from leader Kim Jong-II, set out to create Special Economic Zones (SEZs) within the country that promoted *silli sahoejui*, or “profit-oriented socialism” (Woo 2006). SEZ development was considered to be a major step in encouraging higher levels of foreign direct investment (FDI) in the country.

Early attempts at creating North Korean SEZs excluded South Korea, and have been less than successful, although none attempted value-added manufacturing processes as its core purpose of (Lim and Lim 2005). North Korean developed its first SEZ in 1991, to concentrate on warehousing and ship services, at Rajin-Sunbong on its northern border with Russia. A second SEZ was developed at Sinuiju, across the border from Dandong, China. Sinuiju became the North Korea’s first experiment with an autonomous region, one with separate laws and taxes for business, and has the ability to issue its own passports. South Korean interests and investors negotiated for an SEZ at Mt. Kumgang, where the Hyundai Corporation’s Asan travel subsidiary operates tours for South Koreans into the historic and culturally-significant area. The Mt. Kumgang SEZ has been the site of several events where Korean families separated by the 1950s Korean Civil War have been reunited. Various circumstances ranging from lack of investor interest to anti-business political actions (for example, in July 2008, a North Korean soldier shot and killed a 53-year-old South Korean woman tourist at the Mt. Kumgang SEZ who wandered into a military area) created investor uncertainty and questions to whether North Korea was fully committed to the projects. The three SEZs above, while remaining operational in various degrees, are “dysfunctional for all practical purposes” (Kim and Lim 2009).
However, the two Koreas remained interested in constructing a project that would encourage investment in the North and exhibit a project that symbolized a greater economic integration between the countries. In November 2002, the two Koreas negotiated an agreement (“Law of the Kaesong Industrial District”) to develop a SEZ in the Kaesong industrial region on the North-South border that would allow, for the first time, South Korean firms to invest in manufacturing facilities that would employ North Korean labor under South Korean management (Yoon 2007; Lim and Lim 2006). The Kaesong Industrial Complex, or KIC, was the first large-scale attempt of inter-Korean economic cooperation and integration, and fomented hopes of greater harmony between the two countries. An official KIC website is maintained by the Kaesong Industrial District Management Committee (KIDMAC) at www.kidmac.com.

There are attractive benefits for South Korean SMEs to locate in the Kaesong Industrial Complex and employ North Koreans, especially for those that cannot be profitable utilizing unionized South Korean labor and are vary of the risks in moving manufacturing operations to China or other low-wage Asian country. As of 2010, wages in the KIC begin at US $81.30.per month, around half the prevailing rate in China and competitive with other Asian developing country labor such as that found in Vietnam (Nanto and Manyin 2010). The KIC is also located only 45 km from the South Korean capital Seoul, offering fast delivery to one of the largest consumer markets in Asia. The KIC is also a one-hour commute to the Incheon Free Enterprise Zone (IFEZ), the logistics hub of South Korea. The North Korean government acts as a personnel agent for SMEs that operates in the KIC, hiring employees for the South Korean firms, and collecting wage payments from the companies directly before distribution to the employees. After deductions for insurance and other social benefits, estimates are that the North Korean
worker receives only a small part of the stated wage in cash, as low as US $2 per month, and receive most of their pay in coupons redeemable for goods in government shops (Yoo 2009). The North Korean government also benefits from directly receiving rents from leasing land from the 6,000 acre KIC to the South Korean companies that operate there.

**KNOWLEDGE MANAGEMENT IN NORTH KOREA**

Knowledge management is a key factor in the development capacity of workers in North Korea, as it is in most developing countries (Saravia and Miranda 2004). As the country has little experience in manufacturing save for low-technology, labor-intensive industry (North Korea once made a well-regarded tractor for export named the *Chollima*), it must import modern knowledge management in order to expand national development in knowledge and skills.

In order to establish knowledge networks in North Korea, most South Korean companies must begin work from a blank slate as few workers have experience in all but the most rudimentary manufacturing equipment, and no familiarity with modern knowledge management systems. This situation, in fact, can be a benefit. The lack of similar technology and experiences creates an environment where management and engineers to design systems that “leapfrog” older technologies and processes that required late-comers to bypass large capital investments to catch-up with advanced countries (Chung 2003; Hobday 1995).

The capability of learning new knowledge and its application is a primary factor in the creation of a competitive advantage in an organization (Nonaka 1991; Martin-de-Castro et al 2008; Mu et al 2008). With North Korean workers having this lack of similar experiences, it was difficult to ascertain whether workers would be able to learn the requisite knowledge and adapt to modern technologies (Lim and Lim 2005). The Kaesong industrial area was initially
planned by the North Korean government was for heavy industry, but of the industrial know-how that it did possess, much was incompatible with modern manufacturing methods and needs. It has been estimated that 60% of that knowledge base would become instantly obsolete if North Korean governmental protections ceased. As an example, radios and televisions produced in North Korea do not have channel tuners, as those products are manufactured to receive only the state-operated channels. North Korea’s central planning economic system also eliminated production incentives between its domestic manufacturers, leaving no reason for facility managers to innovate and experiment with new techniques that generate more efficient production capacities (Lim and Lim 2006). Few factory managers are selected based on competence, but often as a political appointment (Martin 2006). As a result, little or no indigenous processes or technologies have been developed, and managers have not been trained to think in resource maximization terms. In addition, North Korean officials severely restrict access to modern communications and information carriers such as the Internet and cell phones, which it is feared may spread anti-government propaganda (Vorontsov 2006). Other factors weighing against a successful implementation of complex and large-scale manufacturing facility include the low level of education in North Korea, especially in high-technology areas (Lim and Lim 2006). Although the North reports a high percentage of high school and college graduation, the quality is dubious due to the government-imposed limits of information allowed to enter the country.

During the initial building phase of the KIC, South Korean investors and management worried about the high inter-country knowledge transfer may have severe problems. Although the two Koreas share a common language and heritage, at first glance a competitive advantage for South Korean firms to locate in the KIC over China or Vietnam, cultural differences were an
unquantified issue. For example, the Korean word that refers to “salad” was a mystery to some North Koreans, especially modern words borrowed from English that were introduced through modern popular culture and globalization (Kim and Jang 2007). However, the preliminary reports coming from the KIC indicate that knowledge transfer has been successful from South Korean management to North Korean workers, allowing knowledge transfer to proceed at a greater rate than first expected (S-Y Kim 2006).

KNOWLEDGE MANAGEMENT LITERATURE REVIEW

There are few academic articles that refer to knowledge transfer in low-technology settings such as SEZs that utilize light manufacturing skills. Much of the body of current knowledge on knowledge transfer follows high-technology fields such as computer software development that generate information that are applicable for researchers to study, such as patent grants or research and development records from businesses. However, many of these knowledge transfer and learning ability theories can be applied to low-technology countries. However, the approaches for less-developed countries (LDCs) from foreign institutions and foreign private investors (or in the case of South Korea, often a ‘government-business’ partnership). These approaches are often at opposite ends of a spectrum, with the main goal of the investing capitalist entity is to turn a profit and the communist North Korean government goal are to generate land rents.

The emerging studies emerging from developing countries suggest that many SMEs do not realize the benefits of knowledge management that would increase the productivity, effectiveness and efficiency of the operation (Hussain et al 2010). SMEs are usually limited in economic and labor resources, and must be efficient in order to survive in the marketplace [Inter-Country Knowledge Transfer]
(Desouza and Awazu 2006). The potential to increase knowledge management could be a driving factor in any competitive advantage that might be brought to a firm (MacKinnon et al 2002). These studies, however, cover developing country operations with developing country management. In the case of SEZ firms in North Korea, the management team is comprised of developed country foreign nationals with familiarity with knowledge management. In theory, this should be a benefit, as the conventional factors of production will be secondary and South Korean management will know where to obtain any knowledge management information and processes to improve their operations (Chen et al 2006).

Knowledge

Knowledge, to obtain the full measure of the idea, must be seen as both an entity and a process (Blackler 1995). A common definition of knowledge is as follows:

“[K]nowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knower. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms” (Davenport and Prusak 1988). Knowledge increases through the sharing of information (Delahaye 2003). As an entity, knowledge can be added to, reduced, divided, multiplied and stored, and also has the ability to be applied as a process. In order to manage knowledge, organizations must have the ability to recognize that knowledge requires both views (Zack 1999).
Explicit and Tacit Knowledge

Polonyi (1966) bifurcated knowledge into tacit and explicit forms. Tacit knowledge is generated naturally as a by-product of action (Zack 1999). Tacit knowledge can be further separated tacit knowledge into two properties: 1) proximal, that knowledge which is closer to us; and 2) distal, that knowledge which is further away. Knowledge is often transferred, and decisions must be made with, incomplete information using each of these types.

Tacit knowledge produced within an organization is often the key to competitive success within an organization (Gertler 2001). The tacit knowledge that derives from the unique capabilities of a firm or organization cannot easily be copied or co-opted by a competing organization. This competitive advantage often arises in such small increments that “firms or individuals are not conscious of it” (Maskell and Malmberg 1999). Organizational and business practices become rote through time, repetition, and interaction with like-minded economic actors (Gertler 2001). A critical mass of this knowledge transfer form results in a large-scale community of practice, which may contain several groups tied together through informal shared expertise and common goals (Gertler 2003).

Explicit knowledge refers to that, which is made available to learners in formal ways, such as written manuals, formal planned training sessions, and databases that disseminate information. Explicit knowledge, therefore, has the ability to be precise and articulated (Zack 1999). Unlike tacit knowledge, which is embedded into one’s consciousness in the form of symbols and concepts and often cannot be spoken, explicit knowledge can take on a physical form that can be manipulated by multiple actors. Polanyi (1966) noted that many engaged in knowledge transfer is unable to adequately express tacit knowledge, stating that “we can know more than we can tell.” Leonard and Sensiper (1998) later expanded on Polanyi’s statement,
extending tacit knowledge to a definition where “we can often know more than we realize.”

However, explicit knowledge such as databases may also be considered tacit, as agents are able to retrieve information through intuitive methods that is often unable to be expressed.

Explicit knowledge occurs in multiple forms. It can be about something (declarative knowledge), how something occurs (procedural knowledge), why something occurs (causal knowledge). Each of these knowledge forms may also be either broad or specific. Organizations often share these forms of knowledge to reach institutional goals using either formal or informal techniques (Zack 1999).

Knowledge Transfers and Flows

Most knowledge that flows from a powerful, developed country to a weak, undeveloped countries in the form of a ‘solution,’ as opposed to a basis of learning (Ellerman 2002). Development institutions, such as the World Bank and the International Monetary Fund, often requires knowledge transfer programs to follow a consensual official line that perpetuates the image of the institution (“having an answer for the client”). Despite the institutional barriers, knowledge may be transferred indirectly to less-developed countries through capitalistic private enterprise, rather than a direct method, through bypassing the elitist rationalism that insists knowledge can only be transferred between equals (McFarlane 2006). Knowledge flow from private SME management to workers falls within this category.

SEZs such as the KIC are designed to be a cluster of knowledge activity. These clusters are adept at knowledge transfer due to local relational networks and ability to have face-to-face contact between parties (Morgan 2004). Further longitudinal interaction between management and labor may lead to a sense of a shared purpose in an operation, and a context in which the understanding of this purpose could extend beyond the operation and into the local

[Inter-Country Knowledge Transfer]
community (Amin and Cohendet 1999). Face-to-face interaction remains the best conduit of knowledge transfer where information is incomplete, or actions are do not readily have the ability to be made explicit (Storper and Venables 2003). Higher degrees of personalization tend to allow a greater sharing of knowledge (Boh 2007). This close interaction appears to be the best way to communicate essential tacit knowledge (Hussain et al 2010).

As workers learn knowledge, the flow of information increases as workers change jobs (Combes and Duranton 2006). Therefore, one way for a firm or organization to increase productivity is to hire workers away (or “poach”) from other entities that have knowledgeable employees, as knowledge has inherently become embedded with those employees. The free flow of workers therefore means a free flow of information. The poaching technique to gain knowledge transfer may come at a cost to the hiring company. The firm that does not want to lose embedded knowledge may either raise its wage rate, making employees more expensive to hire away, or it may do some poaching itself by hiring away a competitor’s employees. Market forces, therefore, serve an important role in knowledge transfer within a knowledge cluster, as workers that can give added-value benefits to a firm may seek out higher salaries. This “brain circulation,” actions that increase knowledge and skill levels by more interaction between persons (management, workers, etc.) and institutions (firms, countries, etc.) generate a wider variety of learning experiences and are generally seen as positive (Saxenian 2002).

Various “brain blocking” strategies such as restrictive government legislation or the imposition of onerous work rules, whether intentional or unintentional, can also serve to suppress knowledge transfer between entities (Gower 2011). National governments, through the enactment of certain legislation, can take restrictive and protectionist actions to impede the brain gain to a country, often an unforeseen and unintended consequence of its intended action.
(Gower, 2011). These brain blocking actions keep persons or entities from maximizing intellectual capital. For example, current U.S. legislation that restricts the importation of educated foreign professionals once a numerical limit is reached, despite the stated need of employers that want to utilize the specialty knowledge of that person. Although the stated intent by Congress in enacting this legislation was to preserve jobs for American workers, firms, especially in high technology areas, have bypassed the U.S. immigration system altogether, and opened operations to employ these persons in adjacent countries with fewer immigration restrictions. By putting up barriers to potential knowledge sharing between educated foreign persons, the enacted legislation served to both reduce knowledge management that would maximize intellectual capital, and force jobs out of the country. The latter phenomenon, referred to as “brain diversion,” unintentionally benefits a third country from the actions of another (Gower, 2011). Brain blocking and brain diverting actions need not be limited to governments. Belligerent unions and fervent local citizenry activism against foreigners are community-based actions that can drive away potential intellectual capital.

**The Knowledge Spiral**

Nonaka (1991) introduced the theory that knowledge creation is based on a spiral movement between actors between explicit and tacit knowledge, and therefore these two knowledge forms cannot be separated. The interaction between explicit and tacit knowledge results in a “knowledge conversion” process that follows a particular pattern. The resultant “Knowledge Spiral” that visualizes the continuous knowledge transformation combines four integrated processes known as SECI: socialization, externalization, combination, and internalization. The processes are both “mutually complementary and interdependent,”
and this interaction is altered by its sequence.

The Knowledge Spiral begins in the socialization process, requiring a transfer process of tacit knowledge between actors in the form of observation, hands-on doing, and an imitation of better practices by those receiving information. To externalize the socialization process, this tacit information is fixed unto a form of media, often manuals, books, business or education documents through an interchange of communication that uses metaphors and analogies (Nonaka 1991). The combination process follows the information and knowledge exchange through the institutional or firm practice that disseminates the knowledge, such as putting new manufacturing procedures in an operations manual and distributing it out to plants, and the scheduling of formal information sessions within a firm to implement the new procedures (distributing the new explicit information throughout the organization). The internalization process then utilizes the formal explicit procedures that transforms that information into an individual’s tacit knowledge (Nonaka 1991; Nonaka 1994, Nonaka and Takeuchi 1995). As knowledge sharing and knowledge creation becomes an integral part of an organization’s culture, knowledge continues to “spiral” and work its way between explicit and tacit forms within the organization.

Hildreth and Kimble (2002), however, find fault with Nonaka’s Knowledge Spiral, arguing that it over-emphasizes the role of technology and under-emphasizes the human role in knowledge transfer. In particular, the authors note that tacit knowledge by its definition can never become completely explicit, as seems to be indicated by Nonaka. The authors claim that knowledge is therefore in duality, at any point in time somewhat explicit and somewhat tacit, and that some parts of knowledge can never be externalized. Noting that
Leonard and Sensiper (1998) wrote that there is an importance of personal contact that is directly related to amounts of interactive time between actors to build interpersonal trust to facilitate knowledge transfer, Hildreth and Kimble (2002) state that an integral part of knowledge transfer becomes clearing communication lines and bringing actors together, rather than merely rely on the Knowledge Spiral.

**THE KAESONG INDUSTRIAL COMPLEX**

The Hyundai Corporation and Korea Land Company, the two South Korean *chaebols* selected to develop the KIC, broke ground to build the development’s infrastructure and factories in 2002. Shipment of the KIC’s first manufactured goods began in 2005. The original plants were South Korean SMEs, although the German auto parts maker Prettl would begin operations in 2008 (New Europe 2008). A few Japanese firms held minority positions in South Korean joint ventures, and Chinese firms have visited the KIC to scout potential factory sites. As of the beginning of 2011, no U.S. firms operated within the KIC. An increase in the diversity of foreign firms other than South Korea is believed to form a buffer between future inter-Korean frictions that might arise (The Hankyoreh 2009; Lim 2007). In addition, the first North-South 50-50 venture, Pyongyang Hemp Textiles, opened in October 2008 (Kim and Lim 2009). A cooperative between the Saebyol General Trading Company (North) and the Andong Hemp Textile Company (South), with an equal investment of US$15 million, began operations despite the high level of political tension at the time.

Its initial phase was labor-intensive light manufacturing such as sewing of materials components and the manufacture of low-technology goods such as cookware, watches, and auto parts. By 2010, 121 light manufacturing facilities were built of the 450 plants
approved to locate within the KIC in future development phases, and employed over 45,000 North Korean workers and over 1,300 South Korean management personnel (Fackler 2010; Yonhap News Agency 2010). Recent news reports show an increase in KIC employment despite a rise in inter-Korean tensions following the election of conservative President Lee Myung-bak in 2008, who backs aid to North Korea based on enacted reforms in human rights and nuclear disarmament, North Korean nuclear program tests by the North Korean government, and the sinking of the South Korea ship *Cheonan* in March 2010 that has been attributed (but not confirmed) to a North Korean torpedo. Despite the tension and delays, it is estimated that the KIC factories produced over US $320 million of goods in 2010 (North Korea Economy Watch 2011). Although laws and agreements prevent KIC products to be directly shipped from North Korea, the manufactured goods are shipped the short distance to Seoul for local sale, or the nearby South Korean Incheon Free Economic Zone (IFEZ) for export. KIC manufactured goods are marked “Made in Korea,” allowing those exports to be covered as a product of South Korean origin, using South Korea’s state status as a Most Favored Nation under World Trade Organization (WTO) rules where applicable (Knudsen and Moon 2009). The South Korean preferential origin designation also brings tariff benefits where the country has negotiated free-trade agreements (FTAs) with multi-lateral organizations such as the Association of South East Asian Nations (ASEAN) and the European Free Trade Association (EFTA).

The KIC master plan involves ramping up heavier and higher technology through the series of three phases. The original plan, scheduled to build and integrate high-level computer technology sector into the prior manufacturing phases, was to be completed by 2012, has had only a small progression into the second phase. By 2010, total employment at the KIC was to reach the 100,000 level, and successful implementation of all three phases was estimated to
employ as many as 350,000 when completed. However, the political friction and disagreements between the two countries has put further implementation severely behind schedule and the project faced rumors of cancellation at the more serious times of contention (Lim and Kim 2009).

**Implementing Knowledge Transfer and Management at the KIC**

The ability for management and workers to interact and allow the transmission of tacit and explicit knowledge is essential within an organization, and is even more important in SMEs that operate in developing countries. Restrictions on the management-employee interface suppresses knowledge transfer, and limits worker development. However, the peculiarities of doing business in North Korea required overcoming governmental opposition to this basic knowledge management concept.

Initial concerns from both sides within the KIC involved the brain blocking barriers that impeded the mechanisms of knowledge transfer. The North Korean government and military takes great lengths to keep information that it does not control away from its population. Internet connections to the outside world are banned, save for the highest people in government or the military (Vorontsov 2006). A limited and tightly controlled cell phone system operates in the country (for example, South Korean management at the KIC are allowed to use modern communications), but away from populous border towns that might be able to reach China. Information and personal exchanges using cell phones to reach outside the country is a capital offense. One recent incident involved the public execution of a factory manager who installed 13 phones in the basement of his building to contact persons outside the country. According to media sources outside North Korea, 150,000 local residents were forced into a soccer stadium to
witness the execution (Fox News 2007). The North Korean government does not acknowledge this occurrence. However, the South Korean SMEs in the KIC are also installing more sophisticated computer and equipment technologies, and recently waivers from previous U.S. export agreements that disallowed the importation of certain levels of U.S.-made technology into North Korea (Kim and Lim 2009). The North Korean government has educated its people that their country is a paradise on Earth, and that the South is “poor and desperate, starving under the yoke of American imperialism,” with its people mired in poverty (Petrov 2009). Potential worker interactions with South management might give a different (albeit, more accurate) perception of its neighbor than was taught by its government, that could lead to dissent within the North Korean civilian ranks.

With these issues in mind, management-to-worker face-to-face interactions were limited at the initial opening of KIC factories. At first, South Korean management was not allowed to eat lunch with workers, lest any talk of the conditions across the DMZ occur (S-Y Kim, 2006). Over time, as this potential problem proved negligible, the North Korean government approved South Korean management was allowed to remain in Kaesong on a semi-permanent basis. By the beginning of 2010, over 500 South Korean managers had weekday overnight privileges, and that key figure was slated to rise to 900 later in the year (Green 2010). The higher degree of personalization allows a greater potential for tacit knowledge to be exchanged between management and workers knowledge in settings other than the job site. It has been noted that North Korean workers now on occasion bring home-cooked food from their homes to management (D-G Kim 2006).

South Korean firms continue to train and develop workers in the light manufacturing facilities at the KIC, although the movement into further phases of development has been
delayed pending the outcomes of political actions by the North Korean government. The recent political climate created uncertainty for South Korean entrepreneurs and their capital sources that wanted to operate there. The lines of communication between South Korea and North Korea concerning the GIC have been frazzled but not completely cut. For example, the road through the DMZ to the GIC remained open as sirens in Seoul warned of an impending North Korean nuclear bomb test (S-Y Kim, 2006). Hyundai’s Asan travel division, the entity given monopoly power over the Mt. Kumgang tourist SEZ, found its allotment halved overnight without warning from the North Korean government after it fired a main employee for fraud that had close ties to the North Korean elites. Various transportation projects have been delayed, seemingly at the whim of the North Korean government or military (S-Y Kim 2006). South Korean investors into the North Korean SEZs have so far transcended politics, not calling in loans as SMEs worked through barriers and obstacles between the two governments. This “patient capital” is one reason the KIC survived political business interruptions (Lim and Lim 2006). The South Korean government, for its part, offers guarantees to investors in the event of the KIC closing for political reasons, up to 90% of investment value.

However, many roadblocks to knowledge transfer between the two Koreas are being lowered, if not reduced. South Korean management recently have been able to occupy firm-owned apartments along with company workers within the city of Kaesong, allowing for extended face-to-face periods of interaction in social settings after hours of business (Morgan 2004). South Korean firms up-graded equipment in factories soon after manufacturing began, installing new technologies that require computer skills, good indications of success (D-G Kim 2006). This infers that knowledge transfer is taking place and that feared barriers such as differentials in local Korean languages and cultures (such as many North Korean
computer specialists only know how to program in Russian) have been minimal and easily overcome. In some instances, North Korea sent some students outside its borders to gain technological and free-market business education, a first for the Kim regime.

CONCLUSION

North Korea, by easing many of its rigid autarkic standards to economically cooperate with South Korea, has added to its level of national development capacity when it began experimenting with SEZs. The development of a “profit-oriented socialism” model has accelerated this process, setting the KIC and future SEZs up for higher levels of foreign direct investment in the coming years.

South Korean managers have stated that they are impressed with the intensity North Korean workers take their jobs, and express excitement the development of this labor pool (CNN.com International 2009; Jin 2007). Worker health and appearance, anecdotally, shows signs of improvement (D-G Kim 2006). The effectiveness of knowledge management, along with other daily living improvements for the North Korean worker, has led to a higher level of skill assimilation, and thus a greater degree of productivity improvement, than was initially expected (D-G Kim 2006). Further advancements are expected once North Korean workers become more familiar with capitalistic market forces. North Korean labor has also impressed its management with its ability to work and solve problems in teams, a possible by-product of being raised in a communist environment. Indications are that both Koreas are pleased with the performance of the North Korean labor pool, and will make an effort to continue and improve the KIC operations (Kim and Lim 2009).

The removal of government-imposed barriers to knowledge management led to an gain in skill levels for workers, that appeared to present itself in the form of increased
productivity. To make incremental advances and venture into higher technologies, it becomes essential that any brain-blocking barriers be identified, from both the worker and management perspective, and cooperatively work to resolve these issues to encourage greater knowledge transfer as the KIC moves forward into its higher technology phases. Through continual improvements in the understanding of its knowledge management issues, the North Korean government would discover benefits and limitations to its worker competitive advantage. Through experimentation to find beneficial outcomes in its capabilities in receiving knowledge transfers, North Korea may find that its internal knowledge management processes to be a major driver in its path towards profit-oriented socialism.

Inter-Korean cooperation within the KIC must also find some way to encourage brain circulation within the KIC to maximize worker development capacity. The relaxation of government rules that discourage job changing would bring about inter-company knowledge transfers and spillover benefits, as workers employed previously by other companies begin to implement techniques learned elsewhere. Once other planned SEZs are built, the easing of travel restrictions may be used to encourage workers sharing knowledge and teaching skills to new employees.

Future Work

To date, there have been no worker-level knowledge management studies on KIC workers, and little firm-level management analysis, due to governmental concerns on both sides. Each side would benefit from studies, quantitative and qualitative, that would explore the level of knowledge transfer for management to workers.

Also of interest are social issues between North Koreans and South Koreans. As noted
by Kim and Jang (2007), relations between North Korean defectors *(saetonmin)* and South Korean residents in the South have often been less than cordial due to cultural differences. Are there similar problems in the North with the cadre of South Korean management now living in proximity? South Korean management is also exclusively male (as are the North Koreans now beginning to be slowly promoted to supervisory positions), and the percentage of KIC workers is approximately 75% female (North Korean Economy Watch 2011). Are there policies that address male management – female worker fraternization outside the workplace, and have there been any instances that required any resolution? As intrusive as the North Korean government might find any questions to social issues, a carefully worded survey vetted by KIC officials would serve to enlighten trends in social conditions there, and potentially aid in the quality of life for workers as further phases and implemented and the Kaesong population expands with more North workers and more South management.
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