

***ENABLING INTERNATIONAL SUPPLY CHAIN INTEGRATION USING PAPERLESS  
TRADE***

**CONTENTS**

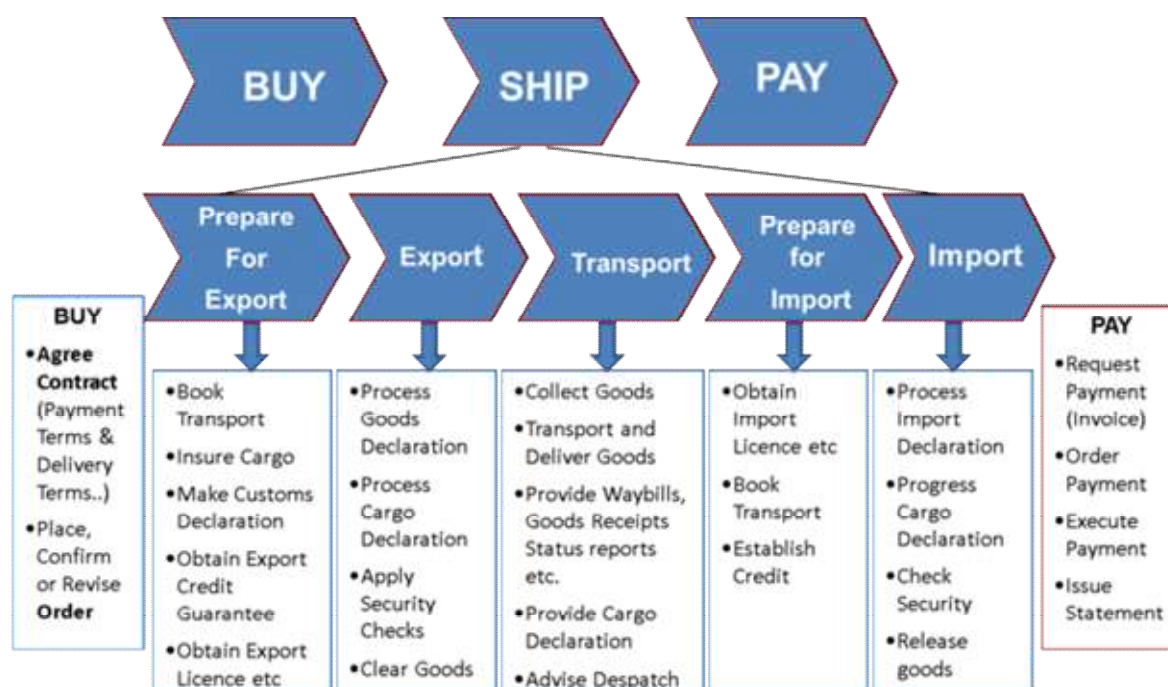
<b>1. Introduction</b>	<b>2</b>
<b>2. Paperless Trade and Efficiency of International Supply Chain</b>	<b>3</b>
<b>3. Review of Current Status</b>	<b>6</b>
<b>4. Issues and Challenges in Cross-Border Paperless Trade</b>	<b>10</b>
<b>5. Cases of Cross-border Paperless Trade Implementation</b>	<b>12</b>
<b>6. Questions for Discussions</b>	<b>19</b>
<b>7. Recommendations</b>	<b>19</b>
<b>8. Conclusion</b>	<b>20</b>
<b>References</b>	<b>21</b>

## 1. INTRODUCTION

A supply chain is an interaction among relevant parties, being either people or organizations, by engaging in a series of activities, with exchange of information and goods among them, to achieve an intended goal. With globalization and ever-changing business environment, a supply chain has also evolved into more complicated arrangement, resulting in involvement of more processes and engagement of more parties. To improve efficiency of a supply chain, businesses transform their supply chains into an international supply chain, where a supply chain is operated across borders.

In the UN/CEFACT Buy-Ship-Pay Model, operation of an international supply chain is represented by three major distinct steps of “buy,” “ship” and “pay”; the Model specifies further in details the processes and players involved in sub-stage of each step, as illustrated in Figure 1.

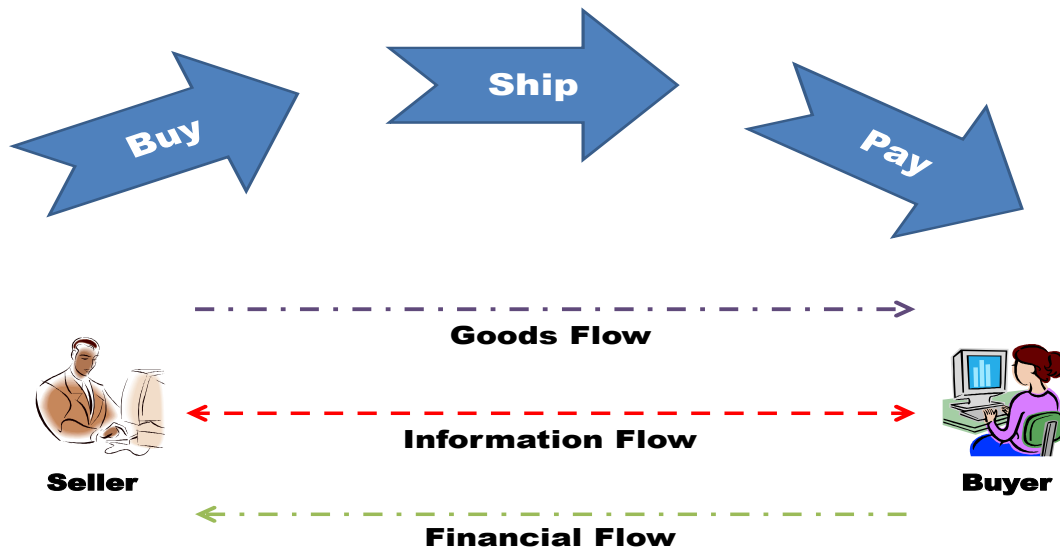
**Figure 1: UN/CEFACT Buy-Ship-Pay Model**



Source: <http://tfig.unece.org/contents/buy-ship-pay-model.htm>

Along the progress of steps or processes within an international supply chain, there are also three flows – goods, information and finance, as illustrated in Figure 2. Goods are exchanged between buyers and sellers, whether they are raw materials or final products; usually, flow of goods is in one directional, from seller to buyers. Financial flow is made for the completion of payment, which is also usually one directional, from buyers to sellers. However, flow of information is rather reciprocal among the players of an international supply chain, involving exchange of information not only between buyers and sellers, but also among all the intermediaries and regulatory agencies. Among the three flows of an international supply chain, information flow is the area where paperless trade can contribute most.

**Figure 2: Three Flows in International Supply Chain**



## **2. PAPERLESS TRADE AND EFFICIENCY OF INTERNATIONAL SUPPLY CHAIN**

Paperless trade is conducting trade transactions on the basis of electronic exchange of trade related data and documents, in contrast to conventional way of exchanging trade information using paper documents. Electronic commerce is defined as an e-commerce as long as whole or part of a transaction process is made electronically. By the same token, paperless trade includes trade transactions of both “paper-less”, where part of trade related data and documents are exchanged electronically, and “paperless”, where all the trade related data and documents are exchanged electronically. With the definition and scope of paperless trade given, any information systems that are used for completing trade transactions are called paperless trade systems, whether their application is for Business-To-Business (B2B), Business-To-Government (B2G) or Government-To-Government (G2G).

The Business-To-Business (B2B) paperless trade has been widely adopted by private sectors, in particular large enterprises, to improve efficiency of their supply chain. Typically, large enterprises such as GM, Chrysler, Benz and BMW in vehicle manufacturing industry, Walmart in distribution and retailing industry, and Intel and Samsung electronics in semiconductor industry have implemented Electronic Data Interchange for efficient international supply chain management. For example, BMW Group has been utilizing EDI with their 12,000 vendors in domestic market as well as in overseas market to develop and maintain sustainable supply chain. And they are encouraging first-tier suppliers to press for the implementation of standards along the entire supply chain to promote sustainability requirements among respective suppliers and sub-suppliers.

**Figure 3: Regional Mix of BMW Group Purchase Volume in 2012**



Source: Website of BMW Group (<http://www.bmwgroup.com/>)

Paperless trade systems can take various forms, from basic information sharing system to more sophisticated systems where multiple trade transaction processes are handled. An electronic Single Window system, which allows “*parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfill all import, export, and transit-related regulatory requirements. If information is electronic, then individual data elements should only be submitted once,*” is an example of sophisticated paperless trade systems that has drawn much attention as an important trade facilitation measure for the last decade.

As an information (processing) system, paperless trade systems are mainly concerned with streamlining flow of trade information in an international supply chain. However, with the advancement of Information and Communication Technology (ICT), paperless trade expands its application areas and can also facilitate flow of goods with the use of Radio Frequency Identification (RFID), mobile technology and Geographical Positioning System (GPS); such application in particular facilitates enhancement of security measures and traceability in international supply chain. Use of paperless trade also increases in the area of financial flow by facilitating efficient exchange of financial information among relevant parties.

International trade transaction inherently requires transactions to occur across more than one country, because an import transaction in one country is an export transaction in another country in international supply chain. However, a country’s primary concern is trade transactions occurring in its domestic area, whether import or export, since it has jurisdiction only on one part while the other part is owned by another partner country. Therefore, trade facilitations measures are mainly implemented within a country. Even though paperless trade also needs to be international with its inherent nature, paperless trade systems, in particular B2G and G2G systems, are mainly developed and used within a country at domestic level as trade facilitation measures.

With current dominant practices of paperless trade systems implementation limited only at national level, flow of trade information does not continue along an international supply chain, being disturbed at the borders and requiring players to turn into paper-based trade transaction practice. When Cross-border paperless trade is enabled, trade information can flow across borders through whole operation of an international supply chain.

Certain recent developments in international supply chain reinforce potential importance of cross-border paperless trade in improving supply chain efficiency and facilitating supply chain integration. Such developments include:

- ① More and more supply chains are connected across borders for more efficient procurement of raw materials, specialized and distributed manufacturing of goods, and streamlined distribution of final products to customers. For those products composed of diverse parts, it is rather difficult to see a case where such products are produced in one country. With this trend, operating a supply chain results in a series of continuous import and export activities among players of a supply chain. Under such circumstances, it is rather obvious that paperless trade across borders can greatly enhance supply chain efficiency and integration with better information flow among them.
- ② Ever-shortening production life cycle is another development in supply chains that contribute to higher demand on implementation of paperless trade systems. To maintain production life cycle short, sharing of relevant information among the players of a supply chain needs to be more efficient. Such efficiency in information sharing can be quite critical when a supply chain is operated across borders. As mentioned earlier, paperless trade can greatly facilitate flow of information.
- ③ Major export markets have introduced various initiatives for enhanced supply chain security, which has implication on efficient operation of supply chains. For example, the United States has introduced a series of supply chain security measures, including Container Security Initiative (CSI), Secure Freight Initiative, Importer Security Filing (ISF or 10+2), Advanced Electronic Cargo Information, etc. Some of these measures indeed have implications for the mandatory use of paperless trade. Use of paperless trade can help better meet the requirements of security initiatives and enhance security of supply chain with seamless flow of information.
- ④ Businesses transform their business models and operation of supply chains in ever-changing business environment through innovation, convergence and alliance. Paperless trade helps businesses to improve operation of their businesses by facilitating streamlining of information flows and creation of new business models. Paperless trade also promotes predictability of business environment with higher transparency and regularity, which is critical for businesses to invest on innovation of business practices.

In view of emerging developments in supply chains, it is no surprise that there are increasing number of initiatives from private sectors as well as public sectors to realize cross-border paperless. Nonetheless, cross-border paperless trade is limited in its number and coverage scope due to various challenges. The Paper will review current status of paperless trade implementation in the region with detailed analysis of two cross-border initiatives as well as discussion on major challenges in further progressing cross-border paperless trade in subsequent chapters.

It is well known that paperless trade can bring huge cost savings and efficiency gains in international trade transactions. The Asia Pacific region is a home to several successful implementations of paperless trade systems with impressive economic gains as briefly described as follows:

- After introducing the SW in Singapore, the time to process trade documents was reduced from 4 days to 15 minutes.
- Thailand has implemented a number of trade facilitation measures such as procedural reforms and customs modernization as groundwork for SW development. These measures have eliminated redundant processes and reduced the number of days for export from 24 days (in 2006) to 14 days (in 2009).
- In Hong Kong, China annual savings from the automated information transaction system are estimated at HK\$1.3 billion.
- The total savings for the business community from the use of the uTradeHub, which provides an automated information transaction system in the Republic of Korea, estimate to be around USD 1.82 billion. These include savings from transmission cost by using e-documents, improving productivity by automating administrative work and improved management, storage and retrieval of information and documents through use of Information Technology.

Note should be given that such gains mentioned above have resulted from implementing paperless trade only in domestic parts of trade processes. Considering the nature of international trade where three flows occur across borders, it is not hard to imagine how much efficiency can be gained when information is exchanged across borders.

### **3. REVIEW OF CURRENT STATUS**

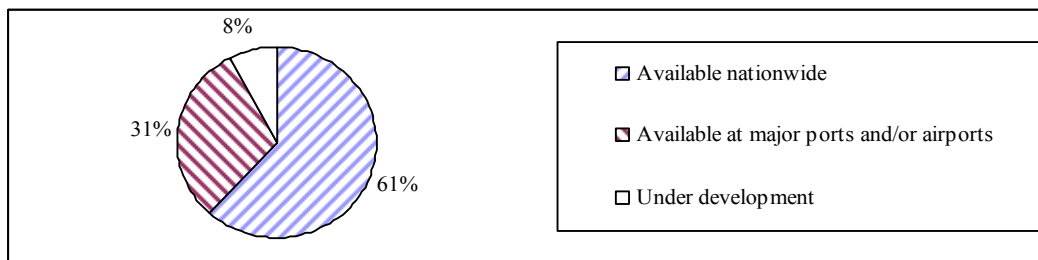
#### **3.1. Assessment of Paperless Trade Implementation in the Region**

Recent survey made by the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), as part of the Asia Pacific Trade Facilitation Forum (APTFF) 2012, reveals good readiness of the region to transition to paperless trade environment.

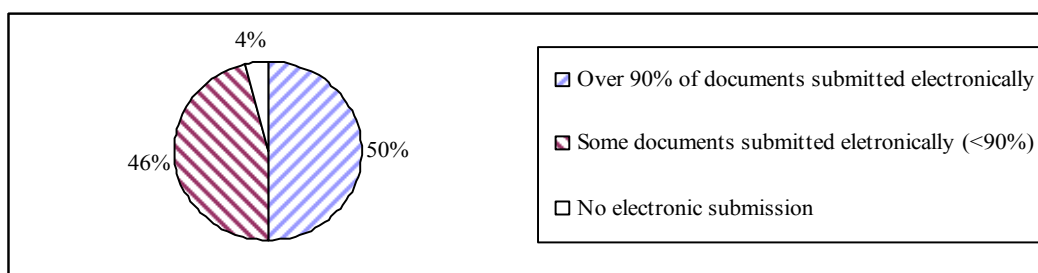
Customs is the area of trade facilitation where most attention has been given, and also where much trade facilitation measures have been taken. In that context, it is no surprise that the APTFF 2012 survey revealed high degree of availability of Electronic Customs. Figure 4 shows that 92% of the responding countries have automated Customs system available either nationwide or in major ports and/or airports. For the submission of electronic Customs declaration, 96% responded that most (over 90%) or some documents can be submitted electronically.

**Figure 4: Availability of Electronic Customs**

### Availability of electronic/automated customs system



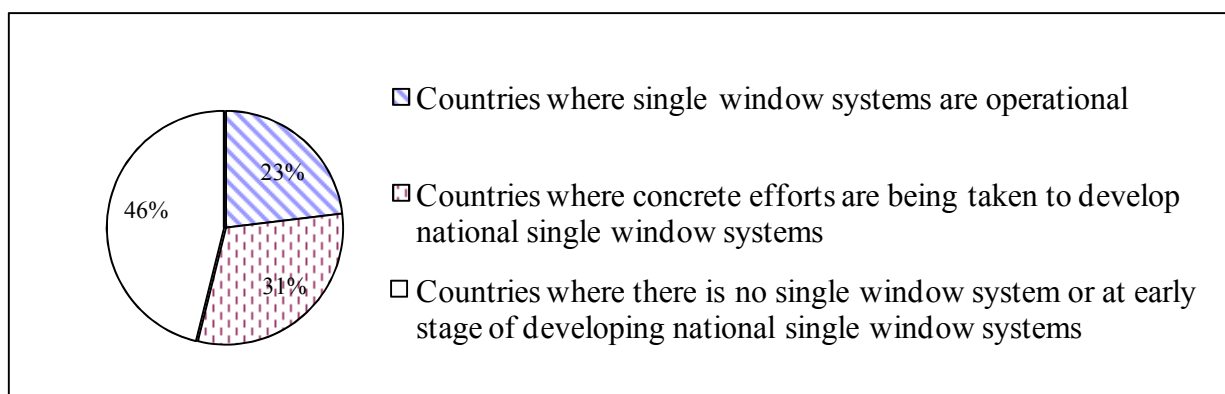
### Submission of the customs declarations electronically



Source: APTFF 2012 Survey

Single Window is an advanced form of paperless trade systems that has drawn much attention in the field of trade facilitation for the last decade. It allows “*parties involved in trade and transport to lodge standardized information and documents with a single entry point to fulfill all import, export, and transit-related regulatory requirements. If information is electronic, then individual data elements should only be submitted once*” The region is a home to many implementation cases of Single Windows. Figure 5 shows that 23% already implemented Single Window systems currently in operation, while 31% are in the process of moving towards development of their Single Windows.

**Figure 5: Development of Single Window Systems**



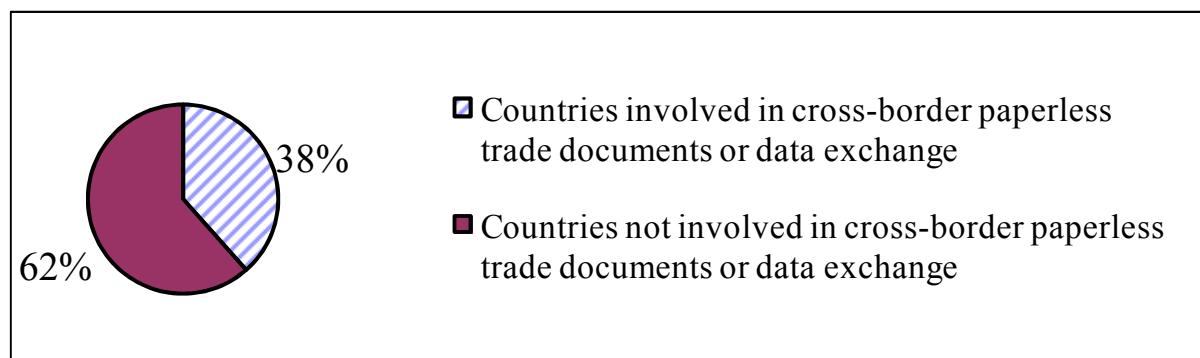
Source: APTFF 2012 Survey

More interesting result from the APTFF 2012 survey is that 38% are involved in cross-border paperless trade documents or data exchange as shown in Figure 6. Considering difficulty of cross-border trade data exchange, it is quite a high ratio. It is most likely that many of them are in the stage of basic data exchange with limited scope or under pilot testing mode, but it is



still an impressive movement within the region since it demonstrates at least their commitment to cross-border paperless trade.

**Figure 6: Engagement in Cross-border Paperless Trade Documents or Data Exchange**



Source: APTFF 2012 Survey

### 3.2. National, Bilateral and Subregional Initiatives

The Asia-Pacific Region is rich in paperless trade initiatives at national, bi-lateral and sub-regional levels. Table 1 shows list of paperless trade initiatives in the Region. As clearly shown in Table 1, bilateral initiatives are much more limited compared to abundance of national initiatives. It is understandable since harmonizing paperless trade systems between two countries or economies is much more difficult with many technical and legal challenges. Major challenges of cross-border paperless trade are elaborated in details in Chapter 4. One case of bilateral cross-border paperless trade received much recognition is the exchange of electronic Certificate of Origin between Republic of Korea and Taiwan Province of China, as explained in details in Chapter 5.2.

**Table 1: National, Bilateral and Subregional Paperless Trade Initiatives**

Type		Countries/Economies/Cases
National	Single Window (in Operation)	Azerbaijan, Japan, Indonesia, Malaysia, Philippines, Republic of Korea, Singapore, Thailand
	Single Window (under Development)	All other ASEAN countries, Kazakhstan, Kyrgyz Republic, Mongolia, Turkey, Tajikistan, Uzbekistan, Russian Federation, India
	Other Paperless Trade Systems	<ul style="list-style-type: none"> <li>- India's Indian Customs EDI System (ICES)</li> <li>- China's e-Ports</li> <li>- Digital Trade and Transport Network (DTTN) of Hong Kong, China</li> <li>- Pakistan's Web-Based One Customs (WeBOC)</li> </ul>
Bilateral Initiatives		<ul style="list-style-type: none"> <li>- Electronic Certificate of Origin between Republic of Korea and Taiwan Province of China</li> <li>- Electronic Exchange of Preferential Certificate of Origin among ASEAN members</li> <li>- Electronic Sanitary and Phyto-Sanitary (e-SPS) exchange between Australia and New Zealand</li> </ul>
Subregional Initiatives		<ul style="list-style-type: none"> <li>- ASEAN Single Window</li> <li>- Pan Asian e-Commerce Alliance (PAA)</li> </ul>



Source: APTFF Survey 2012

Despite limited number of actual implementation cases, due note should be given to willingness of the region in cross-border paperless trade. As shown in Table 2, many countries in the Asia-Pacific region show high level of willingness to implement paperless trade at bilateral level by having paperless trade provisions in their Free Trade Agreements (FTAs).

However, it is also worthwhile to note that currently dominant approach in paperless trade provisions in FTAs is best endeavor. It implies that most countries are not sure yet on how to implement paperless trade at bilateral level, resulting in expressing their commitment to paperless trade while leaving implementation details in blank. For example, though the New Zealand – Singapore Closer EPA has a binding language within its provision<sup>1</sup>, it does not prescribe how the parties will full such commitment.

**Table 2: Paperless Trade Provisions in FTAs and Their Nature of Commitment**

FTA	Nature of Commitment
ASEAN-Australia-New Zealand FTA	Best Endeavour
Australia-Chile FTA	Best Endeavour
Australia-Thailand FTA	Best Endeavour + Some Binding
Australia – US FTA	Best Endeavour
China – Peru FTA	Best Endeavour
India – Singapore CECA	Some Binding
Japan – Philippines Economic Partnership Agreement (EPA)	Best Endeavour
Japan – Singapore New Age Economic Partnership	Some Binding
Japan – Switzerland FTA	Best Endeavour
Japan – Thailand EPA	Some Binding + Best Endeavour
Republic of Korea – Peru FTA	Best Endeavour
Republic of Korea – Singapore FTA	Best Endeavour
New Zealand – China FTA	Best Endeavour
New Zealand – Hong Kong Closer EPA	Best Endeavour
New Zealand – Singapore Closer EPA	Binding
New Zealand – Thailand Closer EPA	Best Endeavour + Binding
Trans-Pacific SEP (Brunei, New Zealand, Chile Singapore)	Best Endeavour

Source: Lim, S. (2013)

The Asia-Pacific region has two major sub-regional initiatives; one is intergovernmental, and the other is private sector-led. The intergovernmental initiative of ASEAN Single Window is an effort to “expedite cargo clearance within the context of increased economic integration in ASEAN” by connecting and integrating National Single Windows (NSWs) among ASEAN Member States. Some members are in the process of implementing their NSWs while others are in full operation of their NSWs. Currently, some members are conducting interconnectivity pilot test among NSWs. The other initiative is the Pan Asian e-Commerce

<sup>1</sup> *With a view to implementing the APEC Blueprint for Action on Electronic Commerce, in particular the Paperless Trading Initiative, the Customs administrations of both Parties shall have in place by the date of entry into force of this Agreement an electronic environment that supports electronic business applications between each Customs administration and its trading community.*

Alliance (PAA) – an alliance of paperless trade service providers to enable cross-border trade data exchange. A detailed description on the PAA is provided in Chapter 5.1.

## **4. ISSUES AND CHALLENGES IN CROSS-BORDER PAPERLESS TRADE**

Notwithstanding the huge benefits that cross-border paperless trade can bring to the players of an international supply chain, it is not easy to implement paperless trade across borders due to various existing issues, mainly with concerns on coordination and harmonization of different legal, policy and technology frameworks. Based on review of current paperless trade initiatives in the region, both domestic and cross-border, the paper identifies five main challenges to overcome. Each challenge is discussed in detail below.

### **4.1. Use of Common International Standards**

Paperless trade inherently applies ICTs to make trade transactions more efficient. In other words, paperless trade systems are developed by applying specific ICTs, such as data format, messaging & communication protocols, security measures, etc. When particular countries or agencies implement their paperless trade systems, they develop such systems using available ICTs in a way to meet their business requirements. An issue of interoperability - *ability of two or more systems or components to exchange information and to use the information that has been exchanged*<sup>2</sup> - arises when interconnecting such systems one another to enable paperless trade.

The issue of interoperability can arise in conducting both domestic and cross-border paperless trade. However, it becomes more difficult issue to address when it comes to cross-border paperless trade. When domestic paperless trade systems are developed, in particular by public sectors, they are usually developed in accordance with a national policy or technical interoperability guideline such as eGovernment Interoperability Framework (eGIF), where basic guidance is given on the use of certain technologies and standards to promote interoperability. In the case of cross-border paperless trade, such technological framework is absent, unless it is made in a community where economic integration is in place.

Under the current circumstances that different countries develop their paperless trade systems, where a universal guiding framework is absent and rather infeasible to be in place, the best way to promote interoperability among them is to use common international standards. When paperless trade systems are developed based on common international standards, they can be more easily connected one another, though it still cannot guarantee 100% interoperability. Though some countries develop their paperless trade systems on the basis of international standards, application of international standards is usually limited only to certain functionalities of them. More dominant current practice is development of paperless trade systems on the basis of national standard or technical requirements.

### **4.2. Harmonization of Different Legal Frameworks**

Just like trade transactions, paperless trade transactions are conducted under certain legal and regulatory regime, primarily at domestic level. At national level, governments establish

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<sup>2</sup>Institute of Electrical and Electronics Engineers (IEEE) Standard Computer Dictionary: A Compilation of IEEE Standard Computer Glossaries. New York, NY: 1990.

their domestic legal framework to enable paperless trade systems operate properly. To serve this, new legal frameworks are established, or existing ones are revised accordingly; in many cases, both would be needed.

With such national legal frameworks in place, paperless trade transactions occurring within the boundary of a border may not face a problem, but an issue arises when such paperless trade systems are utilized across borders. When legal frameworks of importing country and exporting country are not harmonized, paperless trade systems of two countries cannot interoperate. Similarly, traders in one country cannot directly use paperless trade systems of other country. Considering the nature of international trade, trade transactions can be most efficient if they flow continuously across borders, which is not possible when different legal frameworks are not harmonized.

### **4.3. Capacity Gaps among the Parties**

To conduct paperless trade across borders, parties to cross-border paperless trade need to have paperless trade systems. The Asia Pacific region has many countries in a leadership position in paperless trade with advanced features. At the same time, the region is a home to many Least Developed Countries (LDCs) and Land-Locked Developing Countries (LLDCs). For LDCs and LLDCs, implementing paperless trade systems and engaging in cross-border paperless trade can significantly contribute to improving their trade competitiveness and efficiency and effectively support their trade-led economic development policy. In particular, cross-border paperless trade between LLDCs and their neighboring transit countries can alleviate their geographical disadvantage and better link them to export markets.

However, LDCs and LLDCs usually lack human, technical and financial capacity to implement paperless trade systems; it requires certain experiences and knowledge on relevant technologies and skills, such as business process analysis and re-engineering, harmonization of data, application of ICTs, automation technique, etc. Though many LDCs and LLDCs are well committed to paperless trade and are already moving towards paperless trade by implementing such systems as electronic Customs systems, capacity gap with countries having advanced paperless trade systems hinders their engagement in cross-border paperless trade with their trade partners.

### **4.4. Cooperation between Public and Private Sectors**

Paperless trade systems need to be implemented on the basis of requirements from all the stakeholders, including both public and private sectors, to properly serve trade community. Many paperless trade systems, such as a Single Window, are implemented and operated by public sectors due to their nature of public goods. However, users of such paperless trade systems are importers, exporters and intermediaries. If such systems are developed without proper consultation to private sectors, they may not serve the need of traders properly and also may face difficulty in wide adoption and use by trade community. Case studies of successful paperless trade systems stress importance of stakeholder coordination, in particular private sectors.

For example, when different paperless trade systems of different regulatory agencies, such as Customs and inspection agencies, are being developed without proper consultation with private sectors about their concerns, these systems may not reduce burden of private sectors

on redundant and duplicate regulatory requirements, defeating their intention to be trade facilitation measures. By the same token, cross-border paperless trade systems would result in reduced benefits to trade community when trade data and regulatory requirements of different countries are not harmonized in them. Cross-border paperless trade systems need to be implemented in close cooperation between public sectors and private sectors.

#### **4.5. Lack of Coordination Mechanism for Cross-border Data Exchange**

Businesses always try to find ways to innovate their business practices. It is no exception in operating their international supply chains. As described in Chapter 5, they try to arrange cross-border paperless trade data exchange in every possible ways. However, there is certain limitation that private sectors cannot do so much. Such limitation is mostly related to regulatory controls imposed by government agencies. Harmonizing and coordinating different regulatory controls across borders can be done bilaterally or multilaterally only at intergovernmental level.

Note should be given that there is no available regional intergovernmental platform to facilitate coordination of cross-border paperless trade. For example, if one country would like to initiate cross-border paperless trade with other countries, it has to rely primarily on bilateral mechanism, such as FTA. Since every country need to engage in trade transactions with many countries, bilateral approach may end up with a stock of arrangements that are hard to manage. In addition, there is no guarantee that each bilateral arrangement can be compatible each other, since different countries may demand different specificities in the provisions.

### **5. CASES OF CROSS-BORDER PAPERLESS TRADE IMPLEMENTATION**

#### **5.1. Pan Asian e-Commerce Alliance (PAA)**

##### **A. Background**

In the late 1980s and early 1990s, several governments of countries and economies in Asia had initiated Electronic Data Interchange (EDI)-based paperless trade projects and established paperless trade service providers, by adopting a planned implementation strategy rather than market-driven approach for the promotion of paperless trade, to support their export-led economic development policies. Governments of those countries played critical role during the implementation and promotion of paperless trade services by providing policy measures for the implementation of various facilitation measures, including “Call for Collaboration”, inviting the trade community on the use of EDI, the establishment of standard body for e-commerce, the adoption of the legal framework of the use of electronic documents and data messages, the education and awareness campaign on EDI for various stakeholders and the provision of funding for the implementation projects in strategic areas, etc.

Based on the mandate given from national strategy and priority, paperless trade service providers developed their own paperless trade platform and services, in close cooperation with governments. Most of those paperless trade service providers started with implementation of customs clearance service, while others began their projects with port automation, and then extended them to customs clearance later. Following initiatives in Europe and Americas, the private stakeholders adopted EDI for supply chain particularly in the retail and banking sector.

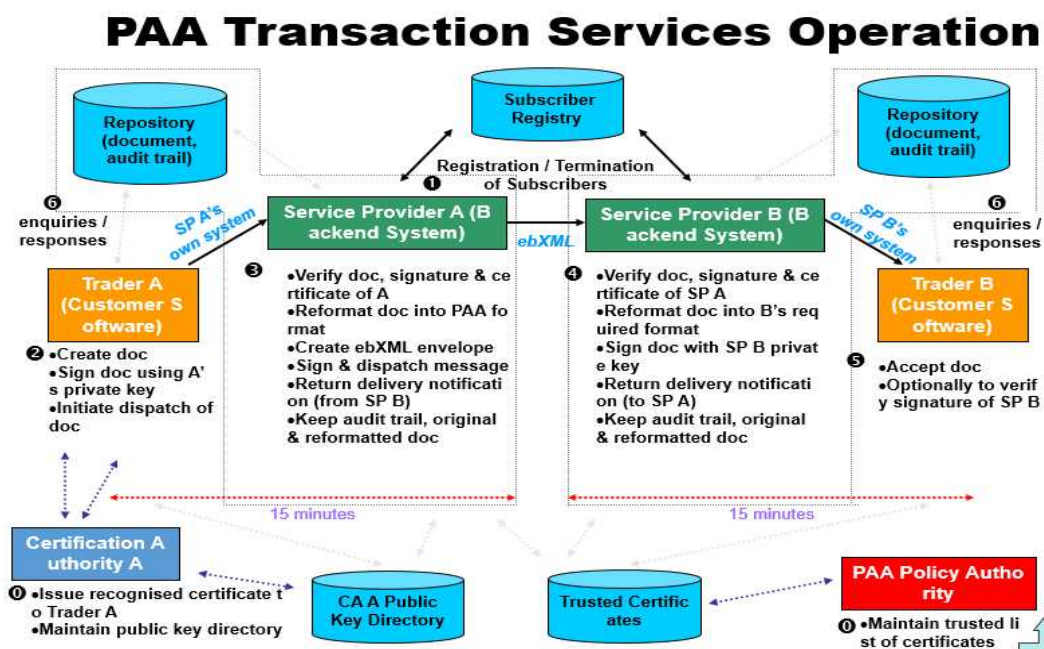
After successful implementation of electronic transactions such as automated Customs clearance and manifest submission, the paperless trade service providers began to look out possibility of extending their service coverage to the overseas market; some of the service providers explored collaboration with newly established global paperless trade platforms and services, such as Bolero and TradeCard. At this same time, they also initiated a regional cooperation framework among the paperless trade service providers in Asia, thus, launching the Pan Asian e-commerce Alliance (PAA). The background for initiating the PAA can be highlighted into three aspects: 1) introduction and spreading of the Internet-based technology, 2) completion of automation of national trade procedures including the formulation of the early models for Single Window platform, and 3) the growing volume of the intra-regional trade in Asia.

## B. Operation Model and Transaction Arrangement

PAA has implemented the following secure cross-border transaction services based on its legal framework and technical specifications for the secure cross-border transaction service as illustrated in Figure 7:

- B2B(Business to Business) Services with PAA XML (eXtensible Markup Language) Document Standard
- Republic of Korea – Taiwan Province of China electronic Certificate of Origin (e-C/O) Service
- Cargo Visibility Service

Figure 7: Operation Model of PAA Secure Transaction Services



With the help of PAA B2B Services, traders and forwarders can exchange trade documents electronically with their partners in overseas regardless of their system and solutions. The trade documents that PAA offers are as follows:

- Purchase Order

- Advance Shipment Notice
- Packing List
- Commercial Invoice
- Air Way Bill
- Bill of Lading
- Delivery Order
- Trade Declaration
- Electronic Certificate of Origin (e-CO)
- Shipping Order
- Processing Trade (China)

TAL Apparel of Hong Kong, China was the first user of the PAA B2B Service. Tradelink of Hong Kong, China provided TAL with intermediary service including message translation between TAL message standard and PAA XML standard. In their commercial transaction, TAL exchanges Purchase Order, Invoice and Advance Shipping Notice with their overseas suppliers.

### **C. Achievements and Limitations**

The PAA is a private sector alliance of government-backed paperless trade service providers. Compared to the implementation of domestic paperless trade infrastructure and services, facilitation of cross-border transaction service is much harder to achieve with many more constraints. At the same time, there are limits and obstacles that the PAA, as a private sector, faces difficulties in pursuing cross-border transaction services. The following four issues are the challenges PAA has faced:

- ① Acceptance of electronic documents by local governments: PAA framework is not recognized by most of the governments as it is not an international standard nor domestic legal framework is in align with international model laws and conventions;
- ② Limited geographical coverage: PAA's service area is limited to certain countries and economies in the Asian region;
- ③ Slow implementation: unlike the domestic paperless trade promotion, cross-border transaction requires more time and resources to realize; and,
- ④ Technical gap: The readiness for cross-border transaction service is different among countries and economies of the PAA members.

Out of the four hurdles listed, the acceptance of e-document and technical gap are more of environment and readiness issues that the PAA has limitation in overcoming them by its own efforts.

Another shortfall the PAA has faced in its effort to facilitate cross-border trade data exchange is that trade documents could not be processed throughout whole trade procedures. In general, trade documents have the following uses and purposes:

- ① Proof of contract and business
- ② Business operation management
- ③ Supplementary paper for customs clearance and regulatory requirements
- ④ Payment/collection/presentation of trade pricing or trade financing from bankers

## ⑤ Delivery and picking up goods

Some uses and purposes can be covered by PAA's legal framework and services, such as proof of contract and business, business operation management and delivery and picking up goods. However, the others are heavily dependent on the laws, regulations and policy of local governments for their acceptance in cross-border electronic transactions. Despite work efficiency and convenience of paperless trade in their supply chain management systems, should some processes out of whole trade business cycle require paper documents in line with the regulatory requirements, traders have to exchange paper documents with its overseas partners. To avoid such situation, it is necessary for governments to promote a legally enabling domestic environment for exchange of trade-related electronic documents as well as facilitate interoperability of cross-border paperless trade, including the following measures:

- To legislate the validity of electronic documents received from overseas,
- To have neutral and technical platform to prevent forfeiting of electronic documents to be exchanged as well as protecting data privacy
- To introduce international standard and technical specification for electronic commerce, and
- To encourage partnership between Public and Private Sectors on modality of cross-border paperless trade as both stand to benefit from it and to bring about a balance between the needs of trade facilitation and regulatory compliance

In addition, it is necessary to have bilateral, regional or international arrangement in establishing cross-border recognition of electronic documents framework. Possible approaches would include adoption of multilateral treaty, convention or recommendations by international bodies on mutual recognition. In this respect, emphasis should be put on importance of coordination role by regional and international bodies such as Asia Pacific Economic Cooperation (APEC) and United Nations to bring governments into the discussion at a regional or international level.

## **5.2. Electronic Certificate of Origin between Republic of Korea and Taiwan Province of China**

### **A. Background**

Together with other cross-border trade documents such as Bill of Landing and Sanitary-Phytosanitary (SPS) Certificate, Certificate of Origin (C/O) has been identified as a key document to be harmonized and circulated through online system for seamless paperless trade transactions. And, to solve the issues at the international level, various regional or international cooperation frameworks have been prepared by international bodies such as UN, APEC and World Customs Organization (WCO). For instance, World Chambers Federation set up a Task Force to develop an International Certificate of Origin Guideline which is including the adaption of electronic Certificate of Origin<sup>3</sup>.

Another important approach is the case of APEC. APEC Paperless Trading Subgroup (PTS) under E-Commerce Steering Group has initiated a number of Pathfinder projects, as part of APEC's Strategies and Actions towards a Cross-Border Paperless Trading Environment. The Pathfinder projects of APEC PTS are as below:

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<sup>3</sup> <http://www.iccwbo.org/chamber-services/trade-facilitation/certificates-of-origin/co-guidelines/>



- ✓ E-Cert SPS (Australia/New Zealand)
- ✓ E- C/O (Republic of Korea-Taiwan Province of China)
- ✓ e-Negotiation (Republic of Korea)

Unlike e-SPS whose issuance and final recipient are the same kind of inspection agencies, e-C/O has a difficult challenge; it has different stakeholders at its issuing and receiving sides, which makes a higher barrier in its implementation across borders.

In the Republic of Korea, KTNET has been providing an EDI-based C/O service with the Korea Chamber of Commerce and Industry since 2000. But, as the C/O needs to be submitted to Customs in trading partners' countries and economies, the C/O has to be delivered in paper form for many years. To make matters worse, some overseas Customs require authenticated C/O which is being registered and stamped at the embassy in exporting countries and it has been a setback in establishing a cross-border e-C/O exchange attempt. In 2004, KTNET proposed e-C/O project to Trade-Van of Taiwan Province of China with their web-based e-C/O system. However it was impossible to conduct the project without the participation of both Governments. By utilizing the APEC PTS meeting, they could initiate Private-Public Partnership (PPP) Meeting. The Government of both economies came to an agreement to have annual bilateral meeting for paperless trade with private sectors.

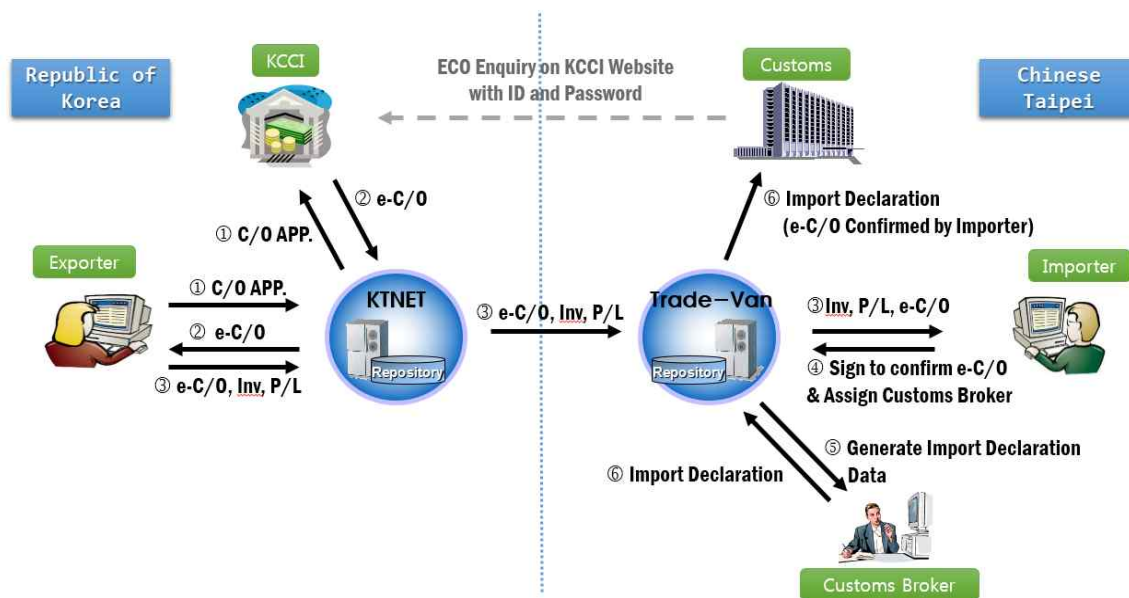
In 2005, the Republic of Korea had its first PPP meeting with Taiwan Province of China and proposed e-C/O project. And a series of Republic of Korea and Taiwan Province of China Private-Public Partnership Meeting for Paperless trade was held thereafter. Regular participants are the Ministry of Knowledge Economy (now called Ministry of Trade, Industry and Energy), Korea Chamber of Commerce and Industry (KCCI) and KTNET from Republic of Korea and Bureau of Foreign Trade, Customs and Trade-Van from Taiwan Province of China.

## **B. Operation Model and Transaction Arrangement**

Both governments agreed on the PAA framework for the secure exchange of e-C/O. A Memorandum of Understanding (MOU) on the exchange of e-C/O was signed by the mission offices of each economy in 2009. In 2010, finally the first transaction of e-C/O was made from Republic of Korea to Taiwan Province of China. Now, Korean exporters do not have to visit Taiwan Province of China mission office in Seoul or Busan for the certification of paper C/O any more.

Republic of Korea-Taiwan Province of China e-C/O exchange scenario is illustrated in Figure 8 and following descriptions.

**Figure 8: Scenario of Republic of Korea-Taiwan Province of China e-C/O exchange**



- ① Korean exporter uses the KCTNET uTradeHub (uTH), the Korean Single Window for paperless trade, to complete the C/O application form over the Internet, and send it KCCI. This online e-C/O application system is operated by KCTNET
- ② KCCI, as the C/O issuing authority, reviews and approves the e-C/O application using its own legacy system and sends a confirmation to the Exporter through KCTNET. Exporters can have an access to the e-C/O database for inquiry according to the e-C/O code issued or download the e-C/O message to its legacy system.
- ③ The Exporter sends the approved e-C/O to the Importer with the uTH of KCTNET which is interconnected with Trade-Van's online e-C/O service. Before the e-C/O is being delivered to Trade-Van, KCTNET signs the approved e-C/O on behalf of KCCI and exporter by the PKI mutual recognition framework of Pan Asian e-Commerce Alliance: an organization for cross-border paperless trade service. It is no longer necessary for exporters to take the paper C/O to the Taiwan Province of China Mission Office in Seoul for authentication, as the digital signature technology provides more than sufficient assurance to Taiwan Province of China Customs on the origin, authenticity and integrity of the e-C/O. In the meantime, the goods are being shipped to Taiwan Province of China from Republic of Korea, which takes about 3 days
- ④ The e-C/O system of Taiwan Province of China will remind the importer with an email notification that the e-C/O has been received from the exporter.
- ⑤ The importer or customs broker will submit customs import declaration electronically quoting the relevant electronic e-CO reference.

If necessary, Customs of Taiwan Province of China can visit the e-C/O database website of KCCI for inquiry. After inquiry and taxation, Customs will grant a release to the goods. A customs broker or an importer will then arrange to pick up the goods from the terminal or holding area and delivers them to the importer's warehouse or required location. Until now, the service has been provided for free of charge by both service providers.

### **C. Achievements and Limitations**

This service has been renowned as the best practice on paperless trade through APEC. The APEC Case Study of Electronic Certificate of Origin (e-CO) shows that significant tangible benefits in terms of costs reductions have been generated for both importers and exporters from the application of electronic C/O between Taiwan Province of China and Republic of Korea.

The savings for an exporter includes the following components:

- Time administrative savings of 4 hours 20 minutes (equivalent to US\$74 at US\$ 17 per hour );
- Direct expenses saving of US\$143.50; and
- Reduction in processing time by two days on the export side of the process.

Savings for an importer includes the following:

- Time administrative savings of 7 hours 15 minutes (equivalent to US\$ 58 at US\$ 8 per hour );
- Direct expenses saving of US\$ 147;
- Reduction in processing time by three days on the import side of the process, and time saved from avoiding the need to send the paper C/O to Taiwan Province of China.

However, despite the success of cross-border e-C/O project, there are limitations and important lessons to be observed.

- ① In the first place, as has been no international framework for e-C/O, the e-C/O project utilized PAA framework which is a private standard hence prohibiting the expansion of the service to outside of PAA region.
- ② Bilateral Public-Private Partnership dialogue really helped stakeholders share their views and concerns and understand each other.
- ③ As both economies have well established environment for cross-border transactions, not much of a capacity building program was necessary. However, when it comes to the expansion of the e-C/O service, the gap among the countries should be addressed.
- ④ What took the most of its time to realize the e-C/O exchange was entering into bilateral agreement, not the technical specifications. From its beginning of the dialogue between two economies, it took almost 5 years to come up with an MOU. International arrangement including regional agreement could have quicken the process.
- ⑤ Lastly, traders need to exchange not only C/O but also other trading documents in electronic forms to enjoy the true benefit of e-C/O as exporters are still sending the other trading documents in paper forms. Even if the C/O is a key documents, without making all documents in electronic forms and without covering the whole international supply chain with these electronic forms, the benefits will be limited.

It seems that currently, it is inevitable for each country to go for bilateral approaches to realize a mutual recognition of cross-border electronic document and data with the absence of international framework and with the technical gap among countries. As it is proven in many cases that cross-border exchange of trade related documents and data can bring huge benefits in global supply chain, it is necessary to have a regional or international level of legal framework for the recognition of trade related documents and data.

## **6. QUESTIONS FOR DISCUSSIONS**

In facilitating cross-border paperless trade, there can be different ways and approaches. The following are five questions corresponding to each of five challenges to stimulate in-depth discussions and possible identification of enablers during the Asia Pacific Trade Facilitation Forum (APTFF) 2013:

6.1: There are different common international standards available. Is there any particular standard that fits better than other? If so, how can one identify such common international standards?

6.2 The paper mentions harmonization of national legal framework with international legal instruments. Are there enough legal instruments available for harmonizing every aspects of national legal framework? If not, what aspects of legal instruments are in need of further development by international community?

6.3 As witnessed in the process of WTO Trade Facilitation Negotiations, capacity gaps of developing countries can be a critical issue in implementing trade facilitation measures. It would be more so for implementation of paperless trade. What would be effective capacity building mechanisms that developing countries can move towards paperless trade practice? Perspectives from current developing countries as well as those countries that used to be developing countries would be value inputs in the discussion.

6.4 Public sectors and private sectors have fundamentally different objectives in dealing with trade transactions. The former has a mandate to ensure regulatory compliance, while the latter wants more facilitation of trade to maximize their profits. There are increasing number of trade facilitation initiatives to help private sectors from public sector perspective. One example is the introduction of Authorized Economic Operator (AEO) programme. Are such programmes are really valuable from private sector perspective? If not, what would be other possible measures that can be introduced through public-private partnership in international trade, in particular in relation to cross-border paperless trade?

6.5 Intergovernmental facilitation of cross-border paperless trade can be made at bilateral, subregional and regional level? Does such facilitation at certain level can be more effective than others? What are the pros and cons of intergovernmental facilitation at each level? What would be best (most feasible or practical) format or mechanism for each level of intergovernmental facilitation?

## **7. RECOMMENDATIONS**

The paper identified five major issues and challenges that attention should be taken in further facilitating cross-border paperless trade in the Asia Pacific region. There is no easy solution

for each of five challenges. Despite, the paper attempts to propose some recommendations to the region as alleviating measures, so that the region may make a steady movement toward cross-border paperless trade environment.

- For the use of common international standards, each country needs to make an effort to integrate common international standards whenever it develops new paperless trade systems or upgrade existing systems. At regional level, having some guidance on use of common international standards would also help countries to coordinate use of standards at national level;
- For the issue of harmonizing different legal framework, each country needs to base or align its legal framework with international model laws and conventions as much as possible. Good examples are UNCITRAL model laws on electronic commerce and signatures as well as UN Convention on Use of Electronic Communications in International Contracts;
- To narrow capacity gaps among the parties, more rigorous capacity building program at regional level is needed. Such program need to accommodate reciprocal capacity building activities and support, rather than focusing on uni-directional support from more advanced countries to the countries in need;
- For closer cooperation between public and private sectors, dynamic platform where both public and private sectors can openly share their views and concerns and communicate readily, so that trust is enhanced while misunderstanding is reduced among them. Based on better communication environment, they would be able to better collaborate on cross-border paperless trade with balanced trade facilitation and regulatory compliance in mind; and,
- For regional coordination mechanism in cross-border paperless trade, regional intergovernmental bodies with wide membership scope and proper mandate need to show leadership by initiating regional arrangement such as regional agreement. Such regional arrangement with high-level scope would provide a good guidance in arranging bilateral mechanism and reduce divergence of approaches among bilateral mechanisms.

## **8. CONCLUSION**

As discussed and illustrated in previous chapters, implementing paperless trade, in particular across borders, can significantly improve trade efficiency and contribute to integration of an international supply chain. However, realizing cross-border paperless trade imposes more difficult challenges to overcome than implementing domestic paperless trade systems.

Main Source of difficult challenge in cross-border paperless trade is harmonizing legal, technical and policy frameworks differing from country to country; overcoming this challenge facilitates different paperless trade systems to interoperate one another. Intergovernmental efforts to facilitate cross-border paperless trade, whether it be bilateral, subregional or regional, are desirable and need to be further explored. Intergovernmental facilitation effort at regional level would be especially valuable for greater harmonization and more interoperability among paperless trade systems.

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