## PART TWO: COUNTRY STUDIES

## IV. SMALL AND MEDIUM-SIZED ENTERPRISE ADJUSTMENTS TO INFORMATION TECHNOLOGY IN TRADE FACILITATION: THE EXPERIENCE OF THE REPUBLIC OF KOREA

By Junsok Yang

## Introduction

International trade has been, and continues to be, one of the most important factors in the growth and development of the Republic of Korea. Because of the importance of trade, the Republic of Korea has always been interested in ways of making trade easier and faster. By the late 1990s, the Republic of Korea was one of the most "wired" countries in the world.<sup>1</sup> Given the rapid pace of IT adoption, it made sense for the Republic of Korea to utilize IT for customs procedures and trade facilitation. The Government of the Republic of Korea vigorously pursued extensive use of IT for cargo clearance in order to reduce transaction costs and regulatory burden for traders, especially small and medium-sized enterprises (SMEs).

This chapter examines the evolution of the use of IT for cargo clearance in the Republic of Korea, and how it has affected businesses, especially SMEs. It should be emphasized here that the adoption of IT for cargo clearance involved not only installing new hardware and software, and replacing paper forms with electronic forms, but also extensive reform of laws and regulations to maximize effectiveness. Section A examines SMEs and their role in trade by the Republic of Korea. Section B explains how the Government of the Republic of Korea adopted IT into its trade and customs procedures. Section C discusses how these changes affected SMEs in general while section D reviews some specific case examples. Section E develops some conclusions and makes some recommendations based on the experience of the Republic of Korea.

#### A. SMEs, trade and trade facilitation in the Republic of Korea

This section examines what constitutes an SME as well as the role of SMEs in trade in the Republic of Korea. For the manufacturing sector, legislation in the Republic of Korea defines an SME as a firm with less than 300 full-time employees or the equivalent, or a firm with capital of less than 8 billion won.<sup>2</sup> For the mining, manufacturing, construction

<sup>&</sup>lt;sup>1</sup> According to the United Nations Conference on Trade and Development e-business database in 2006, as of 2004, 94 per cent of all businesses in the Republic of Korea had access to the Internet, and 92.2 per cent of all Korean businesses were able to access the Internet through fixed-line connections of 2 Mbps or higher.

<sup>&</sup>lt;sup>2</sup> In 2009, this amount equalled approximately US\$ 6.8 million (1,170 won = US\$ 1).

and transportation industries, a small business is a firm with less than 50 full-time employees or the equivalent while a micro-enterprise is a firm with less than 10 full-time employees or the equivalent.

| Sector   | SN                   | lEs                                      | Small<br>businesses | Micro-<br>enterprises<br>Fr of<br>Frs<br>Less than 10<br>Less than 10<br>Less than 5<br>Less than 5<br>Less than 5 |
|--|----------------------|--|---------------------|--|
|  | Number of<br>workers | Capital and sales                        | Numb<br>worl        | oer of<br>kers   |
| Manufacturing  | Less than 300        | Capital of W<br>8 billion<br>or less     | Less than 50        | Less than 10   |
| Mining, construction and transportation  | Less than 300        | Capital of W<br>3 billion won<br>or less | Less than 50        | Less than 10   |
| Large general retail stores, hotels,<br>recreational condominium operations,<br>communications, information processing<br>and other computer-related industries,<br>engineering services, hospitals<br>and broadcasting  | Less than 300        | Sales of W<br>30 billion<br>or less      | Less than 10        | Less than 5  |
| Seed and seedling production, fishing,<br>electrical, gas and waterworks,<br>wholesale medical and orthopaedic<br>products, wholesale fuel and related<br>products, mail order sale, door-to-door<br>sales, tour agencies, warehouses and<br>transportation-related services,<br>professional, science and technology<br>services, business support services,<br>films, amusement and theme park<br>operations | Less than 200        | Sales of W<br>20 billion<br>or less      | Less than 10        | Less than 5  |
| Wholesale and product intermediation,<br>machinery equipment rent for industrial<br>use, research and development for<br>natural science, public performances,<br>news provision, botanical gardens,<br>zoo and natural parks, wastewater<br>treatment, waste disposal and<br>cleaning-related services  | Less than 100        | Sales of W<br>10 billion<br>or less      | Less than 10        | Less than 5  |
| Other sectors  | Less than 50         | Sales of W<br>5 billion<br>or less       | Less than 10        | Less than 5  |

| Table 4  | I a mal | d of in the new | of CMEs   | in the | Demuhlie | of Kanaa |
|----------|---------|-----------------|-----------|--------|----------|----------|
| Table 1. | Legal   | definitions     | OT SIVIES | in the | Republic | of Norea |
|          |         |                 |           |        |          |          |

Source: Small and Medium Business Administration (Republic of Korea) website at www.smba.go.kr/ main/english/sub3/sub03\_1.jsp. In 2006, there were approximately 3 million SMEs in the Republic of Korea (99.9 per cent of the country's total firms), employing 10.9 million workers (87.5 per cent of total employees). However, the SMEs tended to underperform in trade, as they accounted for only 31.9 per cent of total exports from the Republic of Korea. Figure 1 shows recent trends in SME exports and table 2 shows the recent share of SMEs in total exports.





## Table 2. Percentage share of SME exports in total exports by the Republic of Korea

| 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|------|------|------|------|------|------|
| 43   | 42   | 42   | 36   | 32   | 32   |

Source: Korea Federation of Small Business at http://stat.kfsb.or.kr/stat\_index.html.

The types of goods that SMEs export from the Republic of Korea are substantially different from those exported by large enterprises. As table 3 shows, the exports by SMEs and large enterprises are heavily concentrated in the machinery and electronics sectors, but SMEs tend to export more chemicals, plastics and rubber products as well as steel and metal products, which tend to be less processed. The differences probably represent the lower technology base of SMEs.

# B. Evolution in the use of information technology for cargo clearance

## 1. Background

Adopting the use of IT in cargo clearance has been an important part of the Republic of Korea's overall e-trade project, which, in turn, is a crucial component of the

Source: Korea Federation of Small Business at http://stat.kfsb.or.kr/stat\_index.html.

| Year  | Agriculture | Chemicals | Plastics,<br>rubber | Fibre | Steel/<br>metal | Machinery | Electric/<br>electronic |
|---|-------------|-----------|---------------------|-------|-----------------|-----------|-------------------------|
| 2001  | 3.5         | 8.2       | 5.3                 | 20.4  | 5.2             | 20.2      | 31.2                    |
| 2003  | 5.2         | 11.6      | 4.1                 | 15.8  | 8.6             | 16.8      | 33.4                    |
| 2005  | 3.9         | 13.0      | 5.0                 | 13.7  | 9.1             | 20.1      | 31.2                    |
| 2007*                                       | 3.4         | 13.4      | 4.4                 | 9.8   | 10.4            | 21.7      | 34.1                    |
| 2007 <sup>*</sup><br>(Large<br>enterprises) | 8.2         | 9.7       | 1.4                 | 0.6   | 8.4             | 34.3      | 37.3                    |

Table 3. Percentage of exports for SMEs

Source: Korea Federation of Small Business website at http://stat.kfsb.or.kr/stat\_index.html. \* First quarter of 2007.

country's overall trade facilitation initiative. It is important to note that the introduction of e-trade was a part of an overall long term reform of trade procedures. While the introduction of IT may have been the largest component of the reform process, without reforms in other areas it is likely that gains in efficiency would not have been realized.

The Republic of Korea had been emphasizing trade facilitation and reforms of customs clearance since the late 1980s for several reasons. First, trade had always played an important part in the Republic of Korea's development. As figure 2 shows, since the mid-1970s, the combined trade volume (exports and imports) had been consistently higher than 50 per cent of the gross domestic product (GDP). Further, because the Republic of Korea is a resource-poor country – and until, arguably, the mid-1990s a low-technology country – it has needed to import raw materials and other inputs. Thus, better customs clearance could reduce costs of producers and exporters. Also, after a four-year period of trade surpluses in the late 1980s, the Republic of Korea experienced trade deficits from 1990, due in large part to the slowing growth of exports, coupled with a rapid





Source: KOSIS Database of the National Statistics Office at www.kosis.kr.

rise in imports. Thus, emphasis was placed on streamlining and reducing costs to help exports.

Another factor may have been the bad reputation of the Korea Customs Service (KCS) during much of the time the reforms took place. As KCS (2004) admitted in a 2004 report to the President, it was often placed on the list of the most corrupt and unfriendly government agencies up until the early 2000s.<sup>3</sup> Also, the logistics-related costs were deemed to be higher in the Republic of Korea than in the country's international competitors due to inadequate laws and regulations. Such perception gave the Republic of Korea the incentive to try to overhaul the system.

The Republic of Korea completed a major reform of its import clearance system in 1996. The most important consequence of that reform was that the Republic of Korea moved from a permit system to a self-declaration system, and KCS moved towards post-entry investigation for cargo clearance. Focus was placed on deregulation and facilitation of customs clearance. During the reforms, the pre-clearance payment of duty was replaced by a post-clearance payment system. The Republic of Korea introduced the on-dock immediate delivery system in 1998, which allows an importer to unload and release imported goods simultaneously at the time of entry.<sup>4</sup> Such reforms set the stage for e-customs and e-trade.

### 2. Introduction of e-trade

The use of IT for cargo clearance is only a part of the e-trade process. The Republic of Korea defines e-trade as "wide-ranging trade activities, which use electronic means for customs clearance, financial payments, transportation and insurance; and encompasses not only traders but also third parties such as government, transportation firms and financial institutions."<sup>5</sup> The Republic of Korea's trade law recognizes e-trade as "trade whose transactions take place wholly or partially through information processing equipment such as computers, and electronic information networks" (Sohn and Yoon (2001).<sup>6</sup> The Republic of Korea placed importance on using IT for customs clearance because, in the late 1980s and early 1990s, the country began to emerge as a major producer for IT-related goods and began to get "wired." In the late 1990s, the Government began its initiative for establishing an "e-government" where agencies would adopt and use IT wherever possible. Customs clearance was a natural candidate for such e-government initiatives.

<sup>&</sup>lt;sup>3</sup> However, due in large part to the reforms described in this chapter, KCS is now consistently rated as one of the more efficient and least corrupt government agencies. KCS itself appears to have admitted that the low rating served as one of the incentives for reforms, and is deservedly quite proud that it is now considered one of the least problematic government agencies.

<sup>&</sup>lt;sup>4</sup> G/C/W/123.

<sup>&</sup>lt;sup>5</sup> The International Trade Centre, on the other hand, defines e-trade as "the application of information and communications technologies (ICT) to improve export competitiveness of companies".

<sup>&</sup>lt;sup>6</sup> The trade law of the Republic of Korea also defines e-trade as "trade of non-tangible goods in electronic format, as defined by Presidential Executive Order."

The introduction of IT in cargo clearance procedures in the Republic of Korea can be roughly divided into two stages. The first stage can be subdivided into the following substages:

- (a) Preparation for Customs Clearance Automation (1980s-1992);
- (b) EDI Customs Clearance Automation Six-Year Plan (1992-1997);
- (c) The establishment of a Paperless Customs Clearance System (1997-2001); and
- (d) The Plan for Establishment of Infrastructure for Information Technology and Knowledge Management (2001-2003).

The main accomplishment of the first stage was a value-added network/electronic data interchange (VAN/EDI) system that linked KCS and traders in 1996. KCS expanded the VAN/EDI so that traders could access the network through the Internet in 1997, and began building a single window for submitting paperwork to the Government.

The Republic of Korea has been pursuing e-trade since the late 1980s. In 1989, the Government initiated the "Comprehensive Trade Automation Plan" and, in 1991, the passed the "Act on Trade Automation". The Act gave legal basis for the use of IT in cargo clearance as well as automation of the cargo clearance process. In the same year, the Ministry of Trade and Commerce (currently the Ministry of Knowledge Economy) signed an "Agreement on Trade Automation" with KCS.

In 1991, the Korea International Trade Association (KITA), a private organization composed of traders that often acts as an intermediary between traders and the Government, funded the establishment of the Korea Trade Network (KTNET), which was to build and operate e-trade infrastructure and e-trade services. In the same year, KCS designated KTNET as sole trade automation service provider. Since then, KTNET has been the primary e-trade infrastructure operator and service provider, and it has played an important part in establishing e-trade in the Republic of Korea.

In 2003, the second stage began for e-trade in the Republic of Korea. The goal of the second stage is: (a) to build on the accomplishments of the first stage; and (b) to establish an e-trade system where IT is used at every stage of cargo clearance procedures, encompassing not only government-business (traders) transactions, but also businessbusiness transactions. Some Republic of Korea observers refer to such an IT network as a "ubiquitous e-trade system," or "u-trade." The system would provide real-time information on the status of cargo and paperwork, and allow submission of electronic paperwork in real time. The paperwork would be delivered automatically to all parties that required it, and the system would provide real-time assistance.

This second stage involves the establishment of an e-trade network and "UTradeHub", which ties not only the Government with traders, but other trade-related organizations and private agencies such as shippers, insurers, banks and financial institutions. The ultimate goal of the second stage is to have not only submissions of electronic paperwork to the Government, but all trade-related transactions such as the

exchange of electronic paperwork between businesses as well as financial payments made through the electronic network. Table 4 shows the timeline of the more important events in the introduction of IT in cargo clearance, and box 1 explains the concept of "ubiquitous trade."

| Year | Event   |
|------|---|
| 1989 | The Government initiates the "Comprehensive Trade Automation Plan"                          |
| 1990 | Comprehensive Trade Automation Task Force created within KITA                               |
| 1991 | Trade Automation Act is enacted   |
|      | KTNET is established by KITA  |
| 1992 | KCS designates KTNET as sole customs automation service provider                            |
| 1994 | The Republic of Korea initiates electronic customs clearance system for exports             |
| 1996 | The Republic of Korea initiates electronic customs clearance system for imports             |
|      | KTNET provides a logistics service through MFCS   |
|      | The Republic of Korea achieves a 100 per cent electronic customs clearance system (VAN/EDI) |
| 1997 | EDI/VAN service expanded to include the Internet  |
| 1999 | E-commerce law passed; electronic signature law passed                                      |
| 2001 | External trade law amended to define and allow e-trade                                      |
| 2003 | National e-Trade Committee, chaired by the Prime Minister, is established                   |
| 2004 | BPR/ISP for e-trade process innovation  |
| 2005 | The Government enacts the 'e-Trade Facilitation Act'  |
|      | The 'e-LC service' is launched for the first time in the world                              |
| 2006 | The e-Trade Service Project second stage is completed                                       |
| 2008 | UTradeHub is launched   |
|      | e-Trade Service Project third stage is completed  |

Table 4. Timeline of IT introduction in cargo clearance in the Republic of Korea

Source: Data taken from Korea International Trade Association, 2007, KITA press releases and Jung, 2008.

#### Box 1. What is ubiquitous trade?

Since 2005, KCS has pursued "ubiquitous and invisible trade" as one of its mediumterm goals (five-year objective). What is ubiquitous trade? KCS defines ubiquitous and invisible trade as "customs service that is not noticeable to the eye, but is efficient and available to its customers at any time and at any place."<sup>7</sup> "Ubiquitous trade system" implies an e-trade network that is accessible 24 hours a day from any place where an Internet connection is possible, and through which all trade-related transactions can take place. These transactions can include not only those between the Government and traders ("G2B"), such as payments of tariffs and taxes and submission of paperwork, but also transactions between traders and private agents and businesses ("B2B"), e.g., other traders, trading companies, manufacturers, freight forwarders, insurers, warehouses and financial institutions.

<sup>7</sup> www.customs.go.kr/kcsweb/user.tdf?a=user.board.BoardApp&c=2002&seq=850&ctx=&board\_ id=GPB\_NEWSDATA&mc=.

## 3. First stage<sup>8</sup>

### (a) Electronic data interchange and paperless trading

In 1992, the Six-Year Comprehensive Plan for EDI began. KTNET, under the instruction of, and in cooperation with KCS, developed the basic design for the EDI system in 1993. The EDI system was used to promote paperless trading, trade computerization and automation. EDI for export clearance was introduced in November 1994 while EDI for import clearance was introduced in July 1996. EDI for customs duty drawback and the export cargo system was introduced in July 1997, and in January 1998 for the import cargo system. Table 5 summarizes what each system included. Further, KCS linked its computer network to the quarantine inspection agency in May 1998. Electronic fund transfers for tariff duty were allowed from 1999, and the export automated trade system went online in 2000. Since 2001, VAT has also been payable electronically.

Initially, EDI operated as a VAN that linked KCS and government agencies with large traders and customs brokers who had good past records. Thus, only those firms and customs brokers with access to VAN-EDI could take advantage of the network. Relatively few SMEs were allowed to access VAN-EDI directly. However, even this limited access to EDI brought improvements in cargo clearance procedures in the Republic of Korea. According to the World Trade Organization (WTO) (1998), in 1998, computerization had reduced processing time for export clearance from four hours to four minutes, and reduced processing time for import clearance from 8.5 hours to 3.5 hours. Further, KCS operated a number of offices with VAN-EDI terminals, so that firms and brokers that did not have direct access to VAN-EDI could also use the network.

<sup>&</sup>lt;sup>8</sup> Many of the details concerning the first stage are summarized in KCS, 2004.

| System                          | Functions   | Development period | Start of operation |
|---------------------------------|---|--------------------|--------------------|
| Export clearance<br>system      | <ul><li>Export declaration through EDI</li><li>Tabulating export statistics</li><li>Providing export information</li></ul>  | 10/93-10/94        | 11/94              |
| Import clearance<br>system      | <ul> <li>Import declarations through EDI</li> <li>Managing levies (collection, collateral, defaults etc.)</li> <li>Customs surveillance (spotting of high-risk cargo etc.)</li> <li>Compiling import information and providing clearance information</li> </ul> | 11/94-6/96         | 7/96               |
| Export cargo system             | <ul> <li>Export cargo management<br/>(controlling manifests, port<br/>departure records etc.)</li> <li>Tabulating export statistics</li> <li>Providing export cargo information</li> </ul>  | 5/96-6/97          | 7/97               |
| Customs duty<br>drawback system | <ul> <li>File and determine customs<br/>drawback</li> <li>Electronic funds transfers/payment<br/>of drawback</li> <li>Issue certificates</li> <li>Providing drawback information</li> </ul>   | 6/96-7/97          | 8/97               |
| Import cargo system             | <ul> <li>Import cargo management<br/>(port entry, unloading, withdrawal,<br/>bonded transportation, handling,<br/>detaining goods etc.)</li> <li>Tabulating import statistics</li> <li>Providing import cargo information</li> </ul>                            | 10/96-12/97        | 1/98               |

## Table 5. Progress in EDI automatic clearance systems

Source: Based on data from the KCS English-language website at http://english.customs.go.kr.

By May 1999, the EDI system had progressed so that a completely paperless import customs clearance system could be implemented for domestic traders.<sup>9</sup> It was hoped that the time needed for the import customs clearance procedures would be cut in half (WTO, 1999a, b). The paperless system enabled traders to file electronic documents necessary for import declarations through the EDI network, and enabled electronic verification of import requirements demanded by other government agencies; this made it possible for KCS to confirm that other government agencies had issued permits, certificates and other documents electronically.

<sup>&</sup>lt;sup>9</sup> KCS English-language website at http://english.customs.go.kr. Some accounts give a slightly different date of 12 July 1999.

The EDI system was also designed so that traders could submit all paperwork to all relevant Republic of Korea government agencies through the paperless clearance system network. In 1999, 19 government agencies and 48 organizations, such as industry associations, and national institutes of plant and veterinary quarantine were interlinked through the electronic network. Various required documents, including inspection/ quarantine certificates and permit/approval/recommendation papers, were standardized in electronic format, based on international standards such as the United Nations EDIFACT. However, even though most relevant border agencies were tied into the network, traders had to fill out the information and submit it individually to each agency. KCS and KTNET have continually improved the system, tying more agencies and organizations into the network; in 2004, they began to build a "single window" requiring a one-time only submission of information.

The EDI system also uses "what you see is what you get (WYSIWYG)" principles, so that what was on the screen looked exactly like the forms that firms were familiar with. Using such principles has two advantages. First, there is relatively little confusion on the part of traders and customs brokers, since they are filling out the same forms as they have always done. Second, it has facilitated the adoption of international standards for paperwork and data formats, since those standards have become more widely used.

KCS estimated that the new system substantially contributed to further reducing the time and costs involved in the distribution of imported/exported goods. According to WTO (2000), in 2000, 96 per cent of exports, 12 per cent of imports and 33 per cent of drawbacks in the Republic of Korea were completed utilizing the electronic paperless clearance system; the result was that total time required for processing, from the submission of a declaration to acceptance by the relevant authorities, was reduced from 170 minutes to 45 minutes.

Until November 2000, KCS had limited the number of firms that could use paperless trading for import clearance to 352 with good past records. KCS had restricted the number of firms to reduce the possibility of illegal transactions. This restriction, however, limited the extensive use of the paperless trading procedures, as only 12 per cent of all transactions used the paperless procedures. As a result, KCS increased the number of eligible firms to 2,589, with the result that the percentage of such transactions increased to 30 per cent. SMEs were severely disadvantaged by this type of restriction to EDI, since they tended to have worse records than large firms. In addition, customs officials tend to distrust SMEs more than large companies due to the SMEs' lack of manpower and resources as well as shorter histories and larger turnovers (Sohn and Yoon, 2001).

Sohn and Yoon (2001) noted that, as of 2001, 100 per cent of the procedures for customs clearance such as export and import declarations as well as logistics such as submissions of bills of lading, notification of arrivals and departures were automated. Citing a report by KTNET, Sohn and Yoon said the use of EDI was estimated to have saved 81 per cent of export-related paperwork costs, and 79 per cent of import-related paperwork costs, resulting in a savings of W 578 billion annually. Samsung Electronics estimated that by using the trade automation system, it had reduced its ordering time from 10 days to 2 days, and had saved US\$ 800 million (Jeong, 2005).

### (b) Cargo selectivity

EDI was also used for selection of cargo for inspection. By July 1996, the Republic of Korea had established an EDI-based cargo selectivity system that used the EDI data and risk management principles to prioritize which goods to inspect. Under this system, low-risk items were exempted from inspection, while high-risk items were targeted for closer inspection.<sup>10</sup> This system is also used to monitor travellers and vessels, and to detect prohibited articles such as prohibited chemical substances (WTO, 1998).

## (c) Use of the Internet

Initially, the use of IT in cargo clearance was limited to the VAN/EDI network. However, as the Internet became more prevalent, by the early 2000s a middleware programme was in place to transfer data between VAN/EDI and the Internet, so that customs brokers and traders could submit information directly to KCS on the Internet.

## 4. Second stage

In the 2000s, the Republic of Korea began pursuing the goal of becoming the "logistics hub" of North Asia. Former presidents Kim Dae Jung and Rho Moo-Hyun expressed their idea that the Republic of Korea could act as a central base for cargo coming from and going to China, Japan and even the Russian Federation, by linking ports in the Republic of Korea with land routes that would start from the Republic of Korea, go through the Democratic People's Republic of Korea to China, the Russian Federation and perhaps even Europe. The idea of such a logistics hub created further incentive for the Republic of Korea to streamline its customs clearance procedures. In addition, the growing provided an incentive to further incorporate IT and the Internet into customs clearance. During the second stage, KCS further improved its IT-based customs clearance system. At the same time, KTNET, with support by the Ministry of Commerce and Industry, furthered e-trade.

## (a) E-customs<sup>11</sup>

KCS has pursued the goal of "e-Customs, u-Customs, World Best Customs 2012+." During the second stage, KCS completed its Internet portal site, and established the Internet-based customs system, UNI-PASS. Since October 2005, KCS has been operating a web-based clearance system. Currently, while some firms and brokers still use the VAN/ EDI network, KCS says that due to the opening of the Internet-based e-customs system, the use of the EDI system has declined rapidly.

<sup>&</sup>lt;sup>10</sup> Since 2008, customs inspectors have been able to override the decisions made by the cargo selectivity system. If an on-the-ground customs inspector feels that an inspection is warranted, he/she can assign a cargo for inspection, even if the cargo selectivity system indicates that it does not need to be inspected. An on-the-ground inspector can also override a decision made by the selectivity system to require an inspection can also be overridden by an on-the-ground customs inspector; however, in this case, approval will be required from his/her supervisor.

<sup>&</sup>lt;sup>11</sup> Material for this subsection has been taken from Yang, 2009.

80

The Republic of Korea began building an Internet-based "single window" for submission of documents in 2004. Between August 2004 and July 2005, eight government agencies – including KCS, the Korean Immigration Service and the National Quarantine Station, among others – established a task force to examine how a single window could be established. The task force reviewed paperwork and information requested by government agencies in order to see whether overlapping paperwork and repeated requests for information could be consolidated. At the same time, from August 2004 to February 2006, the Government contracted private suppliers to build the appropriate infrastructure and software. In March 2006, the single window opened. As of 2008, 14 agencies – including KCS, the Korean Food and Drug Administration, the National Veterinary Research and Quarantine Service, and the National Fishery Products Quality Inspection Service – were linked to the Internet single window.

According to a KCS representative, more than 40 per cent of traders use the single window. According to a KTNET representative, submissions for 96 per cent of all trade transactions are currently carried out entirely within the single window. While there are a few agencies that are not currently covered by the single window, there are no serious plans to include those agencies, since the marginal cost of including them is deemed higher than the potential benefits to traders.

The use of the KCS Internet portal site and the single window is expanding to include not only traders but firms in trade-related industries. Transportation and logistics businesses such as forwarders, bonded warehouses, bonded transporters and carriers are using the KCS network. As of 2008, 20 per cent of all freight processing<sup>12</sup> was carried out through the KCS network, and that number is growing quickly, according to a KCS representative. Also, KCS and the International Air Transport Association are pursuing an "e-freight" project, where forwarders, customs brokers and traders can file manifests, bills of lading, invoices, packing lists and other documents electronically. KCS is also adopting radio frequency identification technology to process freight in bonded areas, so that cargo can be processed electronically, and up-to-the-minute information can be received through the KCS Internet clearance portal site. The test project was completed in 2008, and the radio frequency identification system was formally implemented for air cargo in 2009. KCS is also stepping up its cooperative efforts with customs services of other countries. KCS has agreed to share data with Belgium and the Philippines, and is holding discussions with Australia, China and Japan on how their Internet portal systems can be linked with the Republic of Korea network.

KCS has also begun a cooperative project with many larger companies to link the Internet customs clearance portal with the Enterprise Resource Planning (ERP) system of firms in the Republic of Korea, in order to reduce time required for customs clearance and facilitate global supply chain management of those companies. The effort began in 2006 and, as of 2008, 17 firms (mostly large companies such as Samsung Electronics, Hynix Semiconductors and LG Electronics) have participated. KCS expected another 10 companies to link their ERP system with the KCS customs clearance portal site in 2009.

<sup>&</sup>lt;sup>12</sup> By number of cases.

KCS has estimated that, in 2008, the number of export and import clearances done through the ERP-KCS system link amounted to 17 per cent of the total clearances.

### (b) E-trade

The Republic of Korea envisioned a single window "e-trade" system where all aspects of trade would take place within the "e-trade" network. This network would encompass not only cargo clearance procedures between the trader and the Government, but all aspects of trade - from initial transactions between suppliers and exporters as well as transactions between exporters and importers, to logistics (transactions between traders and cargo carriers, and warehouses), financial transactions and insurance transactions, as well as transactions between traders and the Government. In short, the network would be a single window encompassing all B2B (business-to-business) and B2G (business-togovernment) transactions related to trade. E-trading companies would also operate within this system. The Republic of Korea believed that such a comprehensive and ubiquitous "e-trade" system would be helpful to SME manufacturers and suppliers, who might not have sufficient human resources to handle trade-related transactions. The "e-trade system" would be a privately run network, operated on a for-profit basis by KTNET and KITA, but with the support of KCS and the Government. Figure 3 shows what such system looks like. In 2008, the Republic of Korea began operating such a system, called the "UTradeHub".



Figure 3. Single window e-trade model of the Republic of Korea (UTradeHub)

Source: KITA Paperless Trading Centre, 2007.

#### (c) National e-Trade Committee

The process to establish the e-trade network began in 2003. To pursue this expanded version of paperless e-trade, the Republic of Korea established the National e-Trade Committee. Box 2 lists the public and private agencies that participated in the National e-Trade Committee.

| Box 2. Participants in the National e-Trade Committee                           |
|---|
| Chairman: Prime Minister  |
| Ministers from:   |
| Ministry of Finance and Economy   |
| Ministry of Justice   |
| Ministry of Government Administration and Home Affairs                          |
| Ministry of Culture and Tourism   |
| Ministry of Commerce, Industry and Energy                                       |
| Ministry of Information and Communications                                      |
| Ministry of Construction and Transportation                                     |
| Ministry of Maritime Affairs  |
| Ministry of Planning and Budget   |
| Office of the Prime Minister  |
| Minister for Trade (Ministry of Foreign Affairs and Trade)                      |
| Commissioner of the Korea Customs Service                                       |
| From the private sector, the chairmen or presidents of following organizations: |
| Federation of Korean Industries   |
| Korea Chamber of Commerce and Industry  |
| Korea International Trade Association (KITA)                                    |
| Korean Federation of Small and Medium Business                                  |
| Korea Trade and Investment Promotion Agency (KOTRA)                             |

The Committee, which included both civilian and public officials at the highest levels, provided a clear idea of which elements needed to be included in the e-trade network. Under the leadership of the Committee, KITA established the Korea Paperless Trade Centre and the Korea e-Trade Facilitation Centre in 2005. In the e-Trade Facilitation Centre, six working groups were organized, dealing with platform, law, finance, logistics, marketing and global (cooperation). These working groups were able to work out the details of the e-Trade network, which eventually became the UTradeHub.

In 2004, KTNET introduced the CTradeWorld portal website, a precursor to UTradeHub (both of which are tied into the KCS customs clearance network). Through this site, KTNET offered four e-trade services to firms and customs brokers on a for-fee

basis:<sup>13</sup> eTradeFrame; eCustomsFrame; eLogisFrame; and eTradeInfo. The first three services were designed to foster paperless trading at various stages of international trade:

- eTradeFrame, which deals with export- and import-related paperwork e.g., letters of credit (L/C), purchase confirmations, certificate of origin, export negotiations, transfers of funds, foreign exchange transactions, export approvals, basic customs clearance and notification of arrival of shipping documents;
- (b) eCustomsFrame, which deals with customs clearance (e.g., export clearance-related work such as export notification, notification of loading, import clearance-related work such as import notification and notification of prices, calculation and receipt for taxes, tariff duty drawback and various confirmations). eCustomsFrame is designed to be used by customs brokers, although companies familiar with customs clearance can also use the system;
- (c) eLogisFrame,<sup>14</sup> which deals with logistical matters related to transportation providers, forwarders, bonded warehouses and transport, banks, customs brokers and quarantine stations. This system also provides cargo information through the Automated Manifest System for cargo headed to the United States;

The fourth service, eTradeInfo, is designed to provide various types of information (national statistics, firm-specific information as well as legal and regulatory information) to clients in real-time.

In order to provide a legal basis for e-trade, the Republic of Korea enacted the 'e-Trade Facilitation Act' in 2005.<sup>15</sup> The Act was effectively a revision of the Promotion of Office for Trade Act, which was passed in 1991. Kim (2007) summarized the major provisions of this Act as follows.

First, the Act defines e-trade, and electronic trade documents.

Second, the Act obligates the Minister of Commerce, Industry and Energy to formulate and introduce measures and policies for facilitating e-trade. Such measures and policies must include the formulation of: (a) a basic direction for e-trade facilitation policies; (b) measures concerning the establishment and operation of e-trade related infrastructure; and (c) measures fostering a favourable environment for e-trade, especially the establishment of an appropriate communications network for e-trade linking traders with relevant agencies, and which allows transmission, storage and certification of electronic documents. The Act also states that e-trade infrastructure should include the provision of a Single Window.

<sup>&</sup>lt;sup>13</sup> The fee was set not on a per-transaction basis, but on the amount of information ("bytes") passing through or stored within the network.

<sup>&</sup>lt;sup>14</sup> eLogisFrame was introduced in 2001.

<sup>&</sup>lt;sup>15</sup> This legislation was a substantial revision of the "Trade Automation Facilitation Act", which was introduced in 1991.

Third, the Act defines the e-trade infrastructure operator.<sup>16</sup> The infrastructure operator operates the e-trade platform, which is publicly owned and is required to be neutral and public-minded. The Act listed the main responsibility of the operator and the criteria to be used for selecting the operator.

Fourth, for certain documents (including letters of credit, purchase confirmations, certificate of origin, letters of guarantee (L/G), delivery orders and certificates of insurance for cargo), if a trader or trade-related agency decides to submit electronic documents, the Act stipulates that electronic documents must be filed and submitted using the existing electronic infrastructure. Also, these documents must use a standardized format.

Fifth, the Act defines an e-trade service provider, lists the services that such providers should provide, and the requirements such providers must fulfill to be registered as e-trade service providers.

Finally, the Act allows the Government to provide funds to universities and government-supported research institutions in order to foster e-trade specialists (Kim, 2007).

The e-Trade Facilitation Act gave legal basis to 10 trade documents in electronic form. These include certificate of origin, L/C and local L/C, L/G, delivery order, insurance policy, import licences, export licence, trade approval and purchase confirmation. However, even though the Act provides a legal basis for these electronic documents, many of them, such as an electronic certificate of origin, are currently not in use. According to an official in KITA's Paperless Trade Centre, in order to use an electronic certificate of origin, trading countries must mutually agree on the rules and format. The Republic of Korea is currently negotiating with Taiwan Province of China on the use of electronic certificates of origin; as of 2008, no such negotiations were being held elsewhere.

#### (d) UTradeHub

Following the recommendations and decisions of the National e-Trade Committee, the Ministry of Commerce, Industry and Energy authorized the construction of the UTradeHub website and electronic network. KITA was given the task of building the network, which would be run by KTNET on a fee and for-profit basis. As described in figure 3, the UTradeHub seeks to use IT for all stages of trade, i.e., negotiations between firms, financial arrangements and payments, insurance, logistics, inspection and quarantine as well as customs procedures. Thus, the network links firms, banks, insurance companies, transportation companies, customs brokers and government agencies. Traditional trading companies as well as new "e-trading companies" also participate in the UTradeHub in order to find new goods and buyers. Legally, the UTradeHub system is a privately-run service, while sharing the public e-trade infrastructure. For those who do not want to use the UTradeHub, KCS maintains its EDI network and web-based clearance system.

<sup>&</sup>lt;sup>16</sup> Currently, the only authorized e-trade infrastructure operator is KTNET.

The UTradeHub network was built with security in mind. The country's National Intelligence Service was involved in designing security measures so that the network would be as hacker-proof as possible.

The UTradeHub came on-line in late July 2008. Because all services are offered with a single log-on procedure, all documents and processes for trade, including logistics, paperwork, quarantine and inspection, finance, insurance and other aspects of customs procedures are all tied together, and are available to traders and those who require the documents. Logistics and paperwork information are available online in real-time, so the trader and other interested parties can know exactly where they are in the customs procedure and can keep track of cargo. Customs brokers have remarked that their work has become easier and faster because the documents that they need to inspect and sign are available instantly on their monitors as soon as the other parties have finished preparing them.

Currently, the UTradeHub consists of five sub-portals: (a) logistics portal; (b) banking portal; (c) marketing portal; (d) customs clearance portal; and (e) global portal.<sup>17</sup> Combined and consolidated access to these five sub-portals is also available through the over-arching trade portal.

For firms that choose to carry out their own customs clearance work instead of using a customs broker, the UTradeHub will make their job easier because it advises the firms on the steps that they must take. Whenever they complete one step of the customs clearance and logistics procedure, the software advises them on the next step. However, the representatives of KITA and KTNET as well as customs brokers note that while the UTradeHub will be of great help to firms, it is unlikely that it will replace customs brokers in the near future, because very specialized legal and regulatory knowledge is still sometimes needed for customs clearance. The UTradeHub also acts as official depository of electronic paperwork. Copies of all relevant paperwork for transactions that go through CTradeWorld and the UTradeHub are kept in an isolated server.<sup>18</sup> Because all paperwork is filed and stored electronically, the Government expects the submission of counterfeit forms to be eliminated.

Figure 4 gives some indication of how firms may connect with the UTradeHub and use the network. Small-sized firms can link up with the UTradeHub via the Internet portal and access the network. Through the network, they can utilize e-trade services in marketing, foreign exchange transactions, negotiations with potential buyers and sellers, logistics, customs procedures and payments. Single sign-in and customized services are available through the Internet portal.

<sup>&</sup>lt;sup>17</sup> The global portal links firms in the Republic of Korea with foreign companies so that they can exchange electronic paperwork.

<sup>&</sup>lt;sup>18</sup> Legally, copies of documents in these servers are treated as original documents.



Figure 4. How firms utilize the UTradeHub

Source: Korea International Trade Association, 2007.

Medium-sized firms can install "e-trade user solutions." These solutions are similar to an internal electronic paperwork network for trade. The solutions can be made to connect with the UTradeHub through a web-service interface offered by the UTradeHub, and the trade-related paperwork of the firm can be sent directly to the UTradeHub.

Large firms that already have an internal electronic paperwork system can choose to become an "e-trade partner." In this case, such a firm's system can be tied directly into the UTradeHub system to directly share information and keep track of the status of trade transactions in real time.

## 5. Evaluation

As explained above, during the initial days of EDI in the 1990s, KCS limited the use of EDI/VAN to trusted firms. It was not until the late 1990s when KCS expanded its EDI to encompass the Internet that the use of electronic paperwork and e-trade truly took off. Table 6 and figure 5 show the rapid growth in the use of EDI and the Internet portal site in the 2000s. Because VAN/EDI charges fees, while the Internet-based customs clearance system does not, the Korea Customs Service (2007) has estimated – based on 2005 data on the numbers of cases filed through the Internet – that traders and customs brokers saved W 319 million by using the Internet rather than VAN/EDI.

|       |       |       |       |        |        | ('000 cases) |
|-------|-------|-------|-------|--------|--------|--------------|
|       | 2001  | 2002  | 2003  | 2004   | 2005   | 2006         |
| Entry | 6 931 | 8 286 | 9 121 | 10 023 | 11 498 | 13 381       |
| Exit  | 7 353 | 8 783 | 9 704 | 10 698 | 12 263 | 14 261       |

### Table 6. Annual use of EDI for import cargo clearance, 2001-2006

Source: Korea Customs Service, 2007.

*Note:* Based on entry and exit of cargo to bonded storage areas.

### Figure 5. Internet portal utilization rate for submission of paperwork



### (Percentage of total submissions)

Source: Korea Customs Service, 2007.

#### Table 7. Expected cost savings and economic effects of e-trade

|  |   | (Won billion)   |
|--|---|-----------------|
| Categories   |   | Amount          |
| Increases in productivity  |   | 294.7           |
|  | Savings in manpower costs                       | 238.1           |
|  | Savings in paperwork printing costs             | 5.1             |
|  | Savings in paperwork delivery (mailing costs)   | 51.5            |
| Savings in associated expenses   |   | 2 107.8         |
|  | Savings in freight storage costs                | 1 353.5         |
|  | Savings in inventory related costs              | 754.3           |
| Savings due to elimination of<br>technology overlapping<br>investment in information |   | 179.8           |
| Total savings  |   | 2 582.3         |
| Source: Ministry of Knowledge E<br>30 July 2008.                                     | conomy (formerly Ministry of Commerce, Industry | ry and Energy), |

*Note:* This estimate was made by Hyundai Research Institute on February 2006 on the request of the Ministry of Commerce, Industry and Energy, and KTNET.

The introduction of e-trade in the Republic of Korea has lowered costs significantly for firms in the Republic of Korea. According to a 2006 estimate by the Hyundai Economic Research Institute, e-trade and the UTradeHub is expected to save those firms approximately W 2.6 trillion per year.

However, problems remain that must be solved before e-trade can be judged completely successful. First, the usefulness of the e-trade system is limited because foreign counterparts to Korean traders are not using e-trade. Thus, while the paperwork is available immediately from firms, the Government and banks in the Republic of Korea, Korean entities often must wait until the physical paperwork arrives from their foreign counterparts. Thus, customs brokers and traders alike advise the Government of the Republic of Korea to negotiate actively with trading partners so that they adopt e-trade and paperless trade.

It is also important that the companies and governments in the countries of those counterparts share compatible standards for e-trade systems, and e-documents and certificates. As stated above, while the Republic of Korea has a legal basis for using e-certificate of origin, the Government has not yet negotiated the use and the format of e-certificates of origin with any exporting countries; thus, the e-certificate of origin is not yet in use. Because the Asia-Pacific Economic Cooperation group as well as the World Customs Organization and other organizations have done much work in adopting a standardized format for e-trade, the most serious problem may be getting foreign countries to invest in the required infrastructure to adopt e-trade.

Another challenge for the Republic of Korea is that, while the country has made major advances in paperless e-trade, the Government believes the country still lags behind many advanced nations in the speed and efficiency of import and export procedures. Table 8 lists recent data and rankings for the Republic of Korea in the World Bank's *Doing Business* indicators in import and export procedures. While the Republic of Korea is ranked near the top and has made continual improvements, it still lags behind the United States and Japan, which the Republic of Korea considers as benchmark targets. Figure 6 shows that transport costs for the Republic of Korea are higher, as a percentage of sales, than for the United States and Japan. These results may imply that inefficiencies in laws and regulations as well as physical problems remain that raise the logistics costs of Korean traders. KCS (2007) has stated that it needs to reduce logistics-related costs further, but in order to achieve that objective additional regulatory reform may be necessary.

## C. Adjustments to an information technology environment

This section looks at how the introduction of IT in cargo clearance and e-trade in the Republic of Korea has affected companies, including SMEs. During the first stage, most SMEs were not directly affected by the introduction of IT in cargo clearance because most of them did not have direct access to the VAN/EDI network. Further, most SMEs preferred using customs brokers for export and import clearance.

| Indicator                   | 2006 | 2007   | 2008   | 2009   |
|-----------------------------|------|--------|--------|--------|
| Documents to export         | 5    | 5      | 4      | 4      |
| Signatures to export        | 3    | n.a.   | n.a.   | n.a.   |
| Time to export (days)       | 12   | 12     | 11     | 8      |
| Cost to export (US dollars) | n.a. | 780    | 745    | 767    |
| Documents to import         | 8    | 8      | 6      | 6      |
| Signatures to import        | 5    | n.a.   | n.a.   | n.a.   |
| Time to import (days)       | 12   | 12     | 10     | 8      |
| Cost to import (US dollars) | n.a. | 1 040  | 745    | 747    |
| Rank                        | n.a. | 28/175 | 13/178 | 12/181 |

## Table 8. Doing business indicators for the Republic of Korea in export and import procedures

Source: World Bank, Doing Business 2006, 2007 and 2008, and World Bank Doing Business 2009 Country Profiles for Korea downloaded from www.doingbusiness.org.





According to interviews with customs brokers and SMEs, even with the introduction of IT, it was not cost-effective for SMEs to carry out customs clearance work directly without the assistance of customs brokers. In many cases, the introduction of IT even lessened the incentives for SMEs to do their own customs clearance work. With the reduced amount of paperwork, there was less need to maintain full-time employees for filling out customs clearance forms. Thus, firms hired fewer workers to staff their customs clearance departments. Also, while the introduction of IT reduced the time required for processing paperwork, it did not necessarily reduce the legal and regulatory burdens per se. Traders still had to obey various laws and regulations, which could be very

Source: Korea Customs Service, 2007.

technical and complex in nature. Further, while the inspection process became more transparent and objective, some cargo still had to be inspected, which required the presence of a representative from the firm.<sup>19</sup>

Given these circumstances, almost all SMEs found that "outsourcing" cargo clearance work to customs brokers was more cost-effective, even when firms had access to e-customs or the UTradeHub. Many industry representatives and customs brokers expressed doubts that firms would find it cost-effective to maintain full customs clearance departments with employees dedicated to customs clearance. Customs clearance still requires specialized knowledge due to the technical and arcane nature of customs laws and regulations. Problems with tariff classification were often given as examples. They argued that personnel involved in customs clearance would need to spend much time and resources keeping up with changes in the laws and regulations; however, most firms said there would not be enough work for these employees to be retained on a full-time basis.

Also, according to the interviewees, if SMEs carried out their own customs and cargo clearance work, they would have to maintain employees at ports where the firms exported or imported their goods. However, it was doubtful that there would be enough work to justify a full-time employee at each port. By outsourcing the cargo clearance work to customs brokers, the SMEs can save costs since they do not need to hire personnel, as well as gain efficiency since customs brokers already have considerable expertise in cargo clearance and keep pace with changes in laws and regulations. The interviewees argued that the incentive to outsource had been strengthened by the introduction of IT in cargo clearance, which reduced the need for full-time employees devoted to customs clearance and lowered the cost of customs brokers.

From the customs broker's point of view, the introduction of IT in cargo clearance had considerable positive effects on efficiency. The VAN/EDI network, and later the Internet, allowed customs brokers to fill out forms and receive clearances within minutes. Thus, the customs brokers were able to achieve substantial economies of scale, reducing the processing costs for their customers. In the interviews carried out in this study, customs brokers stated that they handled dozens of cases each day, and the price they charged for processing one shipment (regardless of the cost or the value of the shipment) was around US\$ 20. Such low prices would not have been possible without the introduction of IT in cargo clearance.

Larger firms also use customs brokers. Most large firms, and even some trading companies, have also eliminated or substantially reduced their customs and cargo clearance divisions. While some large firms continue to hire experts in customs and cargo

<sup>&</sup>lt;sup>19</sup> According to the Korea Customs Service (2007), in addition to high-risk items about 5 per cent of cargo is randomly selected for inspection.

clearance, usually their mandate is to check on the job done by the customs brokers and to coordinate between domestic and foreign customs brokers.<sup>20</sup>

While the companies are not always aware of the fact, e-trade has significantly reduced the costs and time involved in customs clearance. Table 8 shows KCS estimates of clearance times at ports in the Republic of Korea. Electronic clearance is responsible for the short time required in the notification to acceptance stage. Table 9 also shows that, while the process is already very efficient, significant reductions are still taking place. However, since most of the time taken in clearance is between port arrival and notification, and handover to owner, it highlights the need for more efficiency in physical clearance procedures.

|      |                               |                                |                             |                              |  | (Unit: hours)                                    |
|------|-------------------------------|--------------------------------|-----------------------------|------------------------------|--|--|
| Year | Processing<br>time<br>(hours) | Port<br>arrival –<br>warehouse | Warehouse –<br>notification | Notification –<br>acceptance | Acceptance –<br>warehouse<br>departure | Warehouse<br>departure –<br>handover<br>to owner |
| 2004 | 111.7                         | 12.6                           | 57.8                        | 0.3                          | 17.8                                   | 23.2   |
|      |                               |                                | 70.4                        |                              |  | 41.3   |
| 2005 | 110.2                         | 12.9                           | 57.5                        | 0.3                          | 16.5                                   | 23.0   |
|      |                               |                                | 70.4                        |                              |  | 39.8   |
| 2006 | 101.8                         | 11.6                           | 51.8                        | 0.2                          | 16.0                                   | 22.2   |
|      |                               |                                | 63.4                        |                              |  | 38.4   |

### Table 9. Clearance time at ports in the Republic of Korea

Source: Korea Customs Service, 2007.

During the interviews with companies,<sup>21</sup> the interviewees remarked that they benefited from a significant reduction of fees and savings of labour hours when they switched to the e-trade system. SMEs were especially impressed with the savings associated with opening trade documents such as an L/C, an L/G and purchase certificate. Reduction of labour costs was significant. Previously, many man-hours were lost because employees physically had to go to banks, other firms, customs brokers or insurers and wait to receive forms. Also, much time was lost in organizing the forms. Now there is no

<sup>&</sup>lt;sup>20</sup> For this reason, very few SMEs were willing to be interviewed for this study. One major reason was that there was no one in the company who had deep knowledge of customs procedures, because the company personnel left all such tasks to customs brokers. Another reason was that, for the companies which do significant amount of their own paperwork, they made the transition to e-trade systems in the early 2000s, and the people who were most involved in the transition work were no longer with the company.

<sup>&</sup>lt;sup>21</sup> Some of the interviews are summarized in section D.

need to wait since the documents are sent through the Internet, and the e-trade programmes organize the forms for the interested parties.<sup>22</sup>

Another significant advantage of the e-trade system in the Republic of Korea is that the parties need to follow only one network and one set of standards. One interviewee remarked that before they used CTradeWorld and KTNET's e-trade services for bank transactions, they had to install and use the banks' proprietary programmes for online transactions. Because the firms typically dealt with more than one bank, and because every bank used a slightly different programme, there was much difficulty and confusion in installing and using these programmes as well as in dealing with the banks. Having one system designated by law and one set of standards based on international standards meant that firms and customs brokers had to learn only one standard method of operation, which, in turn, made the e-trade system easier to use.

In 2006, KCS commissioned a report on how traders, customs brokers, warehouse operators, transportation service operators, and other "customers" of the KCS felt about the adoption by KCS of paperless trading and e-trade systems. As part of the report, a survey was commissioned asking the customers to rate those aspects of computerization and automation they liked the most. The respondents, who included firms, transportation and storage providers, firms and customs brokers, reported that they found VAN/EDI export clearance system and VAN/EDI import clearance system the most useful, and the Internet duty drawback system and the single window system the least useful (Korea Customs Service, 2007). More details are given in box 4.

#### Box 4. Korea Customs Service customer satisfaction survey

The 2006 survey asked KCS "customers" to rate those aspects of computerization and automation that they liked the most. Table 10 lists the results for all 95 customers surveyed, particularly firms and customs brokers. The respondents comprised 35 customs brokers, 8 firms (traders), 30 bonded warehouse operators, 5 bonded transport operators, 4 forwarders, and 13 airlines and shipping companies. Grading was done according to a seven-point scale, with higher points signifying greater satisfaction. In general, there was satisfaction across all areas, with most areas scoring in the high 4s and 5s.

While the number of firms surveyed may be too small to give reliable results, the results that they have provided are suggestive. Firms, which included SMEs and large companies, were particularly impressed with the improved customer service as well as the improvements in organizational and cultural factors that resulted from the computerization and automation of customs administration.

<sup>&</sup>lt;sup>22</sup> In interviews with traders and KTNET, the interviewees emphasized the savings from letters of credit and letters of guarantee the most. One reason for such emphasis may be that traders often leave much of the actual customs clearance processing to customs brokers. It was found that some firms did not have a clear idea of what the customs clearance process involves. The issuance of letters of credit and letters of guarantee is one of the tasks that firms have to carry out on their own without assistance from customs brokers.

| Classification          |   | All<br>"customers" | Firms*         | Customs<br>brokers |
|-------------------------|---|--------------------|----------------|--------------------|
| Number of respondents   |   | 95                 | 8              | 35                 |
| Customer service        |   | 4.86<br>(1.86)     | 5.70<br>(1.13) | 4.44<br>(2.08)     |
|                         | Service quality improvement   | 5.01 (1.86)        | 6.13<br>(0.83) | 4.57 (2.10)        |
|                         | Increased customer satisfaction   | 5.02<br>(1.79)     | 6.00<br>(0.76) | 4.69<br>(2.04)     |
|                         | Provision of customized service   | 4.82<br>(1.87)     | 5.13<br>(1.73) | 4.31<br>(2.08)     |
|                         | Reduction in customer request for improved service                              | 4.72<br>(1.87)     | 5.75<br>(1.04) | 4.20<br>(2.07)     |
|                         | Reduction of inferior service   | 4.75<br>(1.91)     | 5.50<br>(1.31) | 4.43<br>(2.12)     |
| Cost reduction          |   | 4.58<br>(1.90)     | 4.85<br>(1.78) | 4.45<br>(2.12)     |
|                         | Reduction in administrative costs   | 4.82<br>(1.90)     | 4.88<br>(1.81) | 4.77<br>(2.00)     |
|                         | Reduction in inventory and<br>inventory costs                                   | 4.59<br>(1.89)     | 4.50<br>(1.77) | 4.43<br>(2.10)     |
|                         | Reduction in labour costs   | 4.42<br>(1.87)     | 5.38<br>(1.41) | 4.31<br>(2.23)     |
|                         | Reduction in information system costs   | 4.50<br>(1.93)     | 4.63<br>(2.13) | 4.31<br>(2.15)     |
| Increases in efficiency |   | 4.90<br>(1.90)     | 5.42<br>(1.44) | 4.58<br>(2.08)     |
|                         | Reduction in time spent on<br>responding to customer<br>requests and complaints | 4.72<br>(2.02)     | 5.63<br>(1.19) | 4.20<br>(2.22)     |
|                         | Increase in timely provision<br>of services                                     | 5.07<br>(1.80)     | 5.00<br>(1.93) | 4.77<br>(2.04)     |
|                         | Reduction in time required for administration                                   | 5.08<br>(1.92)     | 5.63<br>(1.19) | 4.74<br>(2.06)     |
|                         | Increased possibility for<br>correcting administrative errors                   | 4.92<br>(1.87)     | 5.00<br>(1.85) | 4.57<br>(2.08)     |
|                         | Reduction in administrative errors  | 4.79<br>(1.84)     | 5.75<br>(1.04) | 4.57<br>(2.00)     |
|                         | Reduction in time required for<br>consultation and decision-making              | 4.83<br>(1.89)     | 5.50<br>(1.41) | 4.60<br>(2.05)     |

## Table 10. Survey results on the effects of computerization/automation of customs administration in the Republic of Korea

| Table 10 (continued)              |   |                    |                |                    |
|-----------------------------------|---|--------------------|----------------|--------------------|
| Classification                    |   | All<br>"customers" | Firms*         | Customs<br>brokers |
| Organization and cultural factors |   | 4.76<br>(1.82)     | 5.65<br>(1.24) | 4.53<br>(2.07)     |
|                                   | Improved image and customer satisfaction of firm        | 4.83<br>(1.83)     | 5.50<br>(1.41) | 4.63<br>(2.02)     |
|                                   | Improved cooperation among<br>personnel and departments | 4.66<br>(1.78)     | 5.38<br>(1.30) | 4.43<br>(2.00)     |
|                                   | Creating innovative environment within firm             | 4.78<br>(1.78)     | 5.63<br>(1.51) | 4.66<br>(2.18)     |
|                                   | Improved employee satisfaction within company           | 4.74<br>(1.85)     | 5.88<br>(1.13) | 4.46<br>(2.08)     |
|                                   | Improved capacity for responding to changes             | 4.80<br>(1.84)     | 5.88<br>(0.83) | 4.46<br>(2.09)     |

Source: KCS, 2006 (tables 4-7, 4-9 and 4-11).

\* Respondents in the "firms" category include one respondent who worked for a company with less than 50 employees (small enterprise), two for firms with 50-100 employees (medium-sized enterprise), two for firms with 300-500 employees, and one for a firm with more than 500 employees. Three of the eight respondents worked in the area of export clearance, and five worked in the area of import clearance.

In the same report, the researchers asked various parties which parts of the e-trade system they found most useful. Customs brokers reported that they found the VAN/EDI export clearance system and the VAN/EDI import clearance system the most useful, while they found the Internet duty drawback system and the single window system the least useful (Korea Customs Service, 2006).

Because of the low number of respondents, the results for firms are not conclusive. However, the Internet EDI duty drawback system and the single window received low marks (Korea Customs Service, 2006). It should be noted that while the firms rated the single window relatively low compared to other systems, KCS (2007) estimates that based on 2005 data on the number of submissions, the single window saved firms and government agencies 1.25 million man-hours in 2005.

It is not clear why the results for the single window were so low, but it may be because firms did not use the single window as much as other customers. It may also be because the single window is used only once during a trade transaction when the forms are submitted, while other systems are used more often. For example, the cargo system is often used to keep track of the location of cargo a well as the stage of the clearance process that cargo is currently going through. Also, in the interviews with SMEs, it was often found that one person was not responsible for all the steps involved in cargo clearance. Thus, because of the limited area of responsibility, one respondent may have a different view on the usefulness of certain systems compared to that of another respondent, even if they both work for the same company.

## D. Case studies of traders

This section summarizes some of the interviews with traders and customs brokers, which were carried out as part of this study. It also summarizes the experiences of companies in their adoption of e-trade, as reported in newspaper articles.

### 1. Cowon Systems Inc., 2008

Cowon Systems, established in 1995, is a producer of multimedia software and hardware, globally known for its "Jet Audio" integrated multimedia software. In 2000, Cowon entered the MP3 player (hardware) market; in addition to MP3 players, the company currently produces portable media players (PMPs), automobile navigation devices and other portable devices. Cowon also provides various software contents and it has entered the online game market. It boasts considerable technical expertise in the digital media field, and since its establishment in 1995, has never posted a loss.<sup>23</sup> As of 2007, it employed 122 workers (qualifying it as a SME under the laws of the Republic of Korea). The company's capital was W 33.3 billion and its annual revenue was W 95.4 billion.<sup>24</sup>

Cowon uses the e-trade system of the Republic of Korea to apply for and receive L/C and L/G. Because Cowon Systems receives parts and components from sources all over the world, it is important that these components arrive quickly and promptly. In addition, because Cowon works with many suppliers, it deals with virtually all major banks in the Republic of Korea.

Before the current electronic L/C and L/G filing system was introduced, Cowon used electronic methods for bank transactions, but each bank had its own proprietary programme, each of which was incompatible with those of the other banks. Thus, Cowon had to deal with the idiosyncrasies of each programme. In addition, because hardcopy forms were required by the Government and banks, paper forms had to be delivered to the banks physically in order to apply for L/C and L/G. As a result, considerable costs were incurred for express mail and carrier services, and much time was wasted in delivery and waiting at banks.

With the current system, Cowon now only needs to deal with one software package, and many of the required supporting documents are now available through the network in electronic form. Thus, these forms no longer need to be correlated and attached physically to the application. Rather, they are available to the bank officer and Cowon officials at a keystroke. The time required for approval has been drastically reduced. Once the L/C and L/G applications are sent through the electronic network, it is not unusual for Cowon to receive the L/C and L/G within 10 minutes. While the time saved has not been estimated, Cowon Systems believes that the savings have been considerable. In addition,

<sup>&</sup>lt;sup>23</sup> Introductory material on Cowon Systems provided by the interviewee and the website at www.cowon.net (Korean language).

<sup>&</sup>lt;sup>24</sup> Financial and employee information from Cowon Systems website at www.cowon.net/ir/ir\_finance\_ result.php and www.cowon.net/ir/ir\_notice\_public.php (Korean language).

the fees for the L/G and L/C applications have fallen considerably, from W 25,000-W 30,000 to only W 8,000.

Cowon has expressed considerable satisfaction with the electronic system for L/C and L/G applications. However, while such applications for air cargo are currently carried out entirely through the UTradeHub, for sea cargo some of the required paperwork from foreign firms is still submitted in hardcopy, and is not available through the UTradeHub. As a result, L/C and L/G applications in these cases must be partially processed outside the UTradeHub, reducing efficiency and increasing the time required for customs clearance.

Cowon also uses the e-trade system for other aspects of importing. Although the interviewee was reluctant to go into specific details because of unfamiliarity with the tasks of other departments, it was reported that Cowon was very satisfied with the e-trade system in the other areas as well, since the e-trade system made the job of Cowon employees and the Cowon customs broker easier.

## 2. Woory Industrial Company, 2008

Woory Industrial Company (Woory) is an automobile parts manufacturer established in 1989. Its main products include controllers for heating and air-conditioning in automobiles, heater control assembly, clutch coil assembly, fuel sender assembly and other automobile parts assembly. Woory sells much of its output to Halla Climate Control and Delphi, and is seeking to expand its operation by exporting its products on an OEM basis. Woory's annual revenue is around W 100 billion (US\$ 100 million), and the company has 400 permanent employees.

Woory has used elements of e-trade and EDI for seven years, resulting in substantial cost and time savings through the reduced need for physically visiting various agencies and banks, as well as by taking advantage of streamlined paperwork procedures. Woory, which uses CTradeWorld to open and amend L/C and L/G, and to confirm purchases, is in process of adopting its operations to use the UTradeHub.

According to Woory, before it began using EDI in 2002, the cost of opening an L/C was W 50,000 and it typically took two man-hours to process it. After using EDI, the cost was reduced to W 15,000 and 10 minutes for processing. Woory has estimated that by adopting EDI, its monthly cost of opening an L/C has fallen from W 750,000 to W 225,000. The cost of opening an L/G has also fallen, although Woory does not have pre-EDI data. Woory's current cost of opening an L/G using EDI is W 10,000 and 10 minutes per opening.

In the case of issuing a purchase confirmation, prior to using EDI the cost for each confirmation was W 30,000 and two hours for processing. After using EDI, the cost dropped sharply to W 4,000 won and 10 minutes per confirmation. Woory has estimated that its pre-EDI monthly cost for issuing purchase confirmations amounted to W 1.2 million while the post-EDI monthly cost has fallen to W 160,000. Woory is very satisfied with how the e-trade system has helped and the company is in the process of expanding the use of

e-trade, as it is incorporating the UTradeHub into its operations in order to expand the use of e-trade beyond the issuance of L/C and L/G, and the confirmation of purchases.

#### 3. Customs brokers and SMEs

As stated above, despite the introduction of IT in cargo clearance together with the various regulatory and procedural reforms, customs brokers still do the bulk of customs clearance-related paperwork. In interviews with the representatives of the Korea Customs Broker Association and several individual customs brokers,<sup>25</sup> it was found that customs brokers process about 98 per cent of import shipments, and 93 per cent of export shipments (by number of cases). The Republic of Korea does not require the use of customs brokers for cargo processing and paperwork. However, most firms, both large and small, find it more efficient and cost-effective to use such services, not only for clearance work in foreign countries, but also for clearance work in the Republic of Korea. Filing export clearances or import clearances is inexpensive. Routine import clearance processing only costs W 20,000 (approximately US\$ 20). Only a limited number of large firms do cargo clearance-related paperwork in-house.

While formal statistics were not kept, the interviewees stated that for most customs brokers, SMEs constituted a major portion of their business. One broker stated that he had about 400 clients in a wide variety of industries, of which about 60-70 per cent were SMEs. Another broker stated that SMEs accounted for about 80 per cent of his clients. They stated that these figures were the norm for most customs brokers.

According to the customs brokers, the extensive use of brokers can be seen as a form of outsourcing. While reforms and introduction of IT allow processing paperwork for export or import clearance within mere minutes, it is very difficult for a firm to have a staff member work part-time on such processing since this sometimes requires specialized knowledge about trade laws and regulations.<sup>26</sup> Further, every once in a while, a representative from the company must travel to the port when KCS or other government agencies decide to inspect a shipment, or to government offices when there is an irregularity. However, normally there is not enough work in these areas to justify hiring full-time employees specifically for that purpose. Thus, for most companies, outsourcing their customs clearance work to customs brokers is a convenient solution. Another consideration may be the legal responsibility related to customs clearance. Firms, especially SMEs, may not want to take legal responsibility for errors in paperwork or improper procedures; using customs brokers allows the firms to shift the blame to the brokers or, at the very least, to share the blame.

Because customs brokers carry out processing work for hundreds of companies, they can achieve an economy of scale, since most transactions are routine and standardized. Since brokers deal with hundreds of clients, they can afford to have

<sup>&</sup>lt;sup>25</sup> The interviews were carried out between January and March 2008 as background research for Im and Yang, 2008.

<sup>&</sup>lt;sup>26</sup> The need for firms to be aware of complex laws and regulations may point out the need for more legal and regulatory reform.

representatives in all major ports and airports where goods may arrive and leave. Thus, most of the processing of customs procedures is left to customs brokers.

In a phone interview in January 2008. A representative of the Korea Federation of Textile Industries supported the statements by the customs brokers. Most members of the Korea Federation of Textile Industries are SMEs and, according to the representative, these firms do not have the resources or capacity to carry out cargo clearance in-house and thus depend on customs brokers. In addition, few SMEs appear to have employees who are knowledgeable about customs procedures. Most SMEs therefore simply do not bother with customs procedures, leaving it up to the brokers.

However, it would be a mistake to conclude that the Republic of Korea's efforts to reform its customs clearance procedures and introduce IT in cargo clearance have been of no use to SMEs. These reforms have helped to reduce the prices charged by the customs brokers and have made the process more transparent, so that bribery or errors have been substantially reduced. In fact, the SMEs' ignorance of customs procedures may be an indication of the actual success of the reforms, since customs procedures no longer represent a significant hassle for most of those businesses.

One broker described how the adoption of EDI and e-trade had sped up customs clearance for his clients: "Since we could not visit customs offices for each and every transaction, we used to gather up the paperwork and visit the offices once a day at 3 o'clock. At that time, customs had to examine and approve each transaction, so processing paperwork would take all day or even two days." This broker also stated that while EDI costs were only around W 300,000 per month, it did the work of 20 to 30 employees.<sup>27</sup>

In addition, the brokers said there was little difference in the amount of paperwork required for cargoes of SMEs versus cargoes of large companies, or expensive cargoes versus more inexpensive cargoes.

## 4. Other examples

When various components of e-trade were first introduced, KTNET distributed testimonials from its users, and the press and mass media in the Republic of Korea often ran introductions and stories about the use of e-trade by individual businesses. Some of those stories are given below.

#### (a) Korea Exchange Bank

Korea Exchange Bank (KEB) is a major commercial bank in the Republic of Korea. As of August 2005, 3,100 firms were using KEB's foreign exchange EDI system to carry out foreign exchange transactions related to trade. KEB joined the KTNET EDI project at its conception and trial from 1993, and has invested billions of won to build the electronic infrastructure for processing these electronic transactions. As of October 2006, KEB

<sup>&</sup>lt;sup>27</sup> Electronic Times (Korea), 9 November 2006 (Korean language). Available at the website www.etnews.co.kr/news/print.htmlid=200611080131.

estimated that some 60 per cent of all foreign exchange transactions that passed through KEB were done electronically.

Firms have benefited because, in the past, they had to apply for and receive at least four or five documents such as an L/C, certificate of origin, invoice, packing list and a Bill of Lading (B/L). When a bank received an L/C from abroad, a bank representative had to phone the firm, and an employee from the firm had to go in person to the bank to pick up the form. Such running around is no longer necessary. EDI has resulted in lower fees, from about W 20,000 to less than W 10,000. In fact, not just firms enjoyed the benefits. KEB no longer has to print out paper forms for the more than 400 trade transactions that they process daily, and the bank employees no longer have to physically examine and process the paperwork. KEB estimates that before the use of EDI, more than 600 employees were dedicated solely to processing trade-related paperwork, whereas now no more than one person per branch is required.<sup>28</sup>

#### (b) Pantos Logistics

Pantos Logistics (Pantos) is a logistics firm that provides: (a) brokerage for air, sea and container freight; (b) bonded transportation; (c) customs clearance; (d) warehousing; and (e) consulting services. It processed 550,000 FEU<sup>29</sup> containers in sea cargo alone in 2005. Pantos has used KTNET's EDI logistic tools and network since 1997. The company has invested more than W 2 billion in e-trade and EDI-related infrastructure, and its payments for EDI-related services amount to more than W 30 million annually. However, Pantos believes that the value of the benefits is many times greater than the costs. More than 100 types of forms are filled out electronically by Pantos.

All repetitive tasks that were once handled by employees are now handled automatically. Before using EDI, a B/L had to be typed individually, and one employee could not handle more than 600 cases a month. Once EDI was introduced, the manpower could be diverted to more useful tasks. The introduction of EDI has made Pantos more competitive as a freight forwarder. Before the introduction of EDI, Pantos could not issue delivery orders, and a B/L issued by Pantos was not accepted for claims. However, with the introduction of EDI, Pantos can keep track of all freight under its charge, raising transparency and confidence. EDI has allowed Pantos to reach beyond logistics into tasks dealing with customs clearance and negotiations.<sup>30</sup>

#### (c) Daewoo Electronics

Daewoo Electronics has used the KTNET EDI service for foreign exchange transactions, customs clearance and logistics since 1996. As with other companies, EDI

<sup>&</sup>lt;sup>28</sup> Electronic Times (Korea), 12 October 2006 (Korean language). Available at the website www.etnews.co.kr/news/print.html?id=200610110135.

<sup>&</sup>lt;sup>29</sup> Forty-foot equivalent unit.

<sup>&</sup>lt;sup>30</sup> *Electronic Times (Korea)*, 12 October 2006 (Korean language). Available at the website www.etnews.co.kr/news/print.html?id=200610180123.

has saved Daewoo Electronics a considerable number of man-hours by eliminating the time required to print the actual paperwork as well as the time spent in commuting and waiting. Daewoo Electronics files more than 40 types of forms electronically.

Although the company's EDI costs have reached W 80 million, it believes that the benefits substantially outweigh the costs. The time taken for a single transaction has fallen from 22 minutes to 6 minutes, resulting in savings of W 75 million in man-power alone. Before EDI, in 2000, the foreign exchange department of Daewoo Electronics required 21 employees. In 2006, only eight employees were required. The number of employees in the logistics department fell from 60 to 35 in the same period. Total cost savings from EDI are estimated to be nearly W 1 billion. In 2006, Daewoo Electronics was in the process of transferring its internal IT infrastructure to XML/EDI format in order to improve compatibility with other external systems.<sup>31</sup>

## E. Impact on SMEs: Conclusion and recommendations

This section attempts to draw some conclusions and recommendations based on the experience of the Republic of Korea. Box 5 lists the factors that KITA believes contributed significantly to building an efficient and successful e-trade system. Emphasis is placed on establishing an appropriate legal framework, strong leadership by the Government, partnership and extensive discussion between government agencies and businesses, a sufficient budget, use of international standards and the use of a userfriendly system.

While the points listed in box 5 are important, the success factors appear to be drawn from the perspective of the Government and the service providers, and they underestimate the need for streamlining and overhauling the existing trade laws and regulations. With these points in mind, the following recommendations are proposed.

## 1. Adopting IT to cargo clearance must be a part of a comprehensive customs procedure reform

Gains from technology will be limited if the number of forms or the number of required procedures are still large. In such a situation, while clearance may be slightly faster, firms and brokers will still be faced with unnecessary forms and procedures. Legal and regulatory reviews as well as audits of physical procedures are necessary complementary tools to IT and e-trade. In addition, some firms have remarked that one of the reasons many businesses prefer to outsource customs clearance to brokers is that some of the existing laws and regulations, such as tariff classifications, are too technical. Such opinions appear to imply that the Republic of Korea needs to review and reform additional areas of cargo clearance.

<sup>&</sup>lt;sup>31</sup> *Electronic Times (Korea)*, 2 November 2006 (Korean language). Available at the website www.etnews.co.kr/news/print.html?id=200611010127.

## Box 5. Critical success factors according to the KITA Korea Paperless

## **Trading Centre**

In establishing an efficient and successful e-trade system in the Republic of Korea, the following factors were critical:

- An appropriate legal framework
- Strong leadership by the Government
- Public and private cooperation covering not only B2B but B2G, G2G
- An adequate budget
- IT infrastructure (network, hardware and software)
- Adopting international standards and trends
- A user-friendly system (easy and simple to use, and an intuitive interface)
  - (e.g., MyTrade at UTradeHub)
- Adoption of state-of-the-art technology
  - Business process management
  - A trusted platform of reinforced security technology
  - Supporting industry SCM with global visibility and radio frequency identification.

Source: Korea International Trade Association, 2007.

## 2. A legal framework must provide a basis for adoption of IT and e-trade

In the Republic of Korea, the introduction of some elements of e-trade was delayed because the law did not provide a legal basis for some of the services provided by e-trade. For example, before the E-Trade Facilitation Act gave legal status to electronic documents, and before Electronic Certification Law defined what was meant by "original documents" for e-trade, the uses of electronic documents were limited. A legal framework must accompany the adoption of technology.

## 3. A single network and single standard may be more useful than variety

Some observers may be wary of establishing a single network and single format for e-trade, arguing that it may reduce efficiencies from competition among different networks and different formats. However, interviews with Korean firms and brokers indicated that having one single e-trade service provider and one single network had made the adoption of e-trade easier by establishing a common format as there was no need to learn several different procedures and formats. Computer programmers often cite the KISS ("Keep it simple, stupid") principle when writing programmes and designing user interfaces. This principle also seems to be useful for e-trade platforms. For example, the WYSIWYG design for electronic documents and screen format, which made electronic documents look the same as the paper documents, appears to have adjusted to paperless trade and e-trade much easier for traders, brokers and other agencies.

## 5. E-trade system and paperless trade system is meant to be used extensively

As explained in section C, initially KCS limited the use of EDI/VAN, fearing that the use of a paperless trade system would increase illegal transactions. It is not surprising then, that the percentage of transactions that went through EDI remained low. The true adoption of paperless trade and e-trade did not occur until KCS allowed more firms to use EDI and opened up the system through the Internet. The ultimate goal of the e-trade system is to reduce costs for traders; however, any such reduction will remain low if traders are not allowed to use the e-trade system. This is especially important to SMEs since they are likely to be the firms who are denied access to the e-trade system.

## 6. Trust must be built between SMEs and government agencies

The Government may limit the use of the e-trade network to traders who, it feels, are not trustworthy. Thus, to facilitate the use of the e-trade system, trust must be established and strengthened between traders and government agencies. However, because of the inherent weaknesses of SMEs such as more frequent turnover, lower capital and a lack of good record-keeping, many SMEs may not have a comprehensive or good past record. Due to such problems, government agencies tend to trust SMEs less than larger firms. In the past, when deciding whether a firm was qualified to use the e-trade system, its size and the amount of its capital were among the prerequisites taken into consideration. Thus, to enable SMEs to use the e-trade system fully, the Government advantage of facilitated trade requirements will depend only on the actual records and performance of such firms, rather than on preconceived notions of customs authorities.

## 7. Usefulness of e-trade will increase exponentially when more countries join

When asked about how the current e-trade system in the Republic of Korea can improve, the interviewees from both the private sector and the public sector pointed out that there was an urgent need to get more foreign partners to use e-trade. Even if all domestic transactions can be carried out online, when approval requires paperwork from abroad, domestic traders and agencies must wait for the physical documents to arrive. This requirement reduces the speed of trade-related transactions significantly. The internationalization of e-trade requires countries to coordinate and use standardized procedures and formats for hardware, software and documents as well as electronic certification and legal interpretation of documents. Many international and regional organizations, such as Asia-Pacific Economic Cooperation, the World Customs Organization and the United Nations, have made significant contributions to establishing international standards and internationally common procedures. However, much work remains to be done. In addition, there is a need for financial assistance to build capacity and infrastructure for e-trade in the developing countries.

## References

- Im, H. and J. Yang (2008). Kiupcheukmeonesuhui WTO/DDA muyukwonhwalhwa hyupsang junryak guchuk (Forming a Negotiation Strategy for WTO/DDA Trade Facilitation Negotiations from the Industry's Point of View), (Korean language), unpublished. Korea Institute for International Economic Policy, Seoul.
- Jeong, Y.S. (2005). "The present and future of Korea's e-Trade (paperless trading)". Presentation given at Capacity-Building Workshop on Trade Facilitation Implementation for Asia and the Pacific Region, 18 March 2005, Kuala Lumpur.
- Jung, J-W (2008). "A study on the comparative analysis of the e-Trade in Korea, United States and Japan," (Korean language), *Korea Trade Review*, vol. 33, No. 4.
- Kim, Cheol-ho (2007). "Some issues of the e-Trade Promotion Act in Korea and its improvement plans" (Korean language), *Gukjaesanghak*, vol. 22, No. 1, pp. 281-299. Korean Academy of International Commerce Inc., Seoul.
- Korea International Trade Association (2007). "What makes the UTradeHub unique?" Powerpoint presentation, August 2007. Korea Paperless Trade Centre, Seoul.
- Korea Customs Service (2007). "*Ttonggwanbunkwa bogosuh*" ("Report of the Customs Clearance Sub-Committee") (Korean language). Seoul.

(2006). Gwansaehaengjung Jungbohwa Sunggwacheukjung mit Sunggwagwanrimodel Gaebal (Evaluation of Results for Customs Administrative Informationalization and Development of an Evaluation Model) (Korean language). Seoul.

(2004). "Choilrewkwansaero ireun kwansae haengjungui searoeun yuksa" ("New history of customs administration achieved through first-class Customs") (Korean language), report to the Blue House, September 2004. Seoul.

- Sohn, C-H. and J. Yoon (2001). "Trade facilitation in WTO and e-Trade," Policy Analysis II 01-03, December 2001, (Korean language). Korea Institute for International Economic Policy, Seoul.
- World Trade Organization (2000). "Korea's recent efforts to streamline the customs clearance system," G/C/W/212, 6 June 2000. Geneva.

\_\_\_\_\_ (1998). "Trade facilitation: National experience paper – reforming the customs clearance system in Korea," G/C/W/123, 25 September 1998. Geneva.

\_\_\_\_\_ (1999a). "Trade facilitation: National experience paper – Revision of the Customs Act of Korea for trade facilitation," G/C/W/146, 6 April 1999. Geneva.

\_\_\_\_\_ (1999b). "Trade facilitation: Customs administration and trade facilitation", G/C/ W/150, 16 April 1999. Geneva.

Yang, J. (2009). "Korea customs and border-related trade reforms", case study in *The Ease of Doing Business in APEC: The Impact of Regulatory Reforms*, pp. 81-97. APEC Economic Committee and the World Bank, Singapore and Washington, D.C.