III. THE DEVELOPMENT IMPACT OF INFORMATION TECHNOLOGY IN TRADE FACILITATION: SUMMARY OF COUNTRY STUDIES

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Introduction

The main purpose of this chapter is to provide an overview and the context of the country studies on IT in TF in SMEs. Following this introductory clarification of the differing views about the importance of IT in TF, where the interests of SMEs lay and how these interests are promoted, section A summarizes the different country studies covering several aspects of IT in TF. Section B derives some implications from the country studies. Section C introduces the contents of the succeeding chapters.

When introducing an IT system for trade facilitation, the rate at which it is adopted and used by traders depends on many factors such as preparedness, access requirements, ease of navigation, content menu and delivery, security of communications and cost. It will have a varying impact on the trading community. The behaviour of international traders and firms varies with the context of their trade needs.

One argument often made regarding IT in TF is that from among the firms that will potentially utilize the IT system, SMEs are bound to be adversely affected by the trade facility for many reasons. For example, there may be technical requisites that SMEs do not have or cannot readily acquire. These could take many forms – the need for dedicated terminals and an exclusive link-up, proprietary software, restrictive technical services and other technical requirements. Although these requisites mainly pertained to first generation IT system (e.g., EDI), some technical constraints remain even with web-based and Internet accessibility.

In addition, SMEs often have limited access to essential information about markets, not to mention market studies that examine sales options and thus strategies to penetrate them. Simplified templates may be available that can be adapted to different environments, but these fall short of appreciating unique prospective markets. Moreover, SMEs also have limited access to knowledge about rules, procedures, and requirements for transactions across borders. The manner of cross-border transactions widely differs from regular domestic market transactions, and SMEs’ familiarity with these aspects is likely to be weak.¹

Finally, SMEs have different configurations and structural conditions than large domestic firms and multinationals. It is obvious that SMEs are “small” compared to “large” firms, even within the domestic economy, and more so in comparison with transnational firms. However, size has disadvantages, especially in the context of international trade.

¹ The weakness of SMEs in acquiring information, understanding and access to markets, and other capabilities to go into business, including international trade, is not really relevant to information technology. However, this may still constrain them from using IT facilities effectively.
Many practices of large firms cannot be easily followed or replicated by SMEs. For example, the use of frontier technology can only be acquired by large firms with the resource capacity, skills and size to use it efficiently. Technology diffusion usually starts with large firms and there is a time gap before SMEs adopt it following some standardization. There is product leverage that large firms can easily apply to their suppliers and other sources of inputs in terms of cost reductions, technical support etc., that SMEs have difficulty in securing. Large firms also have financial leverage with their creditors and suppliers, and equities that provide extensive financial advantages such as longer floats, larger credit lines, better financial costs, additional emergency lines, and other financial premiums that are the privileges enjoyed only by select financial customers.

SMEs, however, play a significant if not critical role in developing countries. They generate employment, absorb marginal and unskilled workers, contribute to production and aggregate output, and earn foreign exchange. As a rule, they should be integral parts of the economy and in the mainstream of development processes. Where they are left behind, development policy should encompass them and aim for a more inclusive growth.

Many of the trade facilitation measures are aimed at increasing the speed of goods movement. To the extent that all traders (actual and potential) are able to access and utilize these facilities, the goals of TF are achieved. However, to the extent that these measures are systematically unutilized by certain groups, it may be necessary to understand what is behind such a situation. This is the rationale for inquiring into the development impacts of TF. SMEs that are international traders are those for which the development impact is determined.

In the specific case of IT in TF, it is necessary to know the extent to which SMEs utilize IT in their commercial transactions. There may be other reasons why they do not use such facilities. For example, SMEs may be using outside resources to substitute for IT in TF; outsourcing their international trade business would be another approach. They may use other alternatives in dealing with international transactions. These may either be rational responses to the inherent constraints that SMEs face or just coping mechanisms. Indeed, the performance of some SMEs with regard to the use of IT in general, and IT in TF in particular, may be made optimal by concentrating on what they do best (including trading with the rest of the world) instead of spreading their limited capacities over the procedures and processes required for their international trading activities. In this connection, customs brokers, forwarders and related services provide the links between traders and border agencies. This is discussed below.

A prevailing school of thought on SMEs and TF (including IT in TF) is that SMEs have not been active in international markets because of a lack of support for accessing global commerce. The underlying assertion is that the benefits from TF are relatively large. Whatever the type of TF measure being considered, quantitative estimation shows significant positive effects. Studies by APEC (2002 and OECD-APEC 2006) were made in a general equilibrium setting or in terms of experiences of the member countries achieving substantial trade gains from trade facilitation in general (e.g., trade volumes and speed of goods movement), and in terms of SMEs (greater economies of scale and increased efficiency). Conversely, without TF measures, SMEs appear to be more vulnerable to
trade barriers than their larger counterparts. Some of these barriers include lost opportunities by forgoing markets, additional costs that reduce their competitiveness and inability to influence trade policies (Fleiss and Busquets, 2006).

Addressing the three GATT Articles (V, VIII and X) as a basis for TF also yields numerically positive benefits to international trade (Wilson, Mann and Otsuki, 2004). In fact, the highest impact from TF measures comes from improvements in port efficiency compared to improvements in customs administration and services (“behind-the-border”) infrastructure. In the case of IT in TF, the prevailing view, based on the literature, is that the benefits to trade from automation processes are overwhelmingly positive. The OECD (2005) survey of customs automation showed substantial cost savings on the part of traders, increases in the efficiency of physical government facilities (e.g., ports and warehouses), and improved governance and predictable revenues on the part of governments. In addition, while the benefits appear to be readily estimated along a uniform stream, the costs differ substantially according to whether the IT system is customized for the agency undertaking the automation, or whether it is off-the-shelf and the additional costs are based on the scale of operations. In any case, this thinking about TF (particularly in the case of IT) appears to be straightforward. A sensible policy decision ought to be in the direction of carrying out TF measures, a significant part of which will have an impact on the development of SMEs.

Another school of thought points out that if an objective of TF is the internationalization of SMEs, prior conditions may exist that must be satisfied before such a measure achieves its purpose. This would be especially true for automation of trade processes and IT applications to trade transactions of SMEs. It can, in fact, be argued that this may also be true of other efforts to help SMEs internationalize. For example, UNCTAD (2005) noted that for effective SME internationalization (by which is meant its export competitiveness), firms must be closer to the top of the value chain and production networks, i.e., the finalization of a product. This would require that SMEs not only be provided with TF support but also that they must connect with network firms along the value chain. While it would be possible for some SMEs to become indirect exporters or importers, i.e., without being internationalized, they would still have to be integral to the network. Therefore, the number of SMEs along the “curve” would not be widespread and thus their development would be limited.

IT experts from the earlier generation of automation systems for trade argue that there are many critical enabling conditions for SMEs to utilize IT for TF effectively, and that these have little to do with trade (Schware and Kimberley, 1995). This could be expected from a legacy system that was not only expensive to set up and maintain but also highly inaccessible except by (mostly large-sized) traders who could provide dedicated equipment and personnel to work on the system. Even then, the critical enabling conditions remain the same – i.e., more related to retooling on the part of the firms, revamping their business models, preparatory work on e-commerce and working with partners on key messages –

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2 The Internet (access, number of service providers, penetration rate etc.) is viewed as a “beyond-the-border” measure.
notwithstanding the later shift to the more accessible web-based automation systems. Indeed, this characteristic of SMEs is not unique to the developing world.

It is also true of SMEs in the developed countries (Shatz, 2004 and Goldsborough, 2005), which also face comparable barriers to becoming internationalized, have analogous problems as the SMEs from developing countries, and are provided with support in the form of TF measures including automation. In fact, some of the analysis of SME and IT application in developed countries reveals that the increasing complexity of trade, the maze of network firms and security concerns of governments pose challenges to SMEs (Goldsborough, 2005).

The Swedish National Board of Trade and Swedish Trade Procedures Council (2003), in noting the importance of computerizing procedures as part of trade facilitation, nevertheless argued that, if implemented untimely and incorrectly, it might turn out to be ineffective as well as costly. There is a need for basic computerization as a building block to a full automation of trade procedures. Among the basic measures are: (a) possible electronic data submission; (b) adoption of international standards in electronic communications; and (c) the operation of an Internet-based central site for relevant information and access to forms and documents necessary for international trade. This combination of electronic filing and electronic retrieval of documents and forms also provides traders with benefits.

There is no indication from this thinking, however, of any gestation period before the preconditions lead to the SMEs’ participation in the global economy through direct exports and imports. Nor is there an indication of how important the partial types of computerization are, nor the period before full-blown automation is fully utilized and the maximum impact occurs as analysed and measured by the prevailing perception of TF measures.

There does not appear to be wide inconsistency between the prevailing perception of the importance of TF measures on SMEs and the belief that there are necessary preconditions that must be met before effective utilization of these TF measures can be achieved. The former just presumes these preconditions exist while the latter requires that the preconditions be satisfied before TF becomes effective. Limited and insufficient results from surveys of SMEs across trading nations show that what are considered barriers to internationalization are ranked lower in importance than those considered to be basic obstacles (OECD-APEC, 2006). For example, the most important barriers have more to do with internal firm capabilities (managerial and personnel quality), finance (working capital), access (information and business opportunities) compared to the need to understand exporting procedures and paperwork. For the smaller firms among the SMEs this could indicate a difficult start-up if not resistance to electronic procedures and record-keeping, fewer paper documents and references, and even real-time transactions through the Internet.

In the specific case of IT in TF, it appears that while the latter view recognizes the importance of computerization and automation in trade, it implicitly suggests a staged process – basic computerization at the SME level, followed by further computerization and
automation as a stronger foundation for eventual full utilization of IT in TF, is built through implementation of successive trade facilitation measures. Moreover, this is not an argument against automation of trade processes or that the benefits from IT are not significant. On the contrary, by passing through the basic stage, SMEs are able to maximize their potential in internationalization. Therefore, this view has implications that differ from what is prevalent.

First, the need for more accuracy in determining the benefits and costs of IT becomes compelling. This does not mean that the extensive literature quantifying the effects of IT in TF is inadequate. What it does mean is that there is a need for a specification that recognizes partial IT (and thus a narrower stream of benefits), limited scope in an agency where the IT is located and finer delineation of costs (both public and private) – i.e., a truncated yet more elaborate cost-benefit analysis than what seems to be given in the related literature. A more complete cost-benefit analysis of IT provides a firmer basis for governments with limited resources to decide on undertaking IT for TF.3

Second, in a partial computerization of automation setting, its location becomes doubly important for the simple reason that the IT application is probably modular, not linked to other agencies with border functions and limited in the information that is captured. In addition, the benefits probably differ according to location. An obvious location is customs, where a partial automation may only involve electronic submission of declaration forms. Depending on the trade structure of the economy (e.g., distribution of trade products), there would be alternative locations for IT. For a dominantly agricultural products trade, the trade-off for customs (partial) automation may be computerizing regulatory and quarantine agencies.4 Thus, measuring and understanding the effects of IT in its location will provide varying bases for undertaking a limited IT for TF that forms part of a building block. In a full automation (end-to-end), a transaction process is carried out from start to finish and will likely be linked to other agencies with particular requirements or submissions.

Although interoperability may be the ideal situation, short of that there are the steps for electronically referring procedures and documents from one agency to another in real time. Partial computerization necessarily requires partial assessment of benefits and costs as well as alternative implementation schemes, i.e., location. In fact, in a partially computerized set-up, where it is located in the procedural steps can spell differences in the benefits to traders. Location, both in terms of border agency and within the border agency which is part of its operation, is important.

Third, knowledge about actual SME behaviour relative to IT in TF is limited. While there are surveys of traders (both large firms and SMEs) inquiring about the importance of trade, understanding the way they respond to TF measures, including IT, is something

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3 As explained in chapter II, the literature does not provide adequate information about the actual costs and benefits of IT in TF.

4 In the case of agricultural products (especially food), automating the issuance of licences, permits and phytosanitary certificates may be more trade-facilitating than a concomitant effort at customs, since the time required for dealing with quarantine regulations may be longer than customs formalities.
else. By really following SMEs as they begin internationalizing, it would be possible to
gauge and validate the alternative view about the importance of TF to small traders and
entrepreneurs. The evidence from the OECD-APEC (2006) survey of SMEs, which tends
to indicate the important concerns they have with regard to internationalizing, does not
easily agree with what TF is expected to contribute. A similar survey is needed that
expands the analysis of SMEs across different regions.

Finally, where the real environment is one where preconditions are constraining
SMEs from entering the global marketplace, the immediate policy implications are not
aimed at providing targeted TF for them. Rather, they are more concerned with addressing
the preconditions and ensuring that these are overcome, so that the internationalization of
SMEs can proceed smoothly. Instruments to be applied would actually be neutral, irrespective of whether the SMEs are local or international traders. Indeed, it appears to
be an argument in favour of this view that once these precondition constraints are
addressed, important factors related to the international trade environment then determine
which of the SMEs will eventually become internationalized.

This type of thinking about IT in TF also raises the question of why the focus
should be on SMEs if they do not actually utilize such a measure. In addition to the fact
that this IT use has to be empirically documented, the objective of an inclusive development
is overriding. This is especially true given that SMEs are seen as vehicles for poverty
alleviation. It is also true that SMEs inherently are disadvantaged in terms of firm
characteristics as already pointed out above. For example, there are special lanes in
customs procedures intended to facilitate the handling of the cargoes of traders who are
accredited on the basis of volume or products.

Additional information and analyses of SMEs in the context of trade facilitation
experiences would be helpful for a greater understanding of IT in TF and its relative
importance to SMEs. An additional analysis of the development of IT for TF would also be
helpful in sifting through various views of how SMEs access the global markets and the
measures useful for them. Such additional analyses would actually enrich the knowledge
base that has been built up about the impact of trade facilitation on expanding trade and
how SMEs are drawn into global commerce.

A. Country studies

This section summarizes five country studies, for Bangladesh (Hossain, Deb and Al
Amin, 2009), India (Chatuverdi, 2009), the Republic of Korea (Yang, 2009), the Philippines
(de Dios, 2009) and Sri Lanka (Wijayasiri and Jayaratne, 2009), that examine the
development impact of information technology (IT) in trade facilitation on SMEs. This is
pursued through a review of the evolution of the IT system in place in each of these
countries as well as a small survey of SMEs and customs brokers or customs house
agents. The inclusion of the study on the Republic of Korea is intended to illustrate
a completed IT system and the role of SMEs.
Several themes appear to run through all the country studies. The intention of using these themes is to discern both differences and similarities, and to avoid the specifics of these countries’ experiences. These themes provide the platform for carrying out comparative analyses.

1. Similar and common settings

The five countries share similar and common settings. They also characterize many of the other countries in the Asia-Pacific region. They have had a legacy of difficult trading with the rest of the world. Their trading environment has comprised: (a) cumbersome procedures that required many documents and signatures; (b) border agencies prone to corruption; (c) a slow flow of goods; and (d) an initial environment of high tariff rates. In recent years, they have also commonly pursued liberalization policies including specific measures related to trade. They all now aim to be internationally trade-friendly, i.e., they have made efforts to reduce barriers for their traders to export and import. For some of the measures, changes have been rapid although other steps remained sluggish. Table 1 shows what it would take to export and import in the five countries plus Singapore in terms of documentation and time. Singapore is included in order to provide an illustrative reference in terms of the requirements for exporting and importing, as it is in the same region and at the forefront of IT in TF initiatives.

<table>
<thead>
<tr>
<th></th>
<th>Singapore</th>
<th>Bangladesh</th>
<th>India</th>
<th>Republic of Korea</th>
<th>Philippines</th>
<th>Sri Lanka</th>
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<tbody>
<tr>
<td>Documents for exports (number)</td>
<td>5 4</td>
<td>7 6</td>
<td>10 8</td>
<td>5 4</td>
<td>6 8</td>
<td>8 8</td>
</tr>
<tr>
<td>Time to export (days)</td>
<td>6 5</td>
<td>35 28</td>
<td>27 17</td>
<td>12 8</td>
<td>18 16</td>
<td>25 21</td>
</tr>
<tr>
<td>Documents for imports (number)</td>
<td>6 4</td>
<td>16 8</td>
<td>15 9</td>
<td>8 6</td>
<td>7 8</td>
<td>13 6</td>
</tr>
<tr>
<td>Time to import (days)</td>
<td>3 3</td>
<td>57 32</td>
<td>41 20</td>
<td>12 8</td>
<td>20 16</td>
<td>27 20</td>
</tr>
</tbody>
</table>


At first glance, the period covered in the table appears to be rather short, as a longer time frame could, in fact, show the magnitude and significance of changes in each of the countries. However, as shorter period can highlight more dramatic changes that have been taking place in terms of exports and imports, table 1 compares 2006 and 2008.
There have been quite noticeable improvements, especially in imports, among the
South Asian countries of Bangladesh, India and Sri Lanka. The number of documents
needed for imports between 2006 and 2008 fell between 25 per cent and 50 per cent for
each of the five countries listed in table 1; the exception was the Philippines where the
number of documents required for imports actually increased. A similar fall in the days
involved in processing imports is also noticeable for all five countries. Even Singapore
experienced an incremental decline in the number of documents required for imports.
Although a comparison of the Republic of Korea and the three South Asian countries
shows a sharp distinction (in terms of the number of documents required) in 2006, that
distinction had virtually vanished by 2008. What that means in terms of similar and
common settings is an overall commitment to facilitate trade, especially in imports.

In the case of exports, on the other hand, there was no noticeable improvement
and there were only marginal changes. The figures for Sri Lanka remained the same
while there was an increase in the number of required documents in the Philippines. No
sharp distinction can be made between the Republic of Korea and South Asia. While
there are also reductions in the number of days to export across all five, these are not as
significant or noticeable as those on the import side.

A number of observations can be gained from the overall settings, which are similar
and common among the five countries and which provide a framework for the studies.
First, the sharp improvements among the South Asian countries are in imports, i.e.,
documents and the number of days needed for processing imports. Second, despite the
improvements, they are still not on a par with the situation in Singapore, where the
numbers (documents and time) are half those for South Asia. Third, the noticeable
improvements in imports may be a reflection of measures that have been taken by the
countries studied to facilitate trade. This is truer for imports since certain steps and
procedures do not take place in exports (e.g., payment of import tariffs).

The individual studies summarize what has been done, both with regard to trade
facilitation in general and IT in particular. Finally, what the improving settings in these
countries show is a more trade-friendly atmosphere that forms part of their overall business
environment. It is an indirect manifestation of the fact that the five countries have embarked
on deliberate programmes aimed at freeing imports and encouraging exports. Their
development impacts need to be traced, especially among SMEs. Although this may
mean placing emphasis on exports, it is more often the case that exports in a globalized
world also require imports for production.

2. Stages of information technology development

In the specific development of IT for trade, the focus is on the evolution of the
electronic systems, the manner of access to the system by traders, the eventual use of the
Internet, the degree of automation of the processes and the length of time taken for
evolution. In the development of an electronic system, distinction is made between the
acquisition of an off-the-shelf system and the independent development of a custom-built
system suited for a country’s environment. It is also important to trace the transition from
dedicated electronic access to the wider Internet, and the transition to partial or full
automation of trade procedures. Table 2 summarizes the evolution of IT among the five countries plus Singapore. This phasing of the evolution of IT, especially in customs, however arbitrary, captures what appears to be the actual development of IT for TF as described in the individual country studies. There are, in fact, unique differences between the countries in the studies.

Table 2. Information technology system development

<table>
<thead>
<tr>
<th></th>
<th>Singapore</th>
<th>Bangladesh</th>
<th>India</th>
<th>Republic of Korea</th>
<th>Philippines</th>
<th>Sri Lanka</th>
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<tbody>
<tr>
<td>EDI/DTI lodgement</td>
<td>Own</td>
<td>ASYCUDA</td>
<td>Own</td>
<td>Own</td>
<td>ASYCUDA</td>
<td>ASYCUDA</td>
</tr>
<tr>
<td>• Internet access</td>
<td>1998</td>
<td>–</td>
<td>1997</td>
<td>2000</td>
<td>2005</td>
<td></td>
</tr>
<tr>
<td>Fully automated process</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Single window</td>
<td>1991</td>
<td>–</td>
<td>–</td>
<td>2006</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>• Single hub</td>
<td>–</td>
<td>–</td>
<td>2008</td>
<td>–</td>
<td>–</td>
<td></td>
</tr>
<tr>
<td>Total length (years)</td>
<td>12</td>
<td>16</td>
<td>5</td>
<td>19</td>
<td>13</td>
<td>12</td>
</tr>
</tbody>
</table>

Trader/CHA/broker coverage

• EDI/DTI 12%
• +Internet +40%

Source: ARTNeT Reports for 2009.

Note: EDI/DTI – electronic data interchange/direct trader input.

There appears to be greater contrast among the five countries in their IT development than comparability. The whole IT system, from end-to-end, was completed in a dozen years in reference country Singapore, whereas in the three countries that are far from complete (Bangladesh, the Philippines and Sri Lanka), they have either have reached the same length of time as Singapore or far exceeded it. Even in the Republic of Korea the time taken for completion was 50 per cent longer than Singapore. That raises the question of whether the design and development of the KTNet actually attempted to capitalize on Singapore’s experiences or whether its development was truly independent.

When the details of IT development in the five country studies (together with Singapore) are examined, the contrasts become sharper. From design, development, installation and electronic lodgement the experience in India shows an almost immediate step, while it took five years for the Republic of Korea and seven years for Singapore. Bangladesh, the Philippines and Sri Lanka took even longer just to allow EDI/DTI to take place after the installation of the ASYCUDA system. On the other hand, the difference is even sharper in the gestation between semi-automation (and Internet access) and full automation (single window/single hub) for the Republic of Korea (10 years) and Singapore (2 years).
The development of the IT system for the five countries, as table 2 shows, provides some interesting points. It appears that there may have only been minimal mutual learning in the IT development between Singapore's experience and the other countries. While this may not have been important in terms of either the independent system for the Republic of Korea and India or the ASYCUDA system for Bangladesh, the Philippines and Sri Lanka, trader information and data-entry priorities and preparedness would have been instructive for those embarking on the development of an IT system. Indeed, mutual learning would have shortened the time for the overall development of the IT system in the Republic of Korea even if the technical specifications of programmes had been independently designed and developed. It took longer for the Republic of Korea to achieve a complete system than it took Singapore a decade earlier. It has, of course, taken even longer for the other countries, in which the systems are still far from fully automated.

Technical hurdles facing countries adopting off-the-shelf systems appear to be less difficult, given the wide experience of other countries. Yet the time required for electronic submission of declarations appears longer than with the independently developed system of the Republic of Korea and Singapore. The time taken for moving into partial automation has marginally improved. The hurdles may therefore not have been technical and the individual country reports trace the non-technical difficulties in developing the IT system.

There may have been differences in trader utilization rates of the IT system in partial automation compared with full automation. This means some palpable benefits were derived from using the partial automation system. The reason why the Republic of Korea took its time (10 years) in moving to full automation may have been the continuing use of the system by traders. As table 2 shows, there was a wide difference in the user rate between EDI and the Internet among traders and brokers. This gives some support to the point made by the Swedish Trade Procedures Council (2003) that some basic computerization scale is essential prior to trade automation. That point is borne out by the fact that, when the Singapore system was developed, a completely wired bureaucracy already existed, which reduced the learning time for full automation among users. In this context, it is also not surprising that Bangladesh, the Philippines, and Sri Lanka have remained at the stage of semi-automation.

3. Programmes for selected traders

A common practice among border agencies in many countries is to provide a programme for selected traders that facilitates their outbound or inbound cargoes. In a situation where trade formalities are conducted manually, border agencies often put up programmes for selected traders that skip certain procedures, accelerate some steps and cut down on needed signatures. In an automated environment such programmes generally remain and the system is configured so that, when tagged, the associated electronic files may be redirected as separate records to meet relevant regulatory and other requirements.

Country authorities generally allow border agencies to set up special windows or lanes, provide direct assistance or designate point persons, waive certain fees or charges and tag documents for selected traders. The bases for selection include volume, value
and frequency of trade transactions, the product or industry involved, the track record of past goods movements, and trader representatives. Sometimes these are only available in certain designated ports. An accreditation system is usually created in order to develop a database for the selected traders. The submission of various documents, certificates, records and other evidence constitutes some of the requirements to be considered in such selected trader programmes.

By definition, most SMEs would be excluded from the list of selected traders. While some of them could qualify in terms of products being traded, other more important criteria of volume, value and frequency may not be met. Thus programmes for selected traders not only facilitate cargo movements but also provide advantages for those who turn out to be “large-sized” traders. Conversely, SMEs face undue disadvantages from the extra facilitation that, as reviewed previously, could be obtained by the “large-sized” traders even without a selected trader programme. If the objective of trade facilitation is to include SMEs in international trade it may be useful to provide a balancing programme for them.

When procedures and processes related to trade movements are electronic, a gateway becomes necessary to link the trader and the border agency’s system. Agencies authorize service providers to deliver services accepting electronic documents from traders and to transmit them to the system. For some traders, notably “large-sized” ones, access through service providers may not matter significantly, given their volumes. Their arrangements with such providers may even carry substantial discounts, additional benefits and technical services.

For SMEs, however, the wide availability and prices of service providers are important to their ability to participate in international trade, assuming an initial readiness in IT for TF. This means the competitiveness of service providers. Where IT service provision is not contestable, or where there is only one designated provider, there is no choice for SMEs, which may create difficult problems for them beyond the pricing of services (e.g., charges for erroneous electronic declarations, and lack of technical support to SMEs computer systems). Indeed, the prices of some service providers may not truly reflect the actual cost of provision as provided for in Article VIII of GATT 1994, which is integral to trade facilitation measures.

Table 3 provides a list of special programmes for selected traders in the five countries studied. The table indicates the name of the programme, the number of service providers for the IT system in place and the approaches to the programme, i.e., where the programme is applicable in terms of ports or products.

Most of the five countries have programmes for selected traders. In the IT systems of the five countries, only the Philippines has more than one service provider. With the exception of the Republic of Korea and the Philippines, the programmes are also applicable only in certain ports or for specific products.
4. Internationalization of SMEs

The increasing participation by SMEs in international commerce is an important development goal aspired to by not only individual countries but also development institutions that promote inclusive growth. A review of what determines the internationalization of SMEs suggests that it may not be as easy as it appears. The process seems to be more involved and there may be necessary preconditions that must be met before the SMEs are integrated into the world economy.

SMEs play important roles in national economies. They contribute to employment generation, especially in comparison with large enterprises. Because they require lower capitalization and scale, they are capable of absorbing more labour. SMEs account for a large portion of total enterprises in a country. If entrepreneurship is equated with enterprises, then the number of SMEs represents a large entrepreneurial force. In terms of more balanced development, SMEs are physically more widespread than large enterprises, thus contributing to even more development. Therefore, the SMEs’ share of total country exports can be viewed as underlining their overall importance, especially in terms of employment.

As can be expected, the SMEs in the five countries under study are important and comparable in size. Despite differences in the legal definition of SME, which often encompass micro-enterprises, their importance can be seen in terms of the number of enterprises, impacts on employment, value added and exports. These range from more than 99 per cent of all firms in the Republic of Korea to more than 90 per cent of all industrial units in Bangladesh, the Philippines and Sri Lanka. SMEs also generally account for a substantial share of industrial employment, ranging from 87.5 per cent in the Republic of Korea to 36 per cent for the Philippines and Sri Lanka. In terms of output (e.g., share of manufacturing value added), their share is smaller, ranging from 20 per cent (Sri Lanka) to 39 per cent (India). Table 4 lists the share of SMEs in total exports by the five countries under study.

While table 4 shows the extent of SME participation in merchandise exports, it does not show is that all the other implied contributions are much larger in terms of other factors, e.g., employment, number of industrial units (firms) and output. In short, the

| Bangladesh | None | 1 (DataSoft) | By port |
| India      | ACP  | Government  | By port |
| Republic of Korea | “Trusted Firms” | 1 (KTNET) | All ports |
| Philippines | Super Green Lane | 3 | All ports |
| Sri Lanka  | Gold Card | 1 (e-Services) | By product group |

Source: ARTNeT Reports for 2009.
likelihood of multiplier impacts from the internationalization of SMEs is not captured by these figures.

5. Benefits and costs

Each of the country studies lists what are perceived by traders and their agents to be the benefits from trade facilitation in general and IT systems in particular. Given that systems are automated to varying degrees among the countries, comparisons would be difficult. Nevertheless, the substance of these benefits and costs are similar. They are also consistent with the overall review of the quantitative assessments of TF effects.

Whatever the degree of automation in the IT systems in place in the five countries studied, traders declare that there are benefits and costs. The responses appear to reveal that the net benefits of the systems are positive. Several items in benefits and costs are common. One is the expected reduction in corruption at customs, which often accompanies manual procedures and face-to-face transactions. The initial introduction of direct trader input in Bangladesh has even been viewed as an opportunity to end corruption at customs. Another way of describing this type of benefit is the reduction in side-payments made by traders in order to facilitate the clearance and release of cargoes.

Another benefit concerns the time usually spent in electronic and manual procedures and transactions. For those countries that have only adopted electronic lodgements (Bangladesh and Sri Lanka), there are palpable impacts in terms of submissions on a 24-hour, seven-day per week basis, removal of queues to customs offices, lesser errors in computation of taxes due, and even shorter clearance times. For those countries that have extended automation up to the major steps (the Philippines and India) or to complete procedural processes (the Republic of Korea), the time benefits are correspondingly larger. Indeed, the Republic of Korea study gives estimated savings of time that would otherwise be spent in a manual environment.

Then there are the productivity improvements across several actors in the formal trade processes. Obvious productivity increases result from reduction in costs to traders because of TF measures – for example, savings in printing costs when certain steps in the

<table>
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<th>Table 4. Share of SMEs in merchandise exports (Percentage of total)</th>
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<td>Bangladesh</td>
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<td>India</td>
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<td>Republic of Korea</td>
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<td>Philippines</td>
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<td>Sri Lanka</td>
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<td>APEC average</td>
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<sup>a</sup> ARTNeT Reports for 2009.
<sup>b</sup> United States ITC.
procedures are simply electronically captured and only a printed final document is needed. There are also reductions in delivery costs when necessary information is electronically retrieved.

On the other hand, there are also costs to the IT system and overall TF measures on the part of the public, and those shouldered directly by private traders. The public investment costs, however, are not reported in the country studies since they are not integral to those studies. Neither are these public investment costs widely known or finely indicated in order to give a more meaningful interpretation. The direct IT facility cost pertains to payment to the service provider for the submission of electronic forms to the border agencies. Ideally, the price of the direct facility should be the cost of providing the service. Actual prices, however, appear to have been mandated rather than by iteration in a market (the reason for which can be found in table 3). Four of the five countries in the study have only one service provider. The alternative way of determining the adequacy of price of the IT facility is whether traders find it excessive or just adequate.

Based on interviews, the results are mixed. Where the IT system in place covered a wide range of the procedures and processes, traders in the Republic of Korea and the Philippines were satisfied with the prices charged for the facility. Traders in Sri Lanka, however, where the system covers only a limited portion of the processes, expressed ambivalence about the prices; some considered the price (actually the system in place) not worth the facility. Insufficient information on Bangladesh and India prevents an initial assessment of the adequacy of IT facility pricing.

The point about pricing of the value-added service provider is whether the service is contestable. One can always argue that a single provider guarantees that only one set of standards is followed, especially if many agencies are interlinked, regulations are easy to impose, and there is oversight from regulators about pricing. In the countries studied, the apparent price of services related to electronic submissions is based on electronic transmissions (number of bytes). However, it does not follow that the price imposed on traders and their agents is the actual cost of provision. What is important is to ensure that the value-added service is potentially more open, given that it is a necessary component of the automation.

Table 5 provides a sample list of productivity and savings benefits from IT in trade facilitation as reported in the country studies. Their magnitudes and importance vary by product and industry, location, volume and scale as well as other factors that affect the production of goods and their movements into and out of the country. SMEs that are internationalizing are also likely to experience such benefits.

6. Intermediation in facilitation

One aspect of the country studies is the use of brokerage or customs house agents (CHAs) by traders in loading or unloading their cargoes. A common practice in most trading countries is the use of brokers and CHAs for the entry of imports from or for exports to borders or ports. The increasing use of IT in TF has partly reduced the need for specialized customs brokers to undertake the required procedures and documentation for
the release or loading of goods. One of the emerging proposals in TF is the phase-out of the mandatory use of brokers’ services (and thus the elimination of pre-shipment inspection).

Except for the Philippines, the countries studied do not have legislation requiring the use of customs brokerage in the clearance of cargoes. In all five countries, however, it is common practice, to use these services. A history of complicated tariffs, permits, restrictions, multiple agency requirements and other paperwork necessitated such intermediation, which effectively relieved traders of often burdensome tasks.

Specialized skills and knowledge related to trade formalities (e.g., the submission of customs declarations, classification of goods, calculation of tariffs and other taxes, applications for permits and licences etc.) also necessitated a system of accreditation and licensing of brokers to ensure that the interests of the traders in facilitating trade were satisfied and that government received correct revenues. Hence, in most cases, brokers were required to pass licensure examinations and to have their work regulated. In the Philippines, recent legislation introduced the professionalization of brokerage services, defined specific educational requirements, specified the role of such services in the formal movement of goods and determined other criteria related to the practice of this profession.

Brokers and CHAs, many of which are also SMEs, are used more frequently by SMEs than large firms and traders in the five countries studied. Given that SMEs are unable to meet all the requirements for cargo releases, the associated paperwork, requirements of other public and private agencies relevant to cargo, and associated services, it is not surprising that they have relied on brokers and CHAs. Conversely, major firms with their large trade volumes are able to operate in-house organizational units that specialize in trade formalities (e.g., in Sri Lanka).

The availability of IT in trade procedures reduces the amount of work that is otherwise undertaken manually. Even partial electronic submissions cut short the amount of paperwork normally required. It follows that SMEs can actually directly file the necessary forms electronically. Country experiences indicate that they continue to rely on the services

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<th>Productivity</th>
<th>Savings</th>
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<td>Manpower costs</td>
<td>Freight transport costs</td>
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<td>Paperwork printing costs</td>
<td>Inventory-related costs</td>
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<td>Paperwork delivery costs</td>
<td>Export-related paperwork costs</td>
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<td>Import-related paperwork costs</td>
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<td>Ordering time</td>
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<td>Traveling time</td>
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<td>Delays and queues</td>
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Source: ARTNeT Reports, 2009.
of brokers and CHAs for a number of reasons. First, with their IT systems, brokers and CHAs are able to realize savings in their usual services and pass them on to their clients. Thus, traders benefit without actually changing their behaviour. Second, other services remain the specialized work of brokers and CHAs – e.g., a presence in most ports (sparring SMEs from designating staff to many ports) and special skills in tariff codes. Finally, brokers and CHAs can transform their usual services into TF-related functions such as archiving documents for post-clearance audits, representing clients in customs valuation disputes etc.

The mandatory use of brokers in the Philippines and the character of the profession have introduced other factors that have created circumstances not evident in the other countries. The legislation covering brokers requires certain academic qualifications that, in turn, have generated supply responses from the education industry. The transfer of licensure from the customs authorities to the larger national professional regulatory agency and the definition of the brokerage practice have changed the way documents have to be formally submitted to the system. Both the mandatory use of brokers and the subsequent legislation institutionalizing the practice have created vested interests.

The use of brokers and CHAs has apparently always been a practice among traders in most trading nations. While it is possible to argue that these businesses have been acting as middlemen in what might otherwise be direct transactions between a border agency such as customs and exporters/importers, they have not been without concrete functions. Indeed, trade formalities come with a plethora of rules, complicated procedures and extensive documentation. Moreover, they have evolved in an environment where these are fulfilled using paper forms and hard copies of documents, giving them an effective intermediary function. In view of recent broad liberalization, simplification of tariffs and other procedural steps in trade formalities, and reductions in paperwork requirements, there is the question of whether the intermediation by brokers and CHAs has lost its essential role in trading. If the increasing automation of procedures is added, this intermediation diminishes in importance. What appears to be happening in the countries studied is either some transformation of functions among the intermediaries or – in incomplete automation systems – the continuation of the past intermediary functions but with significant efficiency gains.

B. Implications

The results of the country studies on the impact of IT in TF on SMEs, together with the related knowledge base concerning the behaviour of SMEs that are internationalizing, suggest several implications and raise questions about how, if needed, TF can be made more inclusive. First, there is no doubt that TF in general, and in TF in particular, has been beneficial to traders, including SMEs. The overall environment, especially for imports, has improved in just a few years. More specifically, the five countries studied are at varying stages in the development of IT systems for TF – some are in the initial stage of electronic submission of customs declarations while the Republic of Korea is moving beyond the national single window. Countries that are in the process of computerizing and automating trade procedures can therefore be guided more closely not only in terms of
agencies to locate a system but also with regard to the time that implementing certain stages (e.g., electronic submissions) may take, public and private costs, and other simplifications, among others.  

Second, there is the question of whether IT in TF deliberately favours large firms and traders or conversely is unduly biased against SME traders. Many countries have programmes for selected traders and the countries in this study are no exception. This is understandable in an environment involving much paperwork and manual declarations as well as with many agencies requiring similar documentation. There is a need to facilitate the movement of goods, especially in the case of large volumes of trade (and paper requirements comparable to those of SMEs). In an automated setting, however, there is no clear indication that a separate programme for facilitation gives an added edge to large firms. Indeed, large firms have built-in advantages over SMEs. In situations of partial automation and computerization, however, such programmes clearly exclude SMEs from facilitation. Thus, IT in TF should proceed with explicit attention to a non-discriminatory tag on SMEs until full automation is achieved.  

Third, given the results of the following country studies, would it make sense to design IT for TF that favours SMEs? An initial reaction would be to slant TF in general to encompass more SMEs. A careful and systematic assessment of previous experiences, however, suggests avoiding moving towards facilitation that favours SMEs, for several reasons. Moving the IT platform from exclusive proprietary EDI and related systems to the Internet has expanded accessibility by SMEs. The results of the following country studies show that SMEs do use the IT system. Finally, while their use of IT is a function of their preparedness, IT availability has also induced them to adjust their systems, equipment and organization so that they can use IT effectively. Indeed, adjustments by traders included organizational changes, training, procedures, connectivity and overall business models. Brokers and CHAs (especially those that are SMEs) made comparable adjustments. The original bias against SMEs in terms of price (of the system) and accessibility has been balanced by the adoption of web-based technologies. In addition, the IT system in place is not significantly sensitive to the volume of trade, i.e., the speed in electronic procedures is not strongly biased against SMEs.  

Fourth, the behaviour of the SMEs in the country studies, the various ways in which they have adjusted to the IT system and their actual use of TF in trading indicate that they would use the electronic procedures even without any separate routines for them. The more important question is not whether there is any slant in their favour but whether they are prepared to use the system. This again raises the view argued in related studies that SMEs need to meet pre-conditions that will allow them to participate in global internationalizing.

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5 What is not available, however, is a more accurate quantitative specification of a benefit-cost ratio at varying levels of computerization and automation of procedures.

6 This does not mean that small and medium-sized traders do not have to bear inherent barriers in the process of internationalizing. This would indeed involve more an internal adjustment on their part than a TF bias. As shown in chapter I, a number of studies have argued that certain pre-conditions have to be met by SMEs before they can successfully internationalize.
markets as exporters or importers. Without meeting the pre-conditions, any IT system, even if configured for SMEs, would not likely be used effectively or efficiently.

Finally, the argument that IT in TF adversely affects SMEs is not really due to the IT system in place but more to the inability of SMEs to meet automation pre-conditions. In fact, the country studies point to the indirect use of IT by SMEs through the out-sourcing of trade formalities to brokers and CHAs. There may also be other reasons related to their trade behaviour why some SMEs that are internationalized prefer not to directly undertake electronic transactions. These are not arguments against IT in TF per se, but are rather arguments for addressing the computerization needs of SMEs, their preparedness for undertaking automated transactions and their capacity to participate directly in global trade. These are also arguments for the use of IT in TF that is non-discriminatory, which means, for example, a phase-out of programmes for selected traders. As SMEs surmount inherent barriers and make their transition towards directly undertake international transactions, trade becomes more inclusive. However, the best instrument for that would have been some form of affirmative action for all SMEs, whether trading internationally or not.

C. Succeeding chapters

Chapter IV presents the study of IT in TF in the Republic of Korea and how SMEs fit in with its development. The entire development of customs automation is described from the introduction of the permit system to self-declaration, from dedicated systems to more Internet-based lodgements. Despite the self-declaration environment in the Republic of Korea, the study – based on the results of both survey and a number of case studies – suggests that brokers remain important in that country. In fact, the study argues that with IT the need for SMEs (which comprise the majority of the country’s traders) to handle their own customs clearance work (self-declaration) is even less.

Chapter V considers the experience of Bangladesh in the use of IT as a trade facilitating measure. A timeline shows the deployment of the ASYCUDA system initially at the Dhaka Customs House, but it took two years before the system was installed at the Chittagong Customs House. Some time passed before the start-up of the direct-trader input process and finally the introduction of partial automation. In the Bangladesh study, the rationale for the introduction of IT in trade facilitation was widely associated with efforts to reduce corruption. While partial automation remains far short of complete end-to-end electronic procedures, the results of the surveys among traders and customs house agents suggest palpable benefits in terms of lodgement time, cost and even clearance time. The chapter ends with some specific recommendations for completing and improving IT.

The experience of India is described in chapter VI. Several streams of IT are employed in India that are related to different aspects of the entire movement of cargo, and these are under the management of different government agencies involved in international trade, such as the Ministries of Finance, Commerce, Industry and Shipping, among others. Various ports and airports are also involved through their own systems and
levels of automation. The chapter describes the processes by which the different streams are integrated.

Based on the results of a small survey of SMEs, CHAs and SMEs in a special economic zone in India, it appears that SMEs lack the specialized knowledge to file their own documents, and more so to become involved in the electronic processing of import and export activities.

Chapter VII provides the study on Sri Lanka, starting with a description of the import and export process from submission of declarations to the release of goods. Some 30 government and non-governmental agencies are linked to the export and import process. The degree of IT use in the country is limited to the electronic submission of customs declarations (CUSDEC); those that are actually connected even with this limited facility include tea and garment traders.

The results of Sri Lanka’s survey of traders (in garments) and CHAs with both small and large firm representation indicate that the limited extent of IT in TF is less than satisfactory, especially given the charges imposed on such CUSDEC submissions. The SMEs believe, however, that the system does not discriminate against them.

The study on the Philippines in chapter VIII traces the history of automation attempts, the current state of IT use (especially at the Bureau of Customs) and some of the evaluation results of the system. For example, the country report indicates substantial improvements in the interval between cargo arrival and lodgement of declarations but not between lodgement and cargo release.

The survey of customs brokers compares the importance of electronic lodgement to the other steps; the results show the extent to which IT has helped to facilitate trade. However, the study reveals that the mandated use of customs brokers has led to adjustments that differ substantially from how brokers play their role in the other countries under study.
References


