

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

CONTENTS

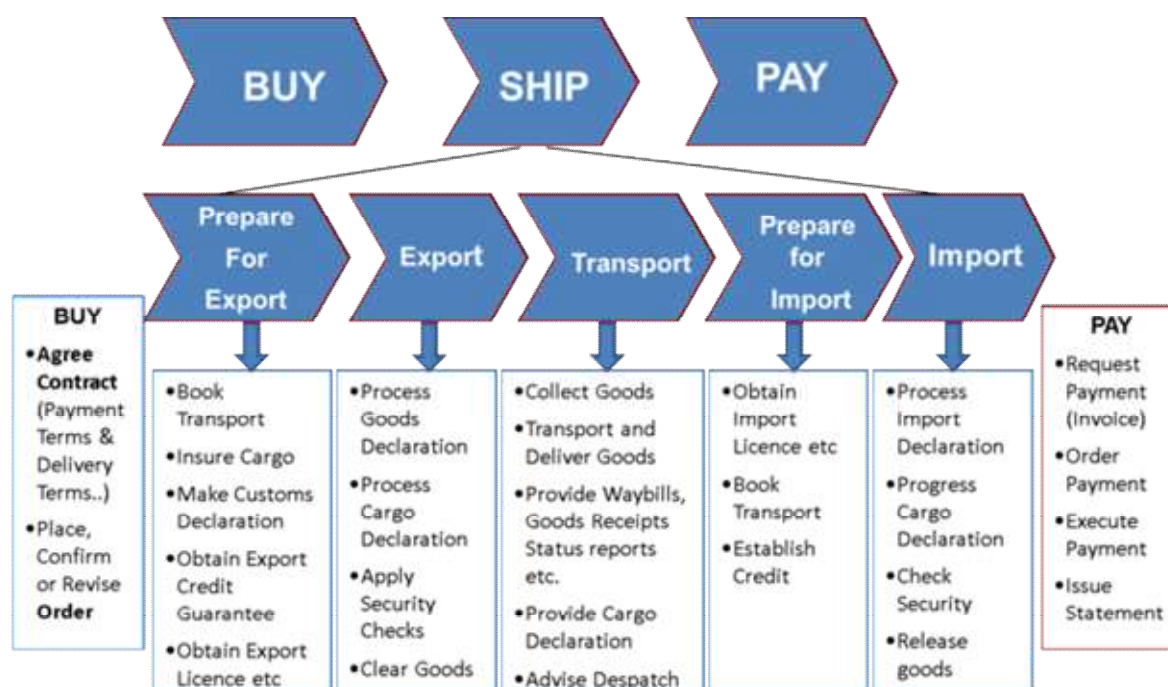
1. Introduction	2
2. Paperless Trade and Efficiency of International Supply Chain	3
3. Review of Current Status	6
4. Issues and Challenges in Cross-Border Paperless Trade	10
5. Cases of Cross-border Paperless Trade Implementation	12
6. Questions for Discussions	19
7. Recommendations	19
8. Conclusion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

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.

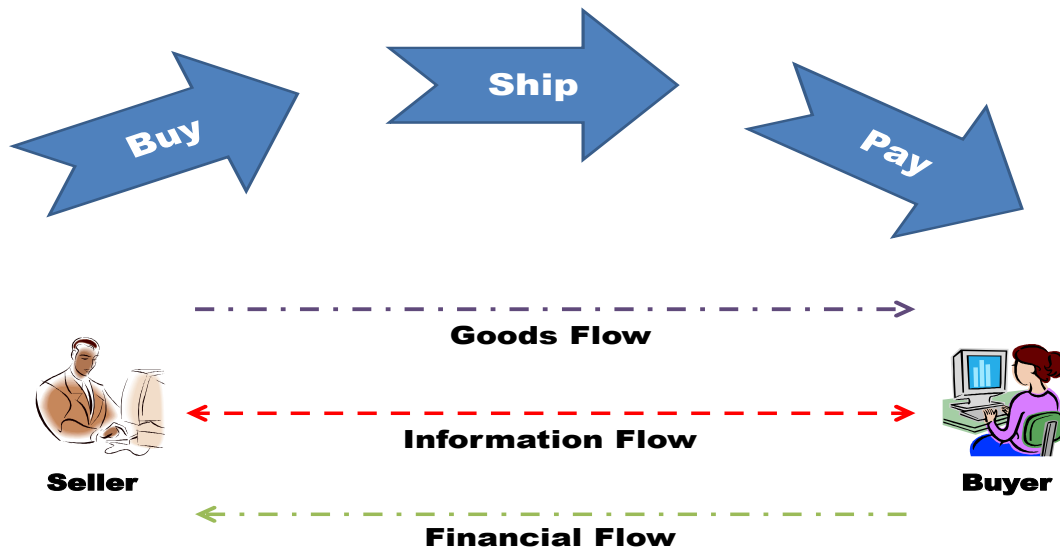
Figure 1: UN/CEFACT Buy-Ship-Pay Model



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

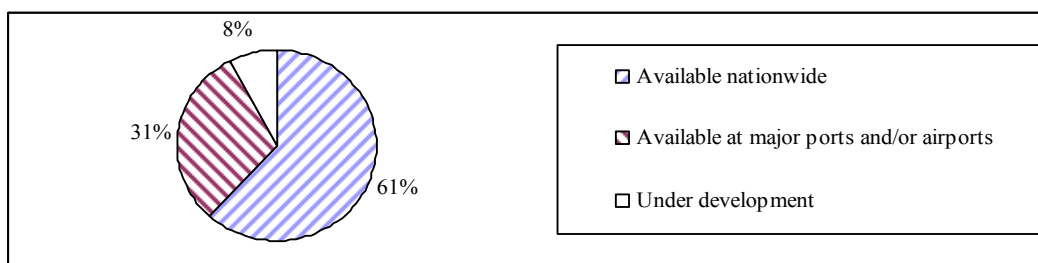
3.1. Assessment of Paperless Trade Implementation in the Region

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.

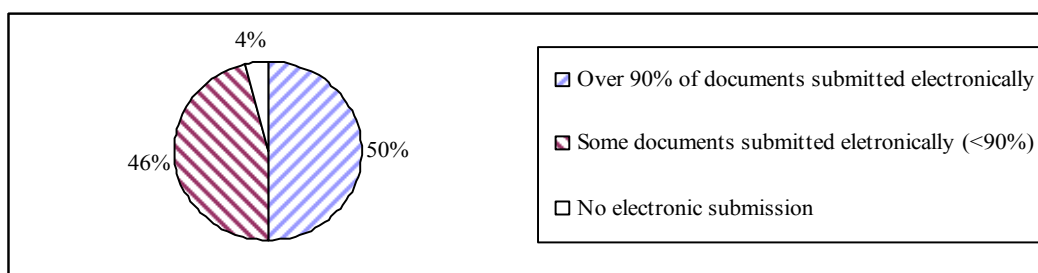
Customs is the area of trade facilitation where most attention has been given, and also where much trade facilitation measures have been taken. In that context, it is no surprise that the APTFF 2012 survey revealed high degree of availability of Electronic Customs. Figure 4 shows that 92% of the responding 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



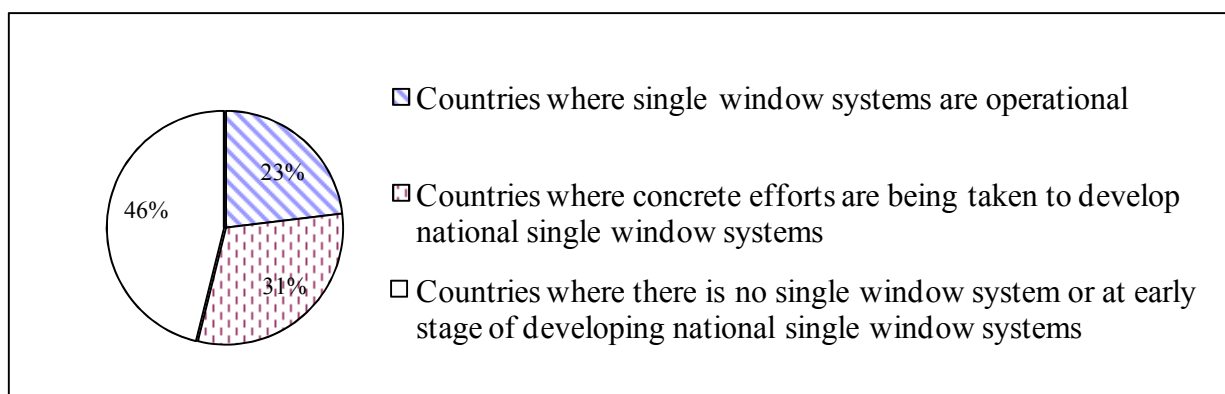
Submission of the customs declarations electronically



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

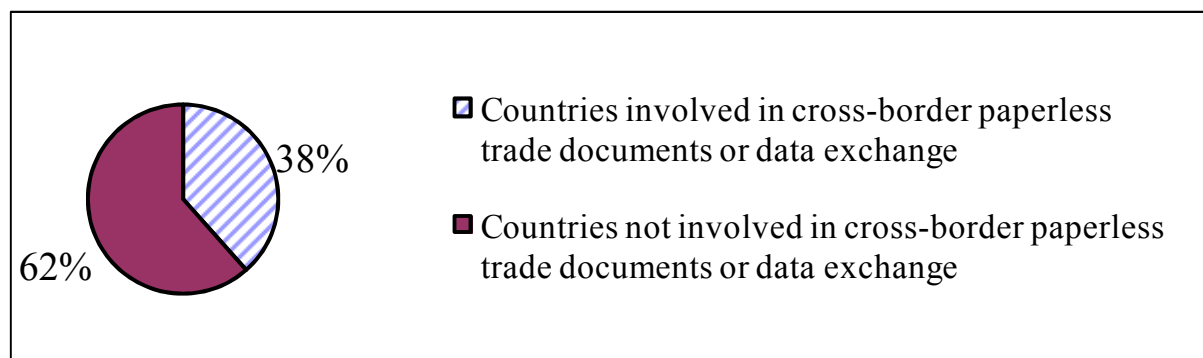


Source: APTFF 2012 Survey

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	India's Indian Customs EDI System (ICES)

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