Assessment and Best Practices on Paperless Trading to Facilitate Cross Border Trade in the APEC Region

Section 2: Assessment on Paperless Trading to Facilitate Cross Border Trade in the APEC Region

APEC Electronic and Commerce Steering Group
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Executive Summary

Content

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Abstract

Implementation of paperless trading and e-commerce can increase trade efficiency to the maximum extent, can enhance competitiveness and improve service means of enterprises and governments, and all participants of trade can benefit from it. Asia-Pacific is the world's major trading area, the trade volume of 21APEC members accounts for about half of world trade volume, economic aggregate accounting for about 67% of the total world economy. APEC leaders' conference in Kuala Lumpur in 1998 adopted the "APEC Blueprint for Action on Electronic Commerce", APEC has developed a framework for action to promote e-commerce, putting forward a plan that developed economies in 2005, and developing economies in 2010 should achieve goals of paperless trading, and APEC as a whole achieve development goals of paperless trading in 2015.

Although, the implementation of paperless trading is a difficult process, in recent years, the vast majority of APEC member economies have developed fundamental program of action of the paperless trading implementation, has made substantial progress. With the further deepening of regional trade cooperation, Paperless trading gradually has been incorporated into bilateral or multilateral trade cooperation agenda, effects are gradually emerging in the promotion of trade liberalization. Legal and policy environment for paperless trading has been greatly improved.

In 2005 "APEC Paperless trading Development Assessment Report" written by the APEC E-Commerce Business Alliance has summarized the progress of APEC Paperless Trading, initially admitted the target that, the member economies can reduce transaction costs of 5% implementing paperless trading. On the basis of evaluation criteria, through the investigation and analysis of the development of paperless trading status and success practices, summing up achievements of the process of paperless trading, sharing successful experiences, analyze gaps, the evaluation report make recommendations to promote the development of paperless trading.

In fact, paperless trading is closely related to trade facilitation. Trade facilitation has been one of APEC's core activities, whose purpose is to drive to continuously improve the efficiency of trade in order to achieve the promotion of cross-border trade growth, promote the development of trade liberalization, so as to bring significant multi-effectiveness for member economies. Paperless trading is precisely one of the principal means to achieve trade facilitation.

In November 2006 in Hanoi, Vietnam, the fourteenth summit of leaders of APEC

economies was held. At the meeting, the leaders of the various economies admitted the target set in the APEC Shanghai meeting in 2001 to reduce transaction costs of trade 5% by trade facilitation. The participating leaders give a high degree of identity to the new trade facilitation framework of the program of action, and set target to achieve a further reduction of trade transaction costs of 5% by 2010.

APEC E-Commerce Business Alliance is one of subgroups for the promotion of trade facilitation. Promoting the implementation of paperless trading as a main clue to complete the objectives set forth by APEC summit. The purpose of this report is through the review and assessment of APEC's cross-border paperless trading strategies and the environment to sum up to best practices, in order to meet the commercial development of government's public service and private sector.

This study assesses the APEC paperless trading development strategy, development status, development ideas, obstacles and difficulties from the two aspects of macro and micro. The report is divided into five main parts, establishes a dual-diamond Assessment Model (Double Diamond Model), in order to show the main elements covered by the development of paperless trading. This report is not the analysis in technical level, therefore, not involves issues of paperless trading in technical level, but analyzes the human paperless trading environment and the interests of common concern of the implementation of paperless trading participant, especially assesses the development of paperless trading from the view of government promotion.

At first, this report make the concept and scale of paperless trading definite, analyzes the APEC paperless trading development environment and driving power from the two aspects of macro and micro. As a result of the specific circumstances of different economies, particularly in infrastructure, technology development, human environment, and the implementation of paperless trading may have different paths. This report summarizes problems of paperless trade development path in the APEC economies. From the macro perspective, this report makes an overall assessment of the development of paperless trading and to identify assessment methods; from a micro-level finds best practices and case from the implementation, especially form economies of different development paths , best practices and cases may have different meanings.

Through analysis, the main points of this report are as follows:

1、 The vast majority of APEC economies attach great importance to the development of paperless trading, telecommunications infrastructure has been improved. Legal environmental and regulations are appropriate; do not obstruct the development of paperless trading.

2、 Most APEC economies have accomplished the electronic customs declaration. Some

economies have begun to promote the integration of customs and logistics, and also have achieved substantial results.

3、 Simplification of trade procedures and paperless trading shows trends of regional co-operation. Due to cultural proximity, close trade, geographical proximity, regional cooperation marked success in promoting paperless trading.

4、Some economies have already been trying to interchange electronic data of cross-border paperless trading. Cooperation of data exchange and authentication between governments departments are just in the beginning.

5、 The realization of paperless trading tends to integration with the global supply chain as the main line. Economies begin to plan a single window of data integration focusing on the global supply chain.

6、Paperless trading promoted by the government gradually shows a trend of market-oriented model, began transformation from the public service platform to the private sector services, forming a private and public partnership.

7、 In some economies, regional construction of paperless trading platform emerges, highlighting the characteristics of the regional advantages and promote the development of single window of paperless trading. Regional integration is the future trend of development.

In recent years, APEC economies has made great achievements in paperless trade development, however, there are also development issues, for example, paperless trading North-South gap are widening, the digital divide still exists between the developed and developing economies, especially developing economies lack capacity in the development of paperless trading. Many economies continue to face problem from the four aspects, first, path dependence issues; Second, legal environment; third is operation and technology; Fourth, IT infrastructure. Paperless trading does not just need participation of the private sectors, the collaboration and integration between public service sectors is more important, which requires the government a strong executive power of government, also requires promotion of the relevant departments.

The report recommends further study of APEC economies to many advantages and benefits in the operation of international trade brought by paperless trading; continue to sum up experiences and lessons from the development of paperless trading; make a

consensus, enhance capacity-building in paperless trading. This report encourages the various economies to communicate with each other, share successful experiences, analyze gaps, support mutually, and fill the digital divide of paperless trading between the developed and developing economies.

Summary

This report is the APEC E-Commerce Business Alliance project study. Report is divided into two main parts: the first part is the background information for paperless trading, mainly introducing the concepts of cross-border paperless trading, background and promotion of the APEC paperless trading. The second part carried out a comprehensive assessment of APEC paperless trading, mainly analyzing the development of paperless trading conditions in the major economies. The third part is about the legal environment, mainly reviewing legal environment construction of APEC economies paperless trading. The fourth part is benefit analysis, primarily analyzing benefits of participants from paperless trading, and trying to give indicators to measure these benefits. The sixth part is proposals to the APEC paperless trading development, mainly describing trends, difficulties and obstacles of the APEC paperless trading development, as well as the development proposals.

In view of the difficulty to collect the specific information, we have adopted a case, qualitative research, the experience of experts to explain the degree of development of paperless trading. In the process of formation of this report, we have communication with experts from some economies through phone conference and the inspection, and also get support from economies, government and colleagues. So, the group on the study wants to express sincere gratitude the institutions and people for their support. Special thank APEC Secretariat, APEC E-Commerce Business Alliance Secretariat, the China International Electronic Commerce Center, Foreign Economic and Trade University, Beijing Cofortune Information Technology Company, Hong Kong, China Tradelink companies, as well as Chinese Taipei TradeVan, Hong Kong, China, Canada, Australia, Thailand, Vietnam, Chile and other economies. Thank participating experts and researchers in the research (including Wang Jian, Chen Jin, Zhan Fudong, Yang Jianzheng, Zhou Ting, Ma Hui, Wang Wei Yi, Zhu Min, Liang Huanlei, Liu Juan and other researchers) for their contributions.

Part I Background

1.1 APEC and paperless trading

Because transactions subject, object and the transaction itself operate across national boundaries, there are a number of government departments and parties involved in international trade practices. For a long time, the process and documents transactions have always been the core of the operation of international trade practices. If we say that the signing of the contract and order are the start of the trade process fairly, then the subsequent course of contract performance in international trade is the beginning of these processes and exchange of documents. During the performance of the contract, the parties of the trade shoulder a heavy time-consuming document process and exchange of working documents. This involves not only the private sector, such as transport, insurance, banking and other commercial institutions, but also government agencies, such as customs, commodity inspection, foreign exchange management and other public services. Inefficient operation of the direct trade makes the enterprise's competitive position in the market decline, also be deprived of free trade among the trading partners to get the benefits. Especially SMEs, an increase in trade transaction costs will make these enterprises can not afford to participate in international division of labor.

Paperless trading and e-commerce can be implemented to enhance trade efficiency, strengthen competitiveness of enterprises and governments and improve their service ways, benefit all trading participants. Asia-Pacific is the world's major trading area, the trade volume of 21APEC members accounts for about half of world trade volume, economic aggregate accounting for about 67% of the total world economy. APEC leaders' meeting in Kuala Lumpur in 1998 adopted the "APEC Blueprint for Action on Electronic Commerce", APEC has developed a framework for action to promote e-commerce, putting forward a plan that developed economies in 2005, and developing economies in 2010 should achieve goals of paperless trading, and APEC as a whole achieve development goals of paperless trading in 2015.

Although, the implementation of paperless trading is a difficult process, in recent years, the vast majority of APEC member economies have developed the implementation of paperless trading, fundamental program of action, has made substantial progress. With the further deepening of regional trade cooperation, Paperless trading gradually has been incorporated into bilateral or multilateral trade cooperation agenda, effects are gradually emerging in the promotion of trade liberalization. Legal and policy environment for

paperless trading has been greatly improved. In 2005 " Assessment Report on APEC Paperless trading Development " written by the APEC E-Commerce Business Alliance has summarized the progress of APEC Paperless Trading, initially admitted the target that, the member economies can reduce transaction costs of 5% implementing paperless trading. On the basis of evaluation criteria, through the investigation and analysis of the development of paperless trading status and success practices, summing up achievements of the process of paperless trading, sharing successful experiences, analyze gaps, the evaluation report make recommendations to promote the development of paperless trading.

In fact, paperless trading is closely related to trade facilitation. Trade facilitation has been one of APEC's core activities, whose purpose is to drive to continuously improve the efficiency of trade in order to achieve the promotion of cross-border trade growth, promote the development of trade liberalization, so as to bring significant multi-effectiveness for member economies. Paperless trading is precisely one of the principal means to achieve trade facilitation.

In November 2006 in Hanoi, Vietnam, the fourteenth leaders' meeting of APEC economies was held. At the meeting, the leaders of the various economies admitted the target set in the APEC Shanghai meeting in 2001 to reduce transaction costs of 5% by trade facilitation. The participating leaders give a high degree of identity to the new trade facilitation framework of the program of action, and set target to achieve a further 5% reduction of trade transaction costs by 2010.

APEC E-Commerce Business Alliance as one of subgroups to promote trade facilitation. Promoting the implementation of paperless trading as a main clue to complete the objectives set forth by APEC. The purpose of this report is through the review and assessment of APEC's cross-border paperless trading strategies and the environment to sum up to best practices, in order to meet the commercial development of government's public service and private sector.

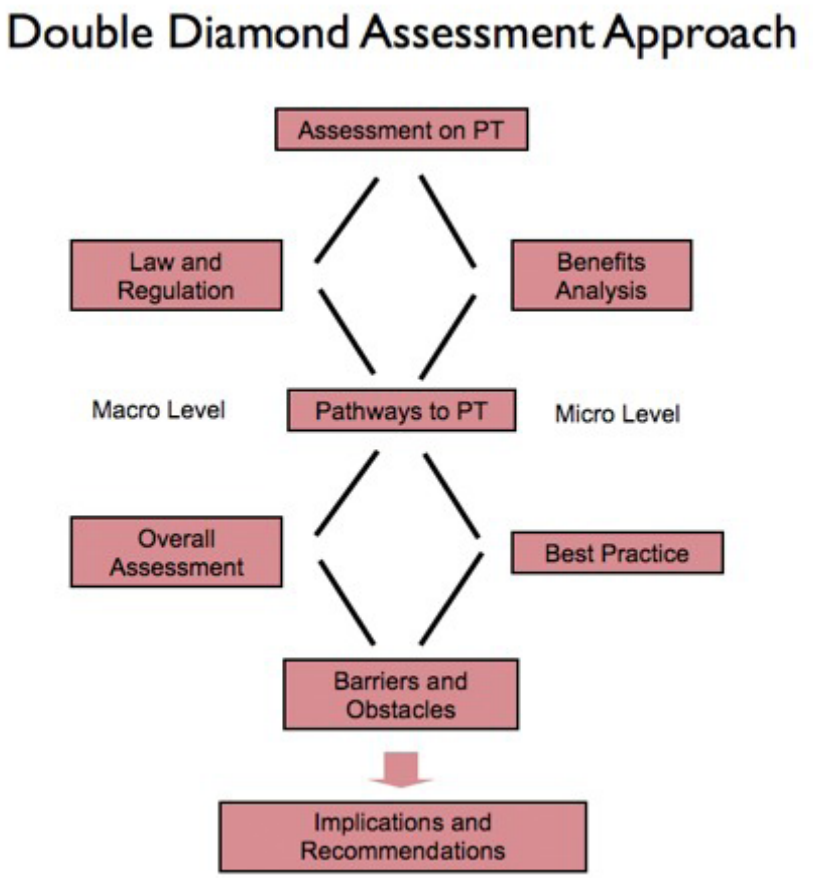
1.2 Assessment Methods of Cross-border paperless trading

This study assesses the APEC paperless trading development strategy, development status, development ideas, obstacles and difficulties from the two aspects as macro and micro. The report is divided into five main parts, establishes a Double Diamond Model, in order to show the main elements covered by the development of paperless trading, pictures are as follows. This report is not the analysis in technical level, therefore, not

involves issues of paperless trading in technical level, but analyzes the human paperless trading environment and the interests of common concern of the implementation of paperless trading participant, especially assesses the development of paperless trading from the view of government promotion.

The issue of the first dimension is related to the concept and scope of paperless trading

The issue of the second dimension is basic environmental problems and power to promote the development of paperless trading. Here two issues are divided into the macro level and micro level.



The issue of the second dimension is paperless trading development path. As a result of the specific circumstances of different economies, particularly in infrastructure, technology development, human environment, and the implementation of paperless trading may have different paths.

The issue of the fourth dimension is assessment and learning. From the macro perspective is to make an overall assessment of the development of paperless trading and to identify assessment methods; from the micro-level is to find best practices and cases from the implementation, especially form economies of different development paths,

best practices and cases may have different meanings.

The issue of the fifth dimension is difficulties and obstacles. By assessing and summing up paperless trading development of the various APEC economies, this report analyzes and identifies the main obstacles and difficulties to achieve goals of paperless trading, in order to find ways and directions to meet these challenges.

Part II Overall Assessment of Paperless Trading

2.1 Concept and scope of paperless trading

2.1.1 Concept of paperless trading

The concept of paperless trading appeared in 60 years 20th century, its main source is the Electronic Data Interchange (EDI). Because of the application of EDI technology, the international trade system developed from the traditional paper-based documents to electronic documents system, it is vividly called the "Paperless Trading".

In 2005, the definition of paperless trading done by APEC E-Commerce Business Alliance at the “Assessment Report on APEC Paperless Trading Development” is:” Paperless trading" is trading activities in electronic form data exchange. It refers to the trade links between the various participants (suppliers, buyers, customs, administrative bodies, banks, logistics companies, etc.) using information technology means to achieve data transmission and processing operations in the standardization of applications between the participants, in order to complete the entire process of transaction. "

According to the " Research Report on Paperless Trading Capacity Building and Intellectual Property Protection" in 2007 done by APEC E-Commerce Business

Alliance ,Paperless trading, should be understood as: In the course of trade, using information technology, through the network means, according to the standard specification combining business practice of trade-related side and implementation of government functions, paperless trading achieves paperless exchange of information among trade management departments of government, enterprises and value-added service providers and becomes an important tool for the promotion of trade.

Paperless trading is generally considered as the principal means to enhance the trade efficiency for an economy. Its effectiveness is reflected in three aspects: improvement of efficiency of trade participants, improvement of efficiency of public service side, and improvement of trade efficiency of the participating economies.

Trade participants refer to those commercial bodies involved in the actual trading market activities, such as importers, exporters, logistics companies, insurance companies, banks, etc. The implementation of paperless trading can improve efficiency of exchange of the commercial documents and business data exchange between these commercial organizations.

Public service side refers to the public service providers related to government management of the economy, such as customs, commodity inspection departments, trade examination and approval departments, etc. The implementation of paperless trading as a public service provides a convenient and effective tool, allowing the effective coordination and communication take place between government departments, facilitates participants submit information to trade-related government and public service sectors, enhance the extent required to meet government regulations.

Trade participating economies refer to administration involved in the trade, in the APEC context refer to the APEC economies. The implementation of paperless trading enhances trade efficiency of the economy by lowering transaction costs, also strengthens economies competitive advantage.

2.1.2 Attributes and role of paperless trading

In fact, these two definitions of the differences in the concept of paperless trading do not differ greatly. If we further deepen inspection, the special properties of paperless trading are reflected in the following aspects:

First, the paperless of trade data exchange. If you simply see the purpose of implementation of paper trading, paperless exchange of trade data is not the main purpose of paperless trading. Paperless trading is considered as a means to enhance trade efficiency. Paperless exchange of trade data is the process of paperless trading in the main form. As international trade procedures are complicated and involved many

parties, in the traditional paper-based document flow process, many of the data entry need to be repeated and Multiple submission , so result in low efficiency of trade operations. Inefficient paper-based document processing is seen as outstanding factor impeding the development in international trade. The implementation of paperless trading makes the exchange of trade data paperless, brought the participants a lot of good in many aspects of trade.

Second, use modern information technology network as platform, use standard specifications as a means to achieve paperless trading. Paperless trading developed along with the popularization and the use of modern information technology. From the earliest EDI technology to international internet promoting the development of electronic commerce, global business data transmission channel has been set up, and can quickly pass a variety of encrypted commercial data. However, data transmission between the different participants, different department encounters different standard specifications, and thus created difficulties for data exchange, in particular cross-platform data exchange needs standards conversion. Therefore, standard specifications have become one of the major driving means of Business Data transmission.

Third, paperless trading involves not only the private sectors, but more importantly, participants in the public service sectors, such as customs, commodity inspection, government approval agencies, etc. Not just the private sectors and commercial organizations promote the development of paperless trading. Although the private sectors and commercial organizations pay more attention to the improvement of trade efficiency, the private sectors and commercial organizations are also more motivated to promote paperless trading. However, improve the operational efficiency of government's functional departments is more important to paperless trading. Because the functions of the government departments and commercial organizations are different, in general there is no competitive environment for governments; there will be no greater incentive to upgrade their departments run more efficiently. The implementation of paperless trading is necessary to mobilize the enthusiasm of government functions departments, the government must be personally involved in order to obtain the social benefits of paperless trading.

Fourth, the realization of cross-border data exchange. Although looking at the development of paperless trading, cross-border trade data exchange is not easy, however, cross-border data exchange is the most basic attribute of paperless trading. Participants in international trade involves cross-border commercial institutions and government departments, the exchange of documents in traditional trade is itself cross-border. Only achieved a cross-border data exchange, paperless trading could maximize its effectiveness. If cross-border paperless trading data Interchange can not be achieved, paperless trading does not have substantive significance.

Fifth, single window is the ultimate goal of paperless trading. Single Window can make government collect and monitor trade information through a platform or system. Do not need to repeat the information, submit to different agencies. Single window is considered as ideal means for government departments to deal with a large number of trade information, make importers and exporters meet the government regulation under the premise of maximum streamline business processes and improve the operational efficiency of trade.

The role of paperless trading is mainly reflected in the following aspects:

First, increase operational efficiency in international trade and reduce costs. Paperless trading is to use technical means to achieve the paperless exchange of data on international trade. Paperless trading in general is considered as one of the important elements of trade facilitation. A large number of facts proved that the implementation of paperless trading can enhance operational efficiency of participants, For example, if time can be reduced by dealing with trade data and production of documents, removed many trade data re-entry, reduce errors and ultimately makes the participants save cost.

Second, improve the visibility of international trade flow. The visibility of international trade flow means that the rule is transparent, supervision over the Government and other regulatory bodies of the Authority have predictability, can be traced and can be tracked. Paperless trading is to use technology to enhance the international trade process visualization. Trade participants through a single window system, can soon know the progress of trade flows and keep abreast of the regulatory rules of regulators. This means security, reliability, convenience and opportunities. Just as the city's traffic monitoring systems, save a lot of manpower, while increase the efficiency.

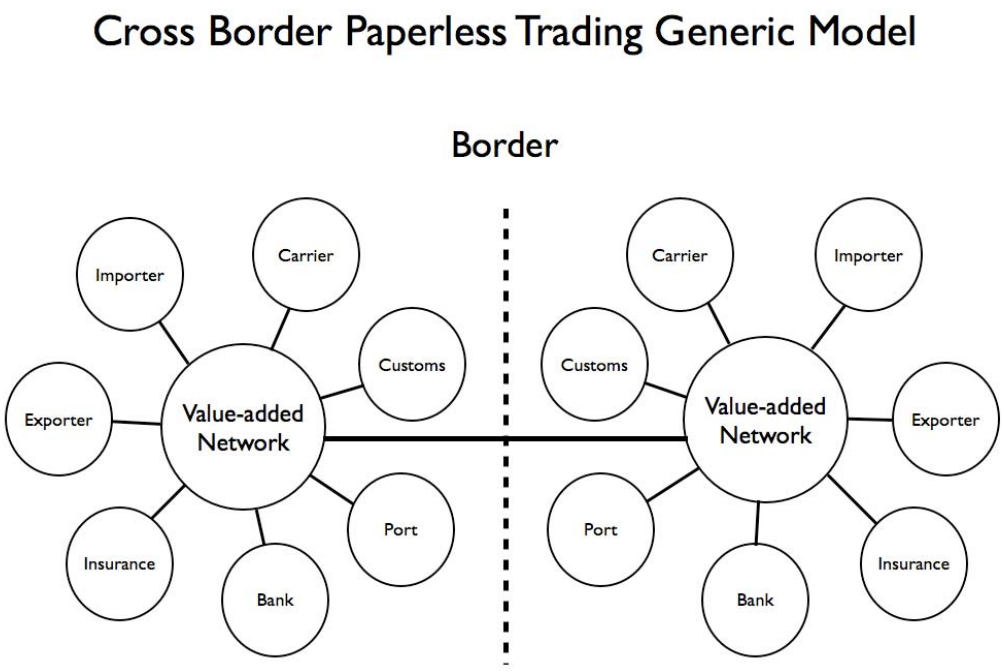
Third, enhance the competitive advantage of member economies. The implementation of paperless trading for APEC economies is to bring about the simplification of trade procedures and lower transaction costs, allowing importers and exporters on the market at home and abroad to obtain a certain degree of competitive advantage. In particular, economies which have implemented paperless trading can get first-mover advantage, through the value-added network of paperless trading to enhance confidence of trading partners to do business with him. Through timely and accurate information access and flexibility in operation, the controllability of the risk can be effectively enhanced. Paperless trading is considered as one of the principal means by many economies to enhance their competitive advantage in trade.

Fourth, promote trade globalization. The gradual reduction of tariffs, reduce or cut Non-tariff measures to improve the APEC trade transparency is an important way to achieve trade liberalization and an important content of it. In the process of trade liberalization, in accordance with their current tariff policy and the "Bogor Declaration" objective APEC's 21 economies make a plan of action consistent with national or regional

economic interests, taking into account the overall liberalization objectives of the regional to reduce tariffs. In addition to trade tariffs, trade liberalization also involves non-tariff barriers. The implementation of paperless trading can reduce the level of non-tariff barriers. According to the degree of development of trade liberalization of economies, we can see that the lower level of human intervention, the smaller trade barriers to the movement, cross-border transactions, business flow, logistics, the higher the degree of integration of capital flow and information flow of the industrial chain, The higher the degree of free trade.

2.1.3 General model of cross-border paperless trading

APEC economies paperless trading development is so far largely confined to the integration within an economy. Its main aim remains to improve the efficiency and level of public services. In recent years, economies have begun to pay attention within the integration of trade data exchange, model of value-added services network was established as a means of service delivery. The service model has changed from single-channel and single-function data submission service in 90 years 20th century towards a single window, towards integration of business processes and value chain. Service methods emerge with clear cross-border trade data integration. In recent years, Korea, Japan and Chinese Taipei trying to trade between each other cross-border exchange of data, for example, a certificate of origin and other cross-border transmission and authentication. Paperless trading cross-border exchanges in general model can be expressed with the following icon.



Assessment on Paperless Trading to Facilitate Cross Border Trade in the APEC Region

In an economic body, the Government normally appoints a paperless trading service platform or the service principal, which we call value-added network service providers. The platform will be responsible for integration of trade within an economy processes involved in data exchange. At the same time, the Government will authorize the network value-added service providers exchange relations with cross-border networks value-added service providers of other economies, to achieve cross-border paperless trading data interchange services. The Government usually authorize one or a limited number of value-added network service providers to realize cross-border paperless trading data interchange, the main reason for that are the following three aspects: First, cross-border data exchange requires the value-added network service providers within an economy have strong integration capabilities, in particular the Government's administrative examination and approval and oversight functions are usually achieve a successful integration on a platform. Second, the Government will emphasize the safety of cross-border data exchange. Because cross-border data exchange will be the state's data security problem, the Government would not normally approve a purely commercial nature of value-added network service providers to authorize cross-border data exchange, but rather are engaged in the designated one or a limited data associated with the government administration Exchange. Third, the Government will take authority and reliability of cross-border data exchange into account. After all, cross-border exchange of data related to different parts of the state administrative jurisdiction, the legal system is likely to be different. The Government will normally consider the authority and reliability of the data, once a dispute arises, there can be a strong administrative background to coordinate and resolve.

The realization of cross-border paperless trading requires more or less within the economy for at least a certain degree of single window service. The realization of cross-border paperless trading is usually a result of trade facilitation. In view of this, where we may look at the relationship among trade paperless trading, single window and facilitation.

Paperless trading is to displace paper-based commerce data transfer electronic data interchange with the standard alternative in international trade value chain or supply chain on all aspects. Paperless trading emphasizes information technology process of international trade, replace or improve traditional paper-based methods by more efficient new electronic means. Paperless trading, emphasize realization of cross-border electronic exchange of international trade data and documents. Paperless trading is considered as an important aspect to promote trade facilitation. Paperless trading can lead to reduction in transaction costs, as well as to enhance trade efficiency.

Single window is usually understood, that the trade participants do not need to submit commercial documents or business data to the different trade principals of supervision and participation, such as customs, commodity inspection, banks, ports, logistics

companies etc. , but to submit a one-time trade data by a single window service system or platform of the front desk, do not need to deal with different trading participants, a single window service provider in the backstage provide trade principals of supervision and participation with their required trade data. Single window save the cost of exporters and importers, is the best way to facilitate the submission. Therefore, single window emphasize degree of network integration and data integration level within an economy of paperless trading, is the main process and milestones of an economy to achieve paperless trading. The establishment of single window is also a concrete manifestation of trade facilitation.

Trade facilitation looks at how procedures and controls governing the movement of goods across national borders can be improved to reduce associated cost burdens and maximize efficiency while safeguarding legitimate regulatory objectives. Therefore, trade facilitation is not only through the ways of paperless trading, nor simply a matter of economy to achieve a single-window approach, Trade facilitation emphasize on a broader sense, the promotion of trade cost reduction, efficiency of all content. If the paperless trading focuses on the means of changes in trade operations, as well as its implementation process, trade facilitation will focus on how the Government adopts policies and administrative measures to promote trade, improve the overall efficiency.

2.1.4 Composition of paperless trading Value chain

From the perspective of international trade chain to see value chain structure of paperless trading, trade chain starts from the order, then transportation declaration, and finally the payment. The overall links involve not only trade logistics, capital flow, information flow, while the relationship between number of participants and the operating procedures. For different commodities and delivery methods, each link has a lot of concrete different procedures and handling documents, which makes the trading process, become very complicated.

In international trade, there are several participants. According to the research by UN/CEFACT, international trade could involve about 40 business organizations and governmental organizations (Grainger, 2007)

Exporters and Importers

Importers and exporters play the main roles in international trade flow, because main bodies of the two different economies usually do the transaction through the part of importers and exporters. These importers and exporters may be an independent agency; it can also be manufacturers, vendors, distributors, distribution companies, agents, etc. The vast majority of exporters deal with problems of customs clearance, transport links

through the designation of freight forwarders or other intermediaries.

Freight Forwarders

Freight forwarders are intermediate services organization to provide transportation services to importers and exporters. It is responsible for finding suitable transport companies, to arrange the best mode and routes of transportation, and responsible for matters relating to shipment booking. The majority of freight forwarders also provide warehousing services, customs clearance services, apply for insurances and other services. Freight forwarders play a very important role in the value chain of international trade; it ties with a number of participants, and is an important part of logistics.

Carriers

The carrier is organization which provides transportation and transport services carrying goods form origin to destination. The carriers are generally shipping companies, air cargo companies and etc.. As the carrier is responsible for the goods of a specific carrier, effective communication between them and other participants in the chain can improve operational efficiency, for example, effective communication and information transmission between the carrier and freight forwarders, carriers and ports, carriers and customs can save time for the carriage of goods, reduce the cost of the carriage of goods and so on.

Customs brokers / Customs Agent

Customs brokers or customs agent is service organization to help the importer to complete the relevant procedures and steps to the customs declaration of goods entering and leaving the customs territory. Customs broker is usually necessary to submit information related to the goods and transportation to Customs. The vast majority of SMEs generally do through the customs broker to complete customs clearance procedures and steps. Customs broker's work can improve the efficiency of customs clearance, to meet the needs of relevant laws and regulations better.

Customs

Customs is the institution of the mandatory supervision and management of a country or economy of goods entering and leaving the customs territory. Customs clearance process and the steps are as a key central link in cross-border cargo logistics. The information of goods and transportation is required to submit to the Customs. Therefore, Customs is one place where gather information of international trade. Customs is one important link having a direct impact on the efficiency of the value chain of international trade.

Ports

Ports are the infrastructure to landing goods, storage of goods and shipment for the carrier, including sea ports and air ports. Customs, customs brokers and freight forwarders transfer the goods at the ports, ports are also gathering places for information of cargo

and transportation. Government agencies may do the inspection of goods at the ports. Integration of ports Information is conducive to enhance efficiency of the international trade supply chain.

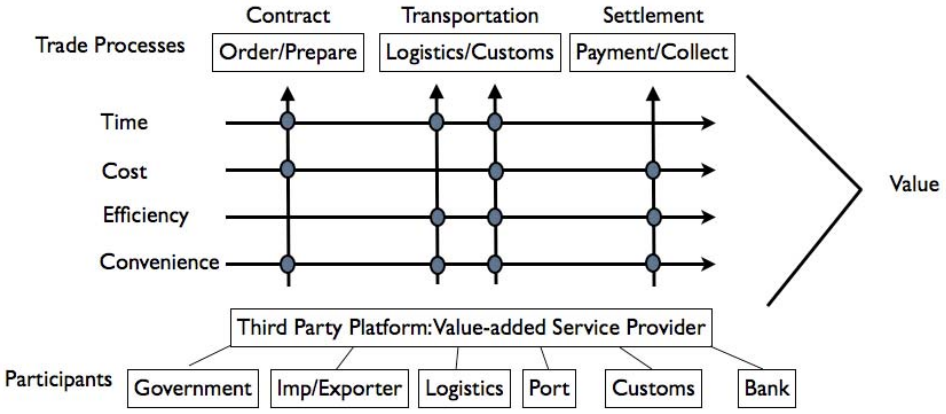
Banks / Financial Institutions

Banks and other financial institutions provide trading payment service to importers and exporters. Bank control flow of funds, also capture information on the cargo and transport information by transaction documentation requirements of parties. Other financial institutions, including insurance companies, provide tools and arrangements for risk prevention and compensation to the owner.

In all these areas some are market segments, some are non-market sectors, non-market sectors, such as customs, government, etc. play a very prominent role, and Government's role, efficiency and legislative levels of the judiciary are directly related to the operational efficiency of these non-market segments. For the market segment, such as transportation, which does not involve the government, these sectors of the implementation of paperless trading usually are not the Government's target. Even though, the government sometimes has to coordinate and standardize a number of rules and procedures. So, for paperless trading under non-market segments, if there is no government participation and support, to create a favorable environment of public services, the development of paperless trading will be constrained. It can be said, paperless trading is a product of the combination of the international trade process and e-commerce, e-government. It makes full use of technological advances means and methods, particularly IT technology, to complete the transformation from system of paper-based documents to electronic documents system, to enhance trade efficiency, reduce trade cost.

Value chain of paperless trading involves process and the composition of the participants (see chart of paperless trading value chain).Participants of the value chain, including commercial organizations, such as trading partners (importers and exporters), logistics companies, ports, banks, etc. Public service agencies include government approval agencies, customs, commodity inspection and so on. The main part of business processes are the contracting, transportation and settlement. Contracting part mainly refers to the process of signing a contract deal, from the perspective of importers and exporters is the ordering and stocking links. Transportation links mainly refers to import and export business and logistics companies contracted to arrange transportation and customs clearance process. Settlement links mainly refers to the payment of the purchase price, or the collection process.

Composition diagram of paperless trading value chain



Indicators of the composition of paperless trading value chain, are four aspects: Time (time, such as delivery accuracy, the length of time required, etc.), cost (cost, including time costs, labor costs, documentation costs), efficiency (efficiency, the number of tasks within a unit time, such as the various links of the error rate, etc.), convenience (convenience, such as visualization of logistics system, reduce intermediate links, the duplication of data entry, etc.)

Trade process reflects the value activities in the process. Usually the flow of international trade is a process holding costs and risks of the commitment caused by the transaction costs, because importers and exporters do not directly create value. However, the process of value activities of international trade flow has impact on importers and exporters, as well as the overall economic efficiency. Therefore, how to streamline trade processes, save cost is actually the main goal of paperless trading. Particularly agencies which usually have no pressure of competition in the non-market sectors of international trade, it is difficult to automatically adjust to more reasonable levels of service and cost through market forces, therefore, APEC economies implement paperless trading to promote and guide the government to improve public services and rationalize trade procedures, through the integration of processes, data exchange and the simplification of trade procedures to achieve the purpose of trade efficiency. By a third party value-added network service platform integrating the interests of participants, recycling process, through changing time, cost, efficiency and convenience and so on, paperless trading will bring value to all parties.

From the figure we can see the benefits of paperless trading by third parties are shown at each value point of integration of the single window platform and process of trade. These values point can enhance the value of one or a number of participants, even the trade chains.

2.2 Development of international trade and paperless trading

Trade liberalization and facilitation are the main goal and core activities of APEC. Through the joint efforts of APEC economies, the average tariff was reduced from 16.9% in 1989, when APEC was established, to 5.5% in 2004. APEC's total trade volume (including goods and services) increased from 3 trillion U.S. dollars in 1989 to 15 trillion dollars in 2007. The average annual growth rate of APEC trade is 8.3%. Within APEC merchandise trade (imports and exports) increased from 1.7 trillion U.S. dollars in 1989 to 8.44 trillion U.S. dollars in 2007.The average annual growth rate at 8.5%. APEC intra-regional trade has accounted for 67% of global trade.

2.2.1 Volume of international trade and paperless trading

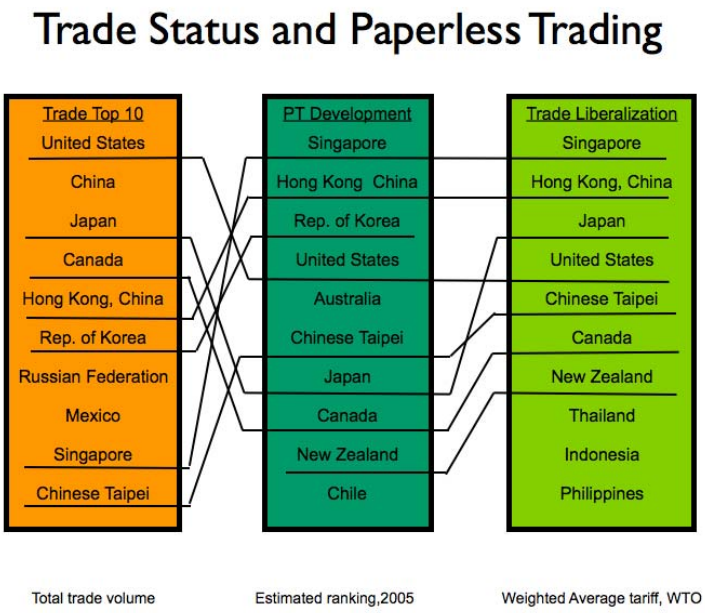
The total trade volume of APEC economies in 2007 is in the table below. The table lists the various APEC economies in the ranking of total trade. United States, China, Japan, Canada and Hong Kong, China ranked the first 5 in the APEC trade. The last five in trade volume of APEC economies were Chile, New Zealand, Peru, Brunei and Papua New Guinea.

Total Trade by APEC Economies (2007)

Economies	Total Trade (million US$)	Share (%)	Trade Dependency
United States	3,182,882	25.01	23.05%
China	2,174,585	17.09	66.30%
Japan	1,336,570	10.50	30.54%
Canada	810,604	6.37	61.11%
Hong Kong, China	739,518	5.81	357.76%
Rep. of Korea	728,335	5.72	75.10%
Russian Federation	577,889	4.54	44.76%
Mexico	567,022	4.46	63.47%
Singapore	562,453	4.42	348.60%
Taipei, Chinese	465,929	3.66	121.10%
Malaysia	323,193	2.54	178.84%
Australia	306,694	2.41	37.32%
Thailand	292,064	2.29	118.81%
Indonesia	210,792	1.66	48.70%
Viet Nam	111,254	0.87	156.22%
Philippines	108,462	0.85	75.25%
Chile	104,769	0.82	63.92%
New Zealand	57,821	0.45	44.69%
Peru	48,376	0.38	44.35%
Brunei Darussalam	9,769	0.08	84.49%
Papua New Guinea	7,671	0.06	122.52%
APEC Total	12,726,652	100.00	

Source: WTO website

We are according to the 2005 APEC Paperless Trading Assessment Report of the APEC 21 member body development of paperless trading, compared international trade development and trade liberalization in the economies of APEC. We use total trade volume as a measure of the development of international trade in economies; we use the average tariff as a measure of trade liberalization of economies. We can take a look at what a rule can be found.



By looking into the top 10 economies in APEC, assessing their level of development of paperless trading and degree of trade liberalization, we found the following conclusions:

1. Among an economy's trade volume, the development of paperless trading, and trade liberalization, there is no necessary link. However, the relationship of promotion exists. In theory, the reduction of tariffs level of economy and the implementation of paperless trading may result in trade growth. The tariff reductions and the realization of paperless trading can reduce the transaction costs of international trade. Whether from the perspective of import or export they can promote trade growth.

2. For developed economies whose the volume of trade in accounting for a larger proportion of the APEC , such as the United States and Japan, the level of implementation of paperless trading, trade liberalization, the level are basically consistent. With the exact opposite of this situation is that China, Russia and Mexico and other economies. Their volume of trade in the APEC economies takes relatively high proportion, in the top 10, but the paperless trading and trade liberalization have not entered the top 10. This shows that these economies still have great potential to be tapped in the implementation of paperless trading.

3. Singapore, Chinese Taipei and Hong Kong, China in the figure show that their level of implementation of paperless trading rankings are superior to volume of trade, the degree of liberalization of trade and the level of paperless trading development are consistent.

This shows that these economies attach great importance to the implementation of paperless trading, level of implementation of paperless trading have a direct impact on the trade position of these economies. Korea in addition to trade liberalization does not rank in the top 10, but Korea's paperless trading position is consistent with its trading. Although New Zealand does not rank in the top 10 in trade volume, but its level of implementation of paperless trading and trade liberalization are also basically consistent.

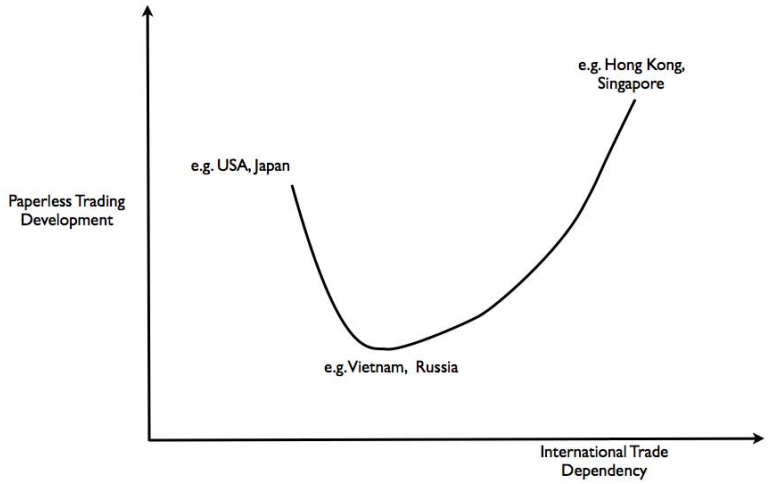
4. Interesting phenomenon is that Thailand, Indonesia and the Philippines in the top 10 in the APEC trade liberalization. However, in the implementation of paperless trading levels they are not in the top 10. This shows that these economies, although the level of average tariff is low, the efficiency of trade may still have problems, trade transaction costs in the chain may also be very high. Therefore, to promote the implementation of paperless trading in these economies has very important significance.

2.2.2 International trade dependence degree and paperless trading

If we study these members dependence degree on trade , we can find that there is no direct relationship between trade volume and the dependence degree. Hong Kong, China, Singapore, Malaysia, Vietnam and Papua New Guinea, among the top five, while the lowest trade dependency members are New Zealand, Peru, Australia, Japan and the United States (See below table - trade and trade dependence degree).

Through the development of international trade of APEC members we cited, it is hard for us to find the absolute relationship between the trade status and the paperless trade from the trade volume and dependence, if we associated trade dependence with the development of paperless trading, we found that the development of paperless trading and trade dependence was U-shaped (see figure). Paperless trading level in a high degree, trade dependency is relatively high, such as Hong Kong, China and Singapore; But at the same time, some members which have low trade dependency, such as the U.S. and Japan, its paperless trading development level is also better. Therefore, we can not say that there has absolute correlation between the degree of trade dependence and paperless trade development, but the dependence degree of trade can also be indicative.

International trade dependence degree and paperless trading



Generally, if the trade dependence degree is high, the members will have a high dependency on trade, so that the trade efficiency has become an important factor which impeding economic' development. Therefore, member economies with high trade dependency attach great importance to the development of paperless trading, because the reduction of trading costs and the improvement of trade efficiency can directly improve the economy's overall international competitiveness.

The same situation to other members are an increase volume of trade, trade structural transformation (from primary products to high-tech products), the high requests for the number and accuracy of documentation, the request for the efficiency of the Customs (Customs become a bottleneck process), higher demands for accurate delivery of goods, shorter circulation time, the accuracy of the data in the submitted documents. All this requires the members to promote the paperless trading development.

Like the United States, Japan and other developed economies, although the dependence degree on foreign trade is relatively low, their overall trade volume is large, these members have a relatively earlier development in paperless trade and e-commerce, and have a strong strength in economy. These members also attached great attention on the development of paperless trading, and encourage the development of paperless trade to some extent. Typically, these members have relatively low tariff levels.

Therefore, we summarize some economic and trade indicators that may influence the development of an economy's paperless trade. The relevant indicators include:
- The overall strength of the member economies
- Trade volume
- Dependence degree on foreign trade
- The level of tariffs

A World Bank research (Transparency & Trade Facilitation in the Asia Pacific: Estimating the Gains from Reform, 2007) study the impact to APEC trade by the transparency associated with trade facilitation. The report assessed the impact that transparency on the improvement of trade from two points of view that the predictability and simplifying of the trade policy change. The report concluded that the international trade within the APEC region achieved a growth of 7.5% because of the improvements that associated with the trade facilitation transparency, which is equivalent to 148 billion U.S. dollars of trade (2004). Despite of the traditional trade barriers such as tariff barriers have been gradually reduced, the main research concluded that the transparency of trade facilitation-related policy has the significant impact on transaction cost of international trade. Compared with other regions, the transparency of APEC trade policy is relatively better, one of the reasons is that the government of APEC members effectively implemented modern information technology. The implementation of paperless trading is a specific way to increase transparency in the trade from trade process to policy-making to enhance the visibility.

2008 APEC CTI Annual Report lists a series of results, including the continued implementation of APEC 2007-2010 Trade Facilitation Action Program (APEC's Second Trade Facilitation Action Plan). Among them, the implementation of paperless trading still remains the major way for trade facilitation of members.

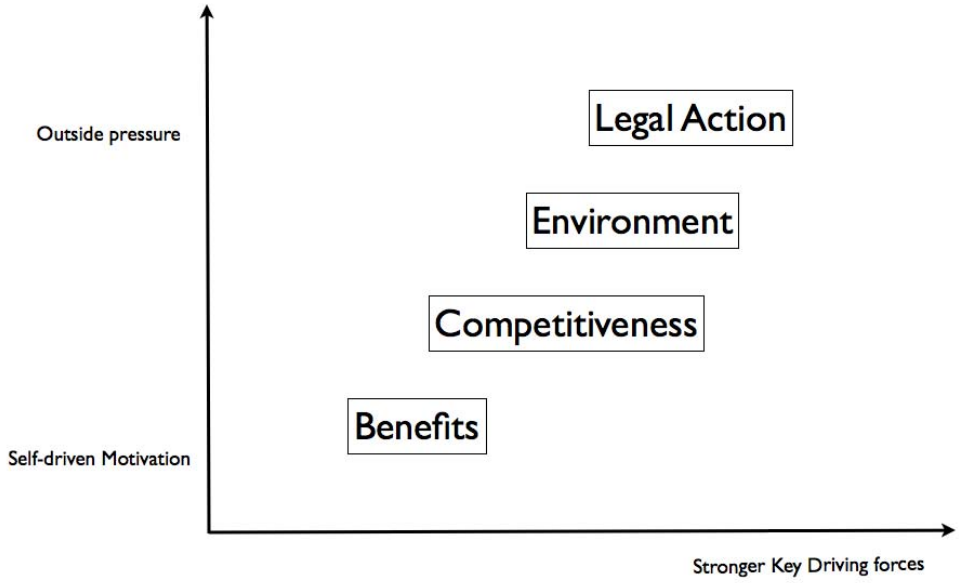
2.3 Key drivers for the development of paperless trading

Key driving analysis forces mainly on the factors may have an important impact on the adoption of paperless trading, implementation, and its final results. It can help us to analyze the key driver factors of paperless trading, so we can found the deep-seated reasons for paperless trading development.

Government's promotion of paperless trading development can be traced back to 30 years ago, when the technical means are not been so well developed. Even if it is subject to technical conditions, the benefits from the implementation of paperless trading is still

obvious. These benefits may be the most original power of the adoption and implementation of paperless trading. After years of practice, however, we found that the motivation to promote the development of paperless trading may come from many different aspects. These different factors have had a significant impact on the decision-making of various members' paperless trading policies. This spurs us on to raise a conceptual model about the key drivers of paperless trading analysis (see figure). This model summarizes the critical factors of the driving force in the promotion of paperless trading development of various members.

Key drivers for the development of paperless trading



The key drivers of paperless trading comes from two aspects: First, the inner driving force from the participants of paperless trading .That means the members of all trading participants take the initiative to implement the paperless trade according to their own situation. The key drivers probably come from the recognition of the benefits and interests that the paperless trading can bring about, and may also come from the need to enhance their competitive advantage through paperless trading. Second is the external factors and external pressures outside the trading participants, such as competition environment changes of global market, legal action and legal arrangements from external. We have identified four key drivers among them, briefly described as follows:

--- Advantages and benefits factors: means the recognition that all the trading participants of the members (including the private and public services sectors) to the benefits and interests due to paperless trading. The more recognition that paperless trading benefits the party involved, the easier to implement paperless trading. Identification of advantages and benefits is the basic driving force to promote the development of paperless trading in the member economies.

--- Competitive factors: refers to the general recognition from the members of all trading participants that paperless trading can enhance the competitive advantage. The competitive advantage here refers both the recognition from the private sector that paperless trading can improve their competitive advantage and from the government and public sector that it can enhance the overall competitive advantage of the members. The more recognition that paperless trading benefits the parties involved, the easier to implement paperless trading.

----Environmental Change: refers to the attitude and the degree of acceptance to the paperless trading related environmental changes by the members of all trading participants. Environmental changes here not only include technical environment changes, but also cultural and business environment changes, as well as the competitive landscape changes. Changes in the environment more often result from the changes by the elements that can not be controlled by member participants, so is also considered an external factor. External environmental changes will have an important impact on the implementation of paperless trading. The recognition of environmental trends can help participants have a better understanding about the elements of trade advantages and benefits, and can also help participants understand the importance of enhancing competitive advantage in the future.

--- Legal action: refers to the binding legal action taken by the member economies of the participants on the implementation of paperless trading. It mainly comes from the two aspects. First, the legal action within an economy for the implementation of paperless trading may be a formulation of basic laws, or an act to promote paperless trading. The other is an international agreements signed between the members and international organizations, or with other member economies. The commitments made by the law have strong coercive and binding force. It is proved by practice that many member economies have achieved outstanding results in the promotion of paperless trading through legal means. Some international agreements such as NAFTA, ASEAN, WTO, have contents related to paperless trading, trade facilitation, single window and so on.

The contents related to trade facilitation and paperless trade involved in the international trade agreements within the APEC members are listed as follows:

- The United States and Peru bilateral free trade agreements
- Canada and Peru bilateral free trade agreements

- Hong Kong, China and Chile trade facilitation arrangements
- China and Chile Free Trade Agreement
- China and New Zealand FTA
- China and Peru FTA

Identifying the above key drivers that promote paperless trading development can enable us to promote the paperless trading development among various members better, the specific benefits embodied in the following aspects:
- Can better understand the key attributes of paperless trading and the path selection in implementation of paperless trading;
-Can better organize the phase of the implementation of paperless trading, prioritize and driven more effectively;
- Can make better use of limited resources; better allocate resource to promoting paperless trade;
- Can help us to understand the objectivity of the promotion of paperless trading better, as well as use effective means.

2.4 paperless trading and the IT environment

The goal of paperless trading is to remove paper-based documents engaged in international trade by using modern information technology, optimize the trade process, reduce transaction costs and improve trade efficiency. In view of the numerous participants of trade processes and complex procedures, the following basic IT environment conditions should be met according to the practice experience for the implementation of paperless trading:

- IT infrastructure, including Internet access services and broadband access
- Internet service providers, and data transmission services
- The informatization of private sector, including corporation e-commerce applications, such as, online submission and data transfer, corporate ERP systems, enterprise CRM systems, enterprise SCM systems, etc.
- The informatization of Government authorities, including network office systems, e-government platform, e –data.
- Public service network platform, including network value-added providers
- Network information technology applications, including solutions provider of services, information technology development,
- Government investment and support, including public network construction investment, financial support in the application of information technology, public service platform construction investment

The IT environment construction in paperless trading may subject to some elements,

including:
- Human resources, high-level professionals in the development of business technology
- The financial condition of the member economies, for example, average GDP per capital.
- The level and attitudes of public services, for example, the efficiency of government
- The credibility environment of business

In order to reflect the APEC Paperless Trading IT environment construction, we found two available evaluation index systems to measure the IT environment construction. One is E-readiness index made by Economist Intelligence Unit, the other is E-government readiness index made by United Nations. We hereby make a comparison between the development of APEC Paperless Trading and the IT environment and infrastructure reflected by these indicators, so as to indicate the development of APEC members in the area of paperless trading IT environment.

E-readiness indicators

According to the assessment conducted by Economist Intelligence Unit to e-readiness in the member economies around the world, the e-Readiness in many member economies has been effectively upgraded by the government's investment and efforts. EIU's assessment index system consists of six aspects:

- Connectivity and technology infrastructure
- Business environment
- Social and cultural environment
- Legal environment
- Government policy and vision
- Consumer and business adoption

Based on the comprehensive rankings of the six aspects above, APEC members' e-readiness index rankings in the global are as follows (see table):

E-Readiness World Ranking by APEC Economies (2005-2008)

Economies	2008	2007	2006	2005
United States	1	2	2	2
Hong Kong, China	2	4	10	6
Australia	4	9	8	10
Singapore	6	6	13	11
Canada	12	13	9	12
Rep. of Korea	15	16	18	18
New Zealand	16	14	14	16
Japan	18	18	21	21
Taipei, Chinese	19	17	23	22
Chile	32	30	31	31
Malaysia	34	36	37	35
Mexico	40	38	39	36
Thailand	47	49	47	44
Peru	51	51	49	50
Philippines	54	54	56	51
China	56	56	57	54
Russian Federation	59	57	52	52
Viet Nam	65	65	66	61
Indonesia	68	67	62	60
Brunei Darussalam	—	—	—	—
Papua New Guinea	—	—	—	—

Source: Compiled from Economist Intelligence Unit 2008, Economist Intelligence Unit 2007 and Economist Intelligence Unit 2005

E-Government Readiness Index is an index system conducted by the United Nations to measure the development of e-government around the world. The e-government readiness index is a composite index comprising the web measure index, the telecommunication infrastructure index and the human capital index.

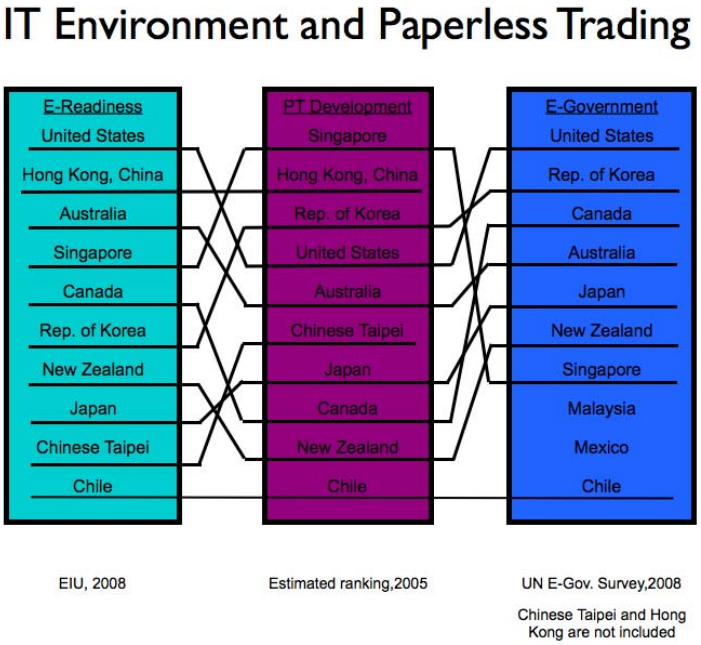
Based on the above comprehensive rankings of the three aspects, APEC members' e-government readiness rankings in the global are as follows (see table)

E-Government Readiness World Ranking by APEC Economies (2008)

Economies	2008
United States	4
Rep. of Korea	6
Canada	7
Australia	8
Japan	11
New Zealand	18
Singapore	23
Malaysia	34
Mexico	37
Chile	40
Peru	55
Russian Federation	60
Thailand	64
China	65
Philippines	66
Brunei Darussalam	87
Viet Nam	91
Indonesia	106
Papua New Guinea	166
Hong Kong, China	—
Taipei, Chinese	—

Source: UN E-Government Survey 2008

According to the 2005 APEC Paperless Trading Assessment Report on the development of paperless trading of the APEC21 members, we compared the APEC members' E-Readiness Index and e-government readiness index ranking situation. At this point, we listed the top 10 of APEC members in these three areas (see chart).

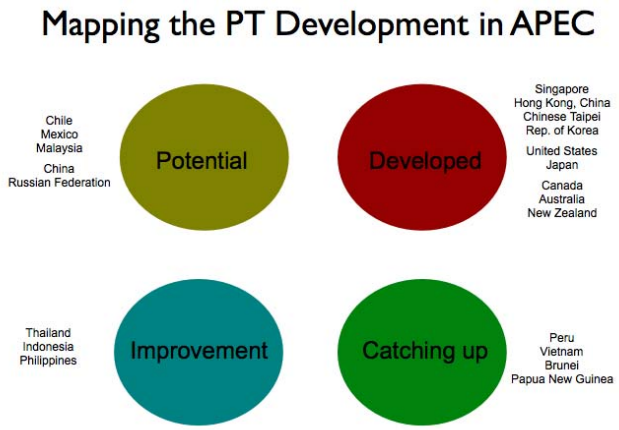


Through observation of APEC e-readiness top 10 members, examining their development status of paperless trading and e-government readiness status. We found the followings:

1. The United States, Canada, Australia, Japan and New Zealand have a powerful e-Readiness Index and e-government indicators. This shows the high construction level of IT infrastructure and environment. The level of development of paperless trading basically coordinates with the IT environment and has a balanced development.
2. E-readiness indicators show that Korea enjoys a high level of IT infrastructure development. At the same time, its e-government and the development of paperless trading is at the leading position in APEC members In particular, its e-government readiness indicators in APEC members are also among the best.
3. Singapore enjoys a prominent development of paperless trading. It has a high level of overall development of IT infrastructure. There are some gaps between E-government readiness and paperless trading position. It is noteworthy that Singapore's paperless trading is the first one in innovation and have a leadership in the application.
4. Chile paperless trade is a very noteworthy APEC member. As an APEC developing member, it has made remarkable achievements in the IT environment and infrastructure construction. In addition, the e-government and e-commerce are also prominent in developing economies. The development of paperless trading has entered the top 10 of APEC. Paperless trading and the IT environment construction have a coordinated development with each other. Thus, Chile's paperless trading development is worth concerning in our future study.

2.5 Results of comprehensive assessment of paperless trading in APEC economies.

In view of the research work of assessment teams and the above analysis, we divided the APEC economies paperless trade development into four groups (see figure). In recent years, APEC economies have made progress in paperless trading. The four groups have the following features:



- Developed

In the development of paperless trading, Singapore, Hong Kong, China, Chinese Taipei, Korea, the United States, Japan, Canada, Australia, New Zealand are classified as well-developed group in APEC member economies. This group of economies is characterized by a relatively high degree of maturity; especially the development of paperless trading and trade status, the legal environment, IT environmental factors, as well as e-government aspects of development are more coordinated. Although the model of development of different economies may be different, these economies have completed the effective integration of e-commerce data within an economy.

- Potential

In the development of paperless trading, Chile, Mexico, Malaysia, China, and Russia can be classified as a potential group in APEC member economies. This group of economies is characterized by the huge development potential. The basic reason is that, for example, Chile, Mexico and Malaysia have been quite prominent in the environment; there is efficient room for the development of paperless trading. While some economies, such as China and Russia, they have a large volume of international trade, but the development of paperless trading is extremely incompatible with their trading status. If the Government and relevant departments can effectively organize power, the implementation of paperless trading can greatly improve the efficiency of trade and thus enhances the economy's competitiveness in trade.

- Improving

In the development of paperless trading, Thailand, Indonesia, Philippines are classified to the improving Group in APEC member economies. This group of economies is characterized by the continuous improvement of the implementation of paperless trading environment, including the introduction of legislative and administrative measures in favor of paperless trading and e-commerce development in recent years. Government and relevant departments are actively trying to maximize promotion of paperless trading.

- Catching Up

In the development of paperless trading, Peru, Vietnam, Brunei, Papua New Guinea can be classified as catching up group. This group of economies is characterized by a positive catch-up in paperless trading development. Some economies, such as Peru and Vietnam issued a series policies and measures in promoting the development of paperless trading, which effectively promoted the development of paperless trading.

Part III Legal Environment

The development of paperless trading depends on strong supports of policies and regulations. Its development involves various policies and legal matters which not only concern transaction itself but also issues related to safety, supervision and control, legal relief and protection, international electronic information protection and jurisdiction, etc. Since 2005, international organizations and APEC member economies as well have been taking efforts to solve these problems to establish a multilevel and all-around legal system, thus to ensure the healthy and orderly development of the trade.

Legal issues between APEC member economies are resolved under the framework of relative agreements and plans which set up a legal platform for paperless trading legislation. Supporting policies and regulations are indispensable to achieve the goals of facilitating trade and promoting regional trade liberalization by e-commerce and paperless trading among APEC member economies.

Overall, since 2005, under the guidance of paperless trading framework, APEC member economies have made certain achievements in relevant legislation, have been exploring higher level of development and found some new characteristics. New development trends in regard to policies and legal environment in APEC members are mainly embodied in the following eight aspects.

3.1 Enhancing Supervision over E-Trade

Although APEC members have reached a consensus on the advantages of paperless trading, there are still great hidden dangers arising from such problems as difficulties to

identify the eligibility and credit standing of trading parties, overmuch fraud and illegal operation , ambiguity in responsibilities and obligations of both parties. Meanwhile, with virtual currency and e-contract springing up, economic security and market supervision are facing great challenges. For that point, APEC members have worked out policies and laws to strengthen supervision and control over E-Trade.

China has made great advances in E-Trade supervision. Many policies have been made into effect to improve E-business security and facilitate cross-border transactions. Some guidance documents have also been promulgated to comprehensively plan the development in this field.

To implement the spirit of the document “Opinions on Accelerating the Development of E-Commerce” (GOSC[1]〔2005〕No.2) promulgated by the State Council, to promote the healthy development of Internet transactions and gradually regulate on-line transactions, to help and encourage the parties involved to carry out online transactions and to alert and guard against transaction risk, Chinese Ministry of Commerce issued a “Guidance on Online Trading (Provisional)”on March 6, 2007, which focuses on the basic links related with agreement, payment and platform operation, without guidance and regulation on credit management, security authentication, taxation and protection of privacy right.

In order to implement the “the Eleventh Five-Year Plan for National Economic and Social Development” and “2006-2020 National Strategy for the Development of Informatization”, to meet the planning requirements established by “Several Opinions on Accelerating the Development of Electronic Commerce Proposed by State Council”, to center on the central task established by “the Eleventh Five-Rear Development Plan of Informatization”, in June 2007, the National Development and Reform Commission and the State Council Information Office organized the compiling of “the Eleventh Five-Year Plan for E-Commerce Development” as China’s guiding document for development of electronic commerce. China’s overall goal is to basically form a structure by 2010 with coordinative developments of e-business development environment, supporting system, technical services, promotion and application. E-business service industry will then become an important new industry. E-business will be applied more widely in various fields of economic and social development and achieve remarkable success. Electronic supervision will be considered as an important issue. The Plan emphasizes that by 2010 China will gradually establish a monitoring system regarding virtual currency, electronic contracts, online product and service information , enhance supervision over economic activity on the network and prevent all kinds of e-business risks.

In March 2007, the Ministry of Commerce issued a “Guidance on Online Transactions

[1] GOSC: General Office of State Council of China

(Provisional)" aimed at basic aspects such as contract signing of online transactions, payment and platform running. "Administrative Measures on Online Transactions" will also be promulgated during the year 2009. It is an upgraded version of the above mentioned Guidance (provisional) released in 2007. It will not only play a guiding role, but also take more specific administrative measures on online business.

In April 2008, China's Ministry of Commerce began to solicit public opinions and suggestions on the internet on two drafted documents: "E-Commerce Model Norms" and "Online Shopping Service Norms". They cover various aspects of the specific assessment requirements such as qualification of the legal person, registered license, operations, payment methods and service system. "E-Commerce Model Norms" specifies the following matters: qualification of service provider as the legal person, qualification of the customer as the legal person, a neutral third-party's participation in the operation, physical transactions, online payment, after-sale services, independent technical supporting facilities and personnel skills. "Online Shopping Service Norms" regulates trading parties, online shopping platform providers, online payment platform providers, etc. These two documents will provide China's first national e-commerce industry standards to abolish the fragmented administration of e-business by the local governments and specific laws to abide by.

To regulate electronic authentication services, China's Ministry of Industry and Information Technology began to exercise supervision over electronic certification service providers based on the document "Administrative Measures on Electronic Authentication Services" released in March 2009.

In addition, State Administration for Industry and Commerce (SAIC) will introduce "Administrative Measures on Online Commodities Trading", establish a monitoring platform, regulate online commodity trading, and safeguard the legitimate rights and interests of consumers. For online stores, a recording system will be adopted for easy market admittance. For consumers, their risks in connection with shopping online are expected to decrease. China has also begun to develop e-commerce legal framework for e-business tax collection and supervision.

A few APEC economies such as Vietnam, Malaysia, Russia, and Indonesia develop rapidly in legislation despite their late start. Vietnam's e-commerce legal system is basically built on a series of recently enacted laws of e-commerce transactions and communications and other laws and regulations. Vietnam formulated the "Master Plan for the Development of Electronic Commerce for 2006-2010" and released "Electronic Transactions Act" (came into force on March 1, 2006), "Trade Law (revised) "(2006) and "E-Commerce Agreement"(2006) and other laws and decrees related to electronic signatures, e-banking system, electronic payment security, e-customs, e-certificates of origin, data privacy protection, electronic data exchange standards, internet security. All the laws and decrees have provided legal support and guarantee for paperless trading in

Vietnam. Malaysia completed the basic framework of laws and regulations on e-commerce after enacting “E-Commerce Act 2007” and “E-Government Activities Act 2007”. In 2006, Russia enacted “Electronic Commerce Law” and “Electronic Documents Law” to specify legal relationship in electronic transactions and electronic document exchange. “Electronic Information and Transactions Law” was promulgated in Indonesia on March 29, 2008.

3.2 Improving Electronic Financial Legislation

In respect of e-payment, APEC economies increasingly focused on trade security and convenience. The extension and intension of electronic payment are expanding gradually to evolve into a broader category e-finance. The integration of finance with electronic and information technologies has greatly pushed the financial revolution which is called “computerized financial services”. E-finance is giving new impetus for government to promote economic development, providing opportunities to merchants. E-finance has not only pushed forward the traditional business but also spurred a new financial service which calls “e-finance transactions”. To regulate e-finance transactions, e-finance law came into being and has become one legal branch with distinctive characteristics of the times. Korea and China are the most prominent in e-finance legislation among APEC members. Meanwhile, Indonesia and Chinese Taipei are making progress in this respect.

To perfect the basic framework of e-finance transaction and facilitate e-financial transactions, Korea promulgated “Electronic Financial Transactions Law” on April 28, 2008, which came into force on January 1, 2007. This law provides for the validity of electronic payment, electronic money transferability, security assurance of e-financial transactions, user protection, conditions for non-financial institutions to provide electronic financial services.

In recent years, China’s electronic financial industry has developed with breakthroughs and e-finance legislation has also made great achievements with the following examples: In 2003, China Securities Regulatory Commission released “Online Securities Commission Provisional Regulations” and “Online Commission Business Approval Process for Securities Company”. The Standing Committee of National People’s Congress formulated the “Electronic Signature Act” in 2004 which became effective in 2005. The China Banking Regulatory Commission (CBRC) enacted “Administrative Measures on E-Banking Business” in 2004. The People’s Bank of China (PBOC) promulgated “Provisional Administrative Measures on Personal Credit Information-Based Database” in 2005. Since 2006, China’s legislation in e-finance has become more comprehensive and detailed. Specific measures have been taken as follows:

With continuous development of e-banking, “Interim Measures for Internet Banking Business Management” (2001) was unable to meet requirements for supervision and

control of risk of e-banking. To effectively control the risks of electronic banking and improve regulatory system, China's Banking Regulatory Commission formulated the "Administrative Measures on E-Banking Business" and "Guidelines on E-Banking Security Assessment" (came into force on March 1, 2006). Mobile phone banking, PDA banks and other emerging e-banking business are listed for being regulated and supervised for the first time. China will have laws to abide by with respect to e-banking business ever since.

In order to further implement "Several Opinions on Promoting the Development of Circulation Industry proposed by the State Council" (SC〔2005〕No.19) and "Several Opinions on Accelerating the Development of E-Commerce proposed by the State Council" (SCS[2005]No.2), Ministry of Commerce issued "Views on Promoting the Healthy Development of E-Business" (2007, No.409), which requested to prevent and stop malicious tying up capital, illegal cashing and transferring by e-payment and other illegal financing behavior. This suggests that China has added e-payment into the scope of financial supervision.

The central bank of Indonesia issued the "New Rules on Electronic Money" (came into force on April 13, 2009) separating provisions of e-money from those regarding the use of card payment instruments. Both banks and non-bank entities to issue e-money are required to apply for a permit from the central bank. However, for non-bank institutions, only when the fund value has reached or will reach a certain level do they need to apply for a permit. The minimum value of the fund is contained in the central bank notice.

In June 2009, Chinese Taipei released the "Draft Rules on E-Ticket Management" which stressed that the stored-value amount has to make equivalent calculation. It means that, when people recharge e-money, the issuer must charge the original amount to them. The stored value cards of some online shopping malls or online gaming industry are also the targets of Financial Supervisory Commission of Chinese Taipei.

3.3 Focusing on Information and Data Protection

Conducting online business activities will generate a large number of business data and information such as product data, research and development data, transaction data, personal information, market data and financial data. Disclosure of information and online business data in the process of data collection, use and transmission has seriously affected business activities conducted online. In addition, protection of right of privacy is another important trend. APEC has developed data confidentiality protection plan to encourage members to concentrate efforts from administrative law-makers, legislative bodies, consumers and business representatives to construct and implement legal framework and regulations on how to protect the privacy of cross-border information flow.

Assessment on Paperless Trading to Facilitate Cross Border Trade in the APEC Region

Of APEC member economies, Canada, Russia, China, Republic of Korea, Australia, Vietnam, Malaysia, USA, India and Mexico have established various laws, regulations and policies to protect electronic information and data.

The Government of Canada attaches great importance to the development of e-commerce and network economy, especially the information and data protection. In recent years, Canada has made tremendous efforts in response to network threats and privacy protection. Enormous amount of capital and manpower have been devoted to better implementation of data protection.

First of all, Canada has laid great emphasis on network threats. In order to create a more secure environment to ensure safety of data and information, Canada has adopted a number of measures to address the issues of network security and data protection. The main measures in 2007 include: implementation of a set of “Principles for Electronic Authentication”; developing a unified mechanism with a variety of international economic organizations (OECD, Asia-Pacific Economic Cooperation Organization) to jointly deal with internet security issues and establish a trusted internet mechanism. In particular, Canada is also responsible for a volunteer group in the OECD in respect of electronic authentication and jointly in charge of APEC cross-jurisdiction PKI panel of experts. In 2007, the Canadian Task Force on Spam submitted a report entitled “Suppression of junk e-mail: creating a more powerful and secure Internet” , which contained a series of suggestions aimed at preventing spam and ensuring confidence in e-economy by more stringent law enforcement, public education, policy formulation and legislation some of which have been put into practice. 2008, Canada participated in the discussion on establishment of a unified and effective response mechanism to network threats held by OECD, the International Telecommunications Union (ITU), APEC, G8 and other economic organizations. In addition, Canada has reached Memorandum of Understandings (MOUs) with a number of trading partners, such as the United Kingdom, Australia, Japan and Chinese Taipei. Canada encourages the private sector to make voluntary measures to combat spam and other internet threats, especially through a number of organizations such as Messaging Anti-Abuse Working Group (MAAWG). Canada also actively promotes cooperation in legal mechanisms through London Action Plan to respond to network threats.

Secondly, Canada attaches great importance to privacy protection. In recent years, Canada has always been committed to the international implementation of APEC Privacy Framework, specially the establishment and implementation of a system about Cross Border Privacy Rules. Canada is walking in the forefront of OECD and APEC member economies in terms of making privacy protection laws and their implementation. In July 2006, the House of Commons Standing Committee on Access to Information, Privacy and Ethic implemented the first five-year statutory review on Personal Information Protection and Electronic Documents Act (PIPEDA) and submitted its report on May 2, 2007. In the report “the Review of PIPEDA”, the government made a number of commitments

including a mandatory rule that data destruction problems must be reported. In addition, a number of measures must be taken so as to achieve the goals of protecting consumers, safeguarding public safety, meeting market demand and ensuring effective governance and supervision. In 2007 Canada, the United States and Mexico established a cooperation framework with security and prosperity of e-business as common principles. Canada is also the first economy to have formed a draft on the cooperation framework of cross-border law enforcement. In 2008 Canada continued its efforts to implement APEC privacy protection framework, specially developed Data Privacy Pathfinder System and also formulated and implemented a system on cross-border privacy rules. Canada's Privacy Commission played a major role in OECD's Working Penal on Information Security and Privacy (WPISP).

In 2006, Russia promulgated the "Law on Electronic Documents" stipulating the validity of electronic documents and specific measures of their use. In January 2007, Russia enacted the "Personal Information Act" making clear the scope of personal information covering all pertinent information of a natural person: name, date of birth, place of birth, address, family, social and property status, education level, occupation, and income, etc. All the information can't be open only if written consent of the principal is obtained.

In order to regulate the notification and reporting of internet security problems in the communications industry, promote information-sharing on network security and improve abilities of early-warning, prevention and emergency response to network security problems, China released "Implementation Measures for Internet security Information Notification and Reporting" in June 2009. Moreover, China's collecting public opinions on "Implementation Measures for Online Business Data Protection".

The Korean government revised "E-Commerce Framework Law" for the second time in 2006. The revised version extended its application to electronic transmission and also specification of the intention of e-documents and notice of the facts, etc. Another important provision in this revision concerns the public storage of electronic documents, namely, electronic documents can be stored in a public space and managed by a trusted third-party who will ensure their authenticity. The third purpose of this revision is to give legal effect to e-documents. Companies can be relieved of their burden in obtaining paper documents and get guaranteed regarding the security of e-documents. To keep a healthy and safe network and protect citizen's rights of privacy, reputation and their economic interests, the Korean government has also promulgated "Promoting the Use of Information and Communication Network and Information protection Correlation Act" since July 2007.

Australia attaches great importance to information and data security. For ensuring security when facing external and internal threats, thus to maintain economic interests, the Australian government pays close attention to network security, authentication service, protection of privacy, consumer rights protection and other issues. The government

encourages the private and public sectors to use authentication technology and facilitates application of e-commerce throughout Australia. In 2006, Australia established electronic authentication framework in the B2G business in addition to actively promoting the application of digital electronic signatures, which was considered as solutions for completing public key infrastructure and consistent with the goal of “realization of Public Key Infrastructure (PKI) interoperability” proposed by APEC. In 2007, Australia established an e-Authentication Framework and carried out cross-border electronic authentication policies to encourage interoperability of public key infrastructure domestically and internationally. At present, Australia is actively promoting the implementation of these policies in domestic government authorities and relevant economies and international organizations as well. Moreover, in 2007 Australia revised “The Gatekeeper Strategy” and the framework of public key infrastructure (PKI). Under this framework Australia administrates e-authentication agencies and their services. Their relative standards of e-authentication include: consistency with the federal government procurement policies; compliance with security policies and planning; physical security; technology assessment; compliance with the authentication policies and procedures; personal review; legal affairs and privacy protection considerations.

Vietnam promulgated “Rules for Management and Use of Internet Electronic Information, Act No.97/2008/ND-CP” on August 28, 2008. Malaysia is also undertaking legislative work of Personal Data Protection Act. The United States also published information and data security initiatives. The U.S. Congressional Research Service issued a report in March 2009 “National Comprehensive Plan for Network Security: Legal Authority and Policy Considerations”. In October 2007 Canada committed to amend privacy protection act and made great efforts to build cross-border privacy system and actively implement the Asia-Pacific privacy protection framework. India’s personal privacy protection started early and is being constantly perfected. Mexico has no specific privacy law, but is also making efforts to safeguard privacy.

3.4 Strengthening Internet Intellectual Property Rights Protection

As the global economy is turning to knowledge-based, competition in terms of modern science and technology and economy has become increasingly fierce. As a powerful weapon for accelerating development of science and technology and economic development, the intellectual property system has been given unprecedented attention. The impacts of information technology, information industry, especially network and digital technology, the global information highway construction and exploitation of the internet on intellectual property law system have aroused great attention of the governments of APEC economies. Economies with higher levels of economic development such as China, Japan,

Chinese Taipei, Korea, Hong Kong, China and Australia particularly go faster in legislation of network intellectual property protection.

In May 2006, China promulgated “Information Network Transmission Right Protection Ordinance” (effective since July 1, 2006) which has made specific provisions on contents and restrictions of information network dissemination, responsibility of internet service providers, exemption clauses and legal liability, etc. The Ordinance is China’s first specific regulations for network copyright.

In Japan, the newly revised (in 2009) “Copyright Law” was formally adopted at the Japan’s Upper House meeting. In order to protect legal download business, down-loaders are to be regulated by the new law which was not the case in the current law under which only publishers are regulated. The new law bans advertisements for selling pirated discs in addition to sales of such items.

In Chinese Taipei, the revised “Copyright Law” revised in April 2009 provides that network user’s right shall be deprived if he infringes upon copyright for three times; In addition, the network operator can avoid paying joint legal liability as long as he fulfills the obligation of management and informing the uses’ of infringement act.

The Korean government highly values the network intellectual property rights. In 2006 “Copyright Revision Act” was promulgated expanding copyright protection to the digital realm.

Hong Kong, China introduced the “Copyright (Amendment) Bill 2009” into the Legislative Council in 2009.

Australia acceded to the World Intellectual Property Organization Internet Treaties in July 2007.

3.5 Promoting Legislative Norms for Regional E-Commerce Platform

With regional economic development climbing up to a higher level, an important issue in the field of regional economic development has emerged which concerns how to leverage the advantages of e-commerce to boost regional economy, and how to link a number of enterprises with the whole process-oriented e-commerce services. Since 2005, regional integration of e-commerce within economies has become an emerging key tendency. China is a good example. A development model called “regional e-commerce platform” was first proposed by China.

“Regional e-commerce platform” is a new development model of e-business. An e-commerce platform with regional characteristics is mainly established by the government who integrates all resources. Enterprises in a supply chain in this region can be linked through the platform to optimize the original business processes. On the basis of a unified standard, through coordination with other service sectors involved with credits, CA security authentication, transactions, electronic payments, trading finance, supply chain management, document transmission, government functions and so on, the regional e-platform can optimize existing business processes among enterprises, promote the smooth flow of logistics, information and capital between enterprises and boost great developments of electronization and informatization within that region. Regional e-commerce platform has the following advantages: adopting a unified platform to avoid duplicate construction; putting regional information into a national information base to avoid regional “information silos”; raising international influence of the regional platform through the authority of the national platform; gaining maximum returns with minimal investment for the government and enterprises. In China, so large in size and different from region to region, enterprises in different locations vary in their level of understanding and service demands for e-commerce. Regional e-commerce platform can take full account of the characteristics of various regions in terms of industrial development level, e-commerce development level and different demands. The concept was created and the first regional e-commerce platform was established by China International Electronic Commerce Center (CIECC). Currently, regional e-commerce platforms have been set up in Fujian, Tianjin, Shantou and Dong guan, etc. As a new wave of e-business development led by regional e-business platform model is coming, CIECC plans to spend three years spreading third-party e-commerce platform model to major provinces and cities. At present, CIECC has gradually carried out targeted regional cooperation with many provinces and municipalities such as Liaoning, Chongqing, Guangxi, Shanxi, Heilongjiang, Jiangsu, Hubei and Hunan. With the Ministry of Commerce as the center, regions as branches, it is a good time to build regional e-commerce application service platform.

The construction and operation of Fujian International E-business Application Platform (abbreviated as Fujian Platform) has demonstrated the well-developed regional E-Business in China. Fujian Platform adopts such a creative mode “financial aid from the government; benefits to enterprises; construction outsourcing”. On the solid basis of CIECC advantages in resources and technologies, Fujian Provincial Department of Foreign Trade and Economic Cooperation provides capital for promoting informationization process of enterprises, which has helped achieve a win-win result. Enterprises in the supply chain of the region can be linked through Fujian platform to optimize the original business processes. The platform can provide enterprises with whole process e-commerce services covering credits, CA security authentication, transactions, electronic payments, trading finance, supply chain management, document transmission and government operations, form a comprehensive database of enterprises and

commodities covering the whole province, which will help enterprises, especially small and medium-sized enterprises to explore overseas market and share all kinds of information. This platform is united with CIECC's existing e-commerce service system and has access to real-time data. This provincial e-commerce platform is built on "Canton Fair Online", and this site is a foreign website of "China Market". "China Market" is now comprised of overseas trading site, domestic trading site and import site. With ten-year's foreign trade resources achieved through "Canton Fair Online", this site will expand the clients from foreign trade enterprises to both domestic and foreign trade enterprises. Enterprises in Fujian province can register to be members of the Platform and have direct access to all information sources on "Canton Fair Online" and "China Market". Therefore, they can get more trade opportunities and reduce trading costs. Fujian Platform is oriented as a comprehensive platform with trading as its initial function and it has connected with the national E-payment platform (GuoFuBao, www.gopay.com.cn). According to the overall program, Fujian Platform will introduce in due time different types of e-business services, including wireless e-business application service, trade financial service and cross-border cargo tracking service; and add supply chain management platform and international trade management platform to help improve internal management and informationization of enterprises.

On March 1, 2009 Shanghai started to implement "Regulation for Promoting E-Business Development in Shanghai" which specified the legal status of e-commerce businesses and clarified their rights and obligations. This is the first regional regulation to push e-business development in China. It consists of three parts: First, it clearly defines e-business. Article 3 stipulates that the defined e-commerce refers to online marketing and service providing. E-business enterprises include those with internet-based e-commerce application service platform, engaging in business activities on e-commerce platforms, establishing websites to sell goods or provide services, and other companies engaging in business activities through the Internet. Second, the provisions explicitly state that "electronic certificate or receipt of purchase or service" can be used as evidence for dealing with consumer complaints and the municipal government departments shall, jointly with the Consumer Protection Commission, to establish and improve e-commerce-related consumer protection mechanism. Third, it makes clear that e-commerce business information should be open to public. Article 14 states that companies engaged in e-commerce should obtain the relevant licenses according to the relevant provisions of the state and publicize the following information on its website: business license, organization code, and other qualification-related information; internet information services license registration or registration of electronic authentication identity; license or certification needed for the products, names of products and producers; business address, zip code, telephone number, e-mail and other contact information.

3.6 Plans and Measures for E-Government in Continuously Promoting Trade Facilitation

In recent years, APEC economies have continuously promulgated relevant measures and management policies on e-government, such as Australia, New Zealand, Singapore, China, Russia, Thailand, Peru and Hong Kong, China, in order to achieve the goal of trade facilitation.

The Australian Government lays stress on strategic planning of e-government in the process of trade facilitation. In 2006 the Australian Government issued “2006~2010 Australian e-government strategy–to build a responsive government”. The Australian Government believes that “associative e-government” will become a reality in 2010, which will push the reforms in the government business process. And it is in the hope that Internet, Electronic and Voice-based services can be more integrated into the government services by 2010. The Australian Government deems that citizens should be able to choose from a range of public service channels, but the most convenient ones are the Internet, Electronic and Voice-based services. According to the strategic planning, it’s predicted that the above-mentioned three service channels will be more frequently used by users. It is worth noting that the Australian government emphasizes to consider the needs of the disabled and ensure that they can get government services more conveniently.

In order to let the public enjoy more convenient government services, the Australian government believes that the service processes should be customer-oriented. Therefore, the citizens do not need understand the setting of government agencies and which government department is responsible for a specific service. They can enjoy services conveniently from a system with a single login function.

In terms of energy conservation and consumption reduction, the Australian government hopes that paper mails and e-mails must reduce 10% each year from 2006 to 2010. Forms required by the government must be cut by 50% by 2010 to facilitate the public. In order to achieve this goal, various forms used between different government departments in Australia must realize information-sharing, thus to reduce the requirements for citizens to input information. This can obviously reduce repetitions and errors, for example, when filling in the form, if one discovers that he has input the error message, he needs to correct it only once, thus reducing the cost of correcting the error.

According to the Australian E-government strategy, the government should maintain a unified image in front of the citizen regardless of using telephone or internet or through other channels. The government needs to learn from enterprises that use advanced information and communication technologies to provide customers with better services. A

key point is to use Service Oriented Architecture (SOA) in the informationization project, and build a responsive government based on this Architecture. The basic idea of SOA is to have services as the core, integrating information technologies into manageable and standard-based services, so that they can be reconfigured and applied. In order to guide each government department to construct this service architecture, the Australian government plans to develop an architecture model to demonstrate how to achieve inter-departmental SOA. It's believed that SOA can support the process standardization, the system re-use and interconnection. The above transformation can significantly improve ROI of the e-government project.

In 2007, the State Services Commission of New Zealand issued "Government Website Standards Version 1.0", which replaced "Government Website Guidelines Version 2.1" released in March 2004. The new standard is more applicable. All people have access to the government website without technical and physical limitations, and can evaluate and test. New Zealand's "e-government strategy" emphasizes the importance of access to state services, and "Government Website Standards Version 1.0" is important to ensure the government information and services on-line for the public. The new standards will provide a clearer guide to the government departments, and guide the government on how to use the internet to provide information and services, and improve the efficiency of the government departments. New Zealand Government has already requested the departments which provide public information services to observe the new standards, and encouraged the related organizations, local authorities and private organizations to adopt the standards.

Singapore is recognized as the best economy in the development and application of information and communication technologies. It is one of the earliest economies which carried out "Government Informationization", and also the most leading country in e-government development. Since 1980, Singapore formulated successively strategic plans on informationization including "National Computer Plan" (in 1980), "National Information technology Plan" (in 1986), "IT2000: the Intelligent Island Plan" (in 1991), "Singapore One" planned (in 1996), "Infocomm 21 Plan" (in 2000), "Connecting Singapore Plan" (in 2003). In 2006 the government issued the plan "Intelligence Nation 2015". These strategic plans provide powerful instructions to the Singapore informationization construction, and advance Singapore's information infrastructure to the leading level in the world.

At present most government departments in Singapore can provide services online. Its E-government system is completely under the state control without private sector participation. The communications infrastructure has so far been regarded as an important aspect of the national economic strategy. The entire technology development was conducted under the overall planning of the government. When constructing the e-government, Singapore regards the user as the customer, classifies services according to users' demands and breaks the traditional pattern of departmental services. The

Singapore Government website has designed four sub-channels for the purpose of facilitating use; classified service themes according to the user's needs and integrating services of different departments, meanwhile sorting out numerous online services on a service theme according to different users. This can enable users to find necessary information and services conveniently and breaks the traditional pattern that services are provided according to division of sectors. Meanwhile, in E-government construction, Singapore has paid great attention to improving the coordinative ability of departments, and constructing jointly the Government Gateway Websites and providing users with "one-stop" service. The Government Gateway Websites integrate information services provided by various sectors, and better coordinate various departments, thus to achieve "many departments, a government", so that the public can get information and services from the government more conveniently. Some of the services are not set in accordance with the departments, but do a package handling as per the process, that is, when a person or an enterprise handles on-line service, they don't need to login in the websites of various government departments, and can complete all the formalities on a single website. In order to serve users better, the Singapore government has fully integrated a variety of resources, including the integration of government departments and local governments, integration of social information resources and services, integration of services at front office and back office. After these resources are integrated, the users can easily get the information and services that they need, save time and costs, and then raise the efficiency. In addition, considering the multiplicity of the communications, Singapore has widely used all kinds of modern information technologies to enable mobile users to have easy access to government services by means of telephone call centers, Internet, smart cards, digital television and so on.

In order to help the small and medium-sized enterprises integrated into the digital society to ensure synchronous development of the whole society, the Singapore Government has released "Singapore Small and Medium-sized Enterprise Information and Communication Technology Application Project". As part of the plan "Intelligence Nation 2015", this project consists of three parts. First, implementing the "Plan of Using Information and Communication technologies for Small and medium-sized enterprise". As the first step, "the Small and Medium-Sized Enterprise Information and Communication Resources Center" has been already established. It will help these enterprises to learn how to use technologies such as e-mail, IP telephone, anti-spy software and anti-virus software. In addition, IDA (Information Development Authority of Singapore) and Singapore Standards, Productivity and Innovation Committee will set aside 5 million dollars from "the technical innovation project", to carry out another two plans in three years which are "growth promotion plan for Small and medium-sized enterprise to use information technologies" as well as "the plan for small and medium-sized enterprises to use information technologies for communication and innovation". Up to 2010, the IDA plan has made the ratio of small and medium enterprises using broadband and online up to 80%.

In the past 20 years, Singapore has implemented a number of important national

information technology plans, all of which contain the contents of training IT professionals, reflecting the Government's attention to IT professionals and the determination to solve the problem of IT professionals. Singapore has worked out successively the following programs to educate IT professionals: "Singapore IT2000 plan" "Blueprint of information and communication technology in the 21st century ", " provide IT Power to workforce in the 21st century (IT Power 21)", "National personal computer operation test (PCDT) plans", "funds guarantee project", "National Information and Communication Skills Authentication Framework". Furthermore, the Singapore government also paid great attention to improving the level of public information and skills, and vigorously promoted the activities of information technology popularization.

In 2006 China promulgated "the 11th-Five-Year Plan of the People's Republic of China", in which "developing e-commerce actively" was raised as an important task. It emphasizes "establishing a sound e-business infrastructure, legal environment, credit and security authentication system, and construct a safe online payment service platform." And further it refines relevant policies and measures to promote paperless trading to achieve trade facilitation. First, it is to improve customs clearance efficiency, promote paperless customs reform, effectively prevent and combat evasion misconduct to facilitate the legal import and export. According to the related laws and regulations and "State Council's notice on strengthening product quality and food safety", on January 1, 2008 China General Administration of Customs and AQSIQ decided to implement the "Customs Clearance Form online verification". Second, to facilitate the related business enterprises to handle business, the State Administration of Foreign Exchange issued "Operation Procedures for Online Verification of Export Settlement" on September 12, 2008 to further improve the export income verification system, simplify some of the business operation and document examination links, and improve the supervision of related businesses.

The Russian Government also pays attention to the E-government at present, especially introducing information technologies into the Customs, and in 2008 issued "About introduction of information technology of representation to customs authorities of data in the electronic form for customs registration of the goods, including with use of the international association of networks 'Internet'".

The Thailand government has also taken some measures to promote paperless trading. It sponsored training programs and seminars on e-commerce during 2006 and 2007, established an electronic market for enterprises, transferred DVP system (Delivery versus Payment) from the government security department to TSD (Thai Securities Depository) and implemented the data exchange project to realize the export entry information exchange with the Philippine Government through "the ASEAN single window".

Peru's Ministry of Finance launched the "2009.07-2011.07 plan to improve the trade environment" which made an overall planning for the development of paperless trading.

Assessment on Paperless Trading to Facilitate Cross Border Trade in the APEC Region

To promote electronic commerce, improve efficiency and maintain Hong Kong's competitiveness as an international trading centre, the Government of Hong Kong, China introduced the Government Electronic Trading Services (GETS) in 1997.

Since the introduction of GETS and competition in the market, Hong Kong has witnessed the emergence of a critical mass of regular users of electronic services and the following benefits to the trading community -

(a) cost savings in terms of obviating the need for traders/ carriers to print, deliver and store million sheets of paper per year;

(b) higher efficiency and better customer services at competitive service charges;

(c) availability of more value-added services.

In December 2008, new contracts for the provision of GETS were awarded to three service providers through an open tender exercise.

The new term of GETS has been commenced in January 2010, several improvement measures have been introduced, including addition of new pro-competition measures. On the technical improvements, formats of fields common in two commonly used trade documents are standardised and data inheritance function between these two documents is provided in order to maximise the potential of customs facilitation and minimise traders' data input efforts. Besides, IT infrastructure of GETS is upgraded with a view to improving data portability for traders, maintaining high level system performance in anticipation of future demand, and maximising users' choice of service providers in those transactions involving multiple parties.

3.7 Closely Developing Bilateral and Multilateral Cross-border E-commerce Cooperation

APEC has always been concerned about how to promote the implementation of three action plans, namely, the individual action plans, the collective action plans and the economic and technical cooperation programs. Within the framework of the Asia-Pacific Economic Cooperation, all members need joint efforts to carry out the cross-board e-commerce cooperation. In recent years, bilateral and multilateral free trade agreements have been reached one after another among APEC members, all of which involved cross-border e-commerce cooperation.

In 2006 Korea signed free trade agreements with Singapore and the EU respectively; in 2007 Korea signed free trade agreement with the US; Japan and Thailand signed

economic cooperation partnership agreement in April 2007(effective in November 2007). In February 2008, Canada, the United States and Mexico signed the Declaration about Free Information Flow throughout North America so as to promote the development of electronic commerce and on-line transaction. In June 2008, Canada signed free trade agreement with Peru. China-Singapore FTA negotiations were concluded in September 2008, and it entered into force on 1 January 2009. In April 2009, China reached free trade agreements with Peru respectively which covered paperless trading cooperation. Vietnam has made significant progress in paperless trading, positively promoted the bilateral cooperation with the United States, China, Korea, Chinese Taipei and other economies. In multilateral cooperation, it has actively participated in e-commerce activities organized by the United Nations, ASEM and APEC. Bilateral and multilateral cooperation are complementary. In the APEC economies how to integrate better these bilateral agreements, multilateral agreements, free trade agreement is a more complex and important issue that APEC is facing.

3.8 Overall Development Pathways of Policy and Legal Environment in the APEC Economies

Legal and policy environment of paperless trading in APEC economies mainly refers to humanities environment of the economies in the implementation of paperless trading in a general sense. It mainly covers the laws and regulations as well as the policy promulgation and implementation by the government for paperless trading.

Recalling the developments of paperless trading in policy-making and legal environment establishment in the APEC economies, we can summarize the following three development pathways: first, the paperless trading is expanding development domain unceasingly, and deepens from the national development to the internal regional integration and develops smoothly globally through multilateral and bilateral cooperation; second, the development level is increasing. First, to complete the construction of the domestic foundational legal environment, afterwards carry out deeper level of construction in a certain field and finally complete the overall strategic plan in terms of the national intellectualization and promote continuously the E-government; Third, the content of construction is gradually expanding, from the construction of core policies and regulations on paperless trading gradually to the related supporting laws and regulations, and build an overall architecture of law environment for paperless trading through bilateral, and multilateral agreements, the unified action in the free-trade zone, the regional economic organization's cooperation framework as well as establishment of international trade practices and rules.

Since 2006, the vast majority of APEC economies continue to attach great importance to

the legal policy environment for paperless trading, they deepen, improve, and actively explore innovative development on the basis of the original laws and policies, and strive to create a paperless trading environment and have made plenty results on the construction of laws and policy environment for paperless trading. From 2006 to 2009, a total of 15 economies have enacted 62 laws, regulations and policies, with Vietnam (21) and China (15) ranking the first two followed by Korea and Russia. In addition, international economic organizations are also unceasingly creating a good international law environment in terms of the electronic commerce legislation. There are five economic organizations that have issued the relevant international conventions and rules.

In particular, what is worth noting is that some of APEC economies have displayed an active development tendency with a faster development speed, a broader development domain and a higher development level. In general, of the 21 APEC economies China and Vietnam have developed very fast. They have released the massive paperless trade laws and regulations and related supporting policies. Developed economies have a higher level of the original development, in recent years they have largely deepened their paperless trade legislation. For example, the United States focuses on the protection of national network security; Korea's emphasis is on electronic financial transactions law, the protection of the network intellectual property rights and information; Canada has made outstanding contributions in the network security, information protection and cross-border unrestricted flow, the right of privacy protection as well as the free trade cooperation in electronic commerce; Russia attaches importance to the bilateral e-commerce cooperation and carries out relevant cooperation with Europe; Japan pays great attention to fair competition and focuses on bilateral cooperation; Australia, New Zealand and Singapore put forward strategic plans on e-government and intelligence development at the national macro-level, while Thailand, Malaysian, Indonesian, Peru and Chinese Taipei are still on their way to complete the construction of basic legal environment.

Annex: List of legislation of e-commerce and paperless trading among APEC Economies after 2005

Korea	5	E-Finance Transaction Act	2006/4
		Copyright Act	2006
		Framework Act on Electronic Commerce	2006 Secondly revised
		Fair Trade Act	2007
		Act on Promotion of Utilization of Information and Communications Network	2007/7
Vietnam	21	Electronic Transactions Law	2006/3
		Commercial Law (revised 2005)	2006
		Directive No.10/2006/CT-TTg dated 23/3/2006 of the Prime Minister on reduction of administrative documents in state agencies	2006/3
		Decree No.57/2006/ND-CP dated 9/6/2006 on electronic commerce	2006/6
		Decision No. 35/2006/QD-NHNN dated 31/7/2006 of the State Bank of Vietnam promulgating regulations on the principles of managing risks in e-banking activities	2006/7

		Directive No. 14/2006/CT-BTM dated 6/12/2006 of the Ministry of Trade on implementation of the comprehensive plan of ecommerce development in 2006-2010.	2006/12
		E-commerce Agreement	2006
		Decree No.26/2007/ND-CP dated 15/2/2007guiding in details the implementation of the Law on Electronic Transactions in respect to electronic signatures and digital signature certification secret.	2007/2
		DECREE On e-transactions in financial activities No: 27/2007/ND-CP	2007/2
		Directive No.03/2007/CT-BBCVT dated 23/2/2007 of the Ministry of Posts and Telecommunications on strengthening information security on the Internet	2007/2
		Decree No.35/2007/ND-CP dated 8/3/2007 on electronic transactions in banking activities	2007/3
		Decision No.18/2007/QD-BTC dated 22/3/2007 of the Ministry of Finance on printing, issuance, use and management of electronic airplane fares.	2007/3
		Decree No.64/2007/ND-CP dated 10/4/2007 on application of IT in activities of state agencies.	2007/4
		Decree No. 71/2007/ND-CP dated 3/5/2007 on guiding in details the implementation of several articles of the Law on IT	2007/5
		Decision N o. 52/2007/QD - BTC dated 22/6/2007 of the Ministry of Finance issuing the Regulations on application of e-customs procedures on pilot.	2007/6
		Decision No.18/2007/QD-BTM dated 30/7/2007 of the Ministry of Trade on issuing the Regulations on granting of electronic certificates of origin.	2007/7

		Decision No.04/2008/QD-NHNN dated 21/2/2008 of the State Bank of Vietnam on promulgation of the Regulations on granting, management and use of digital signatures, digital certificates and digital signature certification services of the State Bank of Vietnam.	2008/2
		Decision No.20/2008/QD-BTTTT dated 9/4/2008 of the Ministry of Information and Communication on promulgating the list of the norms of IT application in state agencies.	2008/4
		Decision No.891/QD -BTTTT dated 13/6/2008 of the Ministry of Information and Communication on functions, responsibilities, rights and structure of the National Digital Signature Certification Centre.	2008/6
		Circular No.09/2008/TT-BCT dated 21/7/2008 of the Ministry of Industry and Trade on guiding the Decree on e-commerce in respect of provision of information and signing of contracts on e-commerce websites.	2008/7
		DECREE No. 97/2008/ND-CP OF AUGUST28, 2008 on the management, provision and use of internet services and electronic information on the internet.	2008/8
Japan	1	Copyright Law (Law No.53, of June 19,2009)	2009/6
Malaysia	2	Electronics Transactions Act	2006
		Electronics Government Activities Act	2007
Russia	4	E-commerce-Law	2006
		Civil Code principles (tbc)	2006
		Personal Information Law	2007/1
		2008 № 52 <About introduction of information technology of representation to customs authorities of data in the electronic form for customs registration of the goods, including with use of the international association of networks" Internet ">	2008
Australia	2	2006 e -Government Strategy, Responsive Government: A New Service Agenda	2008

		Content Services Code	2008/7
Peru	1	Plan on improving trade environment	2009
New Zealand	1	E-government Strategy(updated)	2006/11
Singapore	2	Computer service -Section 86 of the Customs Act	2004 Revised Edition
		Electronic Transactions Act	2004 Revised Edition
Indonesia	3	Trade Law	2006
		Electronic Information and Transaction Act	2008/3
		E-money Regulations	2009/4
Chinese Taipei	3	Computer Network content rating approach	2006/1
		Amendment to the Copyright Law	2009/4
		The draft rules of management of e-ticket	2009/6
Hong Kong, China	1	Copyright (Amendment) Bill 2009	2009
USA	1	Comprehensive National Cybersecurity Initiative: Legal Authorities and Policy Considerations	2009
Canada	2	Report on “the Review of PIPEDA”	2007/5
		Report on “To stop junk e-mail: create a stronger and safer internet”	2007

Part IV Benefits Analysis of the Paperless Trading (Benefits Analysis)

In carrying out cross-border trade, paperless trading has played a significant role in various phases of trade development, meanwhile trade has brought benefits to all participants from multiple angles and at different levels. Based on the data provided by the

United Nations Conference on Trade and Development, international trade on average involves 27 to 30 different participants, and needs to deal with 40 documents and 200 data units, of which 30 items need to be repeated at least 30 times, and 60% to 70% of the data need to be re-typed one or more times.

Through the implementation of paperless trading, you can reduce the volume of paper documents printed; cut down communication costs; reduce errors caused by the computer entry; decrease the cost of trade financing; shorten trading time; reduce human resource inputs in the process of trade; shorten transit time, thereby reduce transportation costs, and lower inventory level and costs.
Settle payment

Trade process begins with business communication and negotiation, and then involves order processing and handling, logistics, customs clearance, until accounts settlement. In this process, the trade participants include: private sector and government agencies. For example, the private sector includes enterprises, logistics service providers, banks, insurance companies and other commercial organizations, and the government agencies include the Customs, Commodity Inspection, Foreign Exchange Administration, and other public service departments. To expound more specifically the benefits of paperless trading, this report makes analyses from two perspectives of trade process and relevant parties respectively, and pertinently puts forward some assessment indexes for subsequent quantitative research.

The benefits of paperless trading to relevant parties can be measured by comparing the effects of the paperless trading platform before and after its use, thereby assessing the value of paperless trading platform. It also can be reflected by the difference of effectiveness and efficiency whether a number of trade participants adopt paperless trading platform or not.

4.1 Benefits Analysis of Paperless trading from Trade Process Perspective

4.1.1 Business Communication and negotiation

Business communication and negotiation are main business activities for paperless trading participants to exchange information. Paperless trading can reduce business communication costs, improve communication efficiencies, and facilitate negotiations. The

implementation of paperless trading can bring about benefits to all trading parties in the following aspects:

- Real-time communication. Time limit is eliminated so that trade participants in different regions can choose their own convenient time to make business communication.
- Facilitation of communication tools. With the development of a variety of new wireless technologies, business communication can be made at lower costs.
- Business cost savings. Business Communication and non-physical transactions may incur considerable expenses in communication, mailing, etc. but on paperless trading platform trading participants can easily communicate at very low costs.
- Dramatic improvement in business efficiency. In particular, the efficiency of business negotiations and the speed of concluding a deal can be improved. For those trade partners who are geographically far apart but follow the same trading rules, business efficiency improvements can be more significant.
- Maintaining and accurately recording the processes of business communication and negotiation, and identifying the real intention of both trade parties. When both parties to a transaction have disputes, this communication records can be used as evidence.
-More business opportunities. As communication costs are gradually reduced and communications are becoming more convenient, an increasing number of enquiries will come resulting in more business opportunities.

The measurements for paperless trading benefits in business communication and negotiation are:

- The negotiation cycle
- Transaction rate
- Number of enquiries
- Marketing and promotion expenses
- Communication costs
- Availability of information on trade parties' credits

4.1.2 Order processing and handling

- Information is accurately documented. Order requirement from the buyer and confirmation from the seller are accurately written down, so that the trade process is more precise.
- Electronic documents substitute paper-based ones making costs of documentation greatly reduced. In the course of trade, the participants need to make out a large number of documents, such as confirmation, contract, invoice, etc. Some items are repeated quite a lot. The application of paperless trading can reduce duplication in the process of making out documents.
- With more usage of electronic documents, the workload for handling each order will be reduced, and human resources can be saved.
- Increase the transparency of data on inventory and accurately analyze the availability of

the goods ordered.
- Easy to find and obtain supply and sourcing information, facilitate information flow among the upstream and downstream firms in a supply chain.

The measurements for paperless trading benefits in order processing and handling are:
- Documents making error rate
- re-keying times
- Documents making speed
- Reduction in labor cost
- Savings in paperwork printing costs
- Savings in paperwork delivery or mailing costs
- The time for applying for export licenses (from application to approval)
- Inventory information visualization
-Sourcing cycle
- Sourcing quantities

4.1.3 Logistics and Transportation

- Information is accurately documented to ensure correct delivery of the goods.
- Improve on-time delivery rate.
- Multi-party participation to facilitate supervision. On paperless trading platform, the business changes of carriers and freight forwarders can be reflected on a real-time basis. The whole trading process is transparent. Visualization can be achieved in logistics process.
- Reduce the cost of making out documents.
- Improve efficiency and reduce inventory costs.
- Control cargo transportation on a real-time basis and improve the ability of risk control.

The measurements for paperless trading benefits in logistics and transportation are:
- Documents making error rate
- re-keying times
- Documents making speed
- Visualization
- Synergy efficiency of a number of participants
- Inventory Cost
- Inventory carrying cost
- Inventory turnover (total inventory / average inventory)
- Time spent on goods in port
- Accurate delivery rate
- Just in time delivery rate
- The time needed to get a bill of lading after loading of goods
- The time for receiving shipment advice

- The time spent between covering insurance and getting the insurance policy

4.1.4 Customs declaration and clearance

- Improve transparency in customs procedures, administration and reduce corruption.
- Improve the consistency of the documents for customs declaration, ensure the compliance among documents, licence and goods, and reduce customs declaration error rate.
- Meet the requirements for cargo inspection. Before arrival of the goods, an advance examination of the cargo manifest is required to improve customs clearance security.
- Coordinate different departments related with customs clearance, including the Customs, commerce departments, foreign exchange administration, inspection agencies, banks, and other relevant departments. The customs clearance flow should be transparent and open.
- Integrate business process and save materials and manpower.
- Precisely determine document consumption, and make double improvements in efficiency.
- Facilitate the timely statistics of import and export data.
- Paperless trading platform makes it easy to extract relevant data for multi-angle and multi-dimension analyses.
- Strengthen supervision and reduce fraudulent practices.
- Solve security problems with respect to cross-border trade and reduce risks through information integration with government authorities, including those domestic or foreign agencies in areas of taxation, foreign exchange administration, import and export administration and commodity inspection.

The measurements for paperless trading benefits in customs declaration and clearance are:
- Customs declaration error rate
- Time of goods in the bonded area
- Percentage of customs transit time in the total transit time
- Lead time of goods staying in the port, Customs and bonded area
- Total time spent on customs clearance
- Improvement in the time spent on customs clearance
- Time needed from customs declaration to customs clearance
- Reduction in time spent responding to customer requests and complaints
- Increase in timely provision of services
- Documents to import
- Signatures to import
- Time to import (days)
- Cost to import

- Documents to Export
- Signatures to Export
- Time to Export (days)
- Cost to Export
- Inspection time
- The ratio of customs clearance cost in selling price
- The ration of customs clearance cost in the cost price
- Use of EDI for import cargo clearance in thousands of cases
- Internet portal utilization rate for submission of paperwork in percentage of total submissions
-All the electronic transacted documents between economies worth (USD)
-The percentage of repetitive transactions concluded through paperless trading in total transactions
- Commodity inspection cycle
- Time needed to apply for commodity inspection certificates
- Time needed to apply for a certificate of origin
- Time needed to process dutiable commodities permit applications
- The number of customs fines occurrences (if the number is declined, it may prove that the data comply with customs requirements better than before.)

4.1.5 Payment process and management

- Reduce duplicate entry, transfer information faster. It is more reliable for payment and can increase trade opportunities.
- Shorten the time of payment, effectively speed up the flow of capital, reduce the impacts on the time and expenses needed for money transfer , increase the proportion of available funds and accelerate the flow of capital.
- Eliminate barriers of time and place in the payment process and management, achieve an all-weather control of funds, and provide cross-bank services to enable customers to enjoy services offered by different financial units which can improve the quality of banking services and achieve diversification.
- Improve the capabilities of controlling capital risks, utilize EFT for electronic payment transfer, reduce the traveling time for its customers to and from financial units as well as cash flow risks, shorten the processing time for capital flow, improve the customers' flexibility in capital movement and effect fast and reliable payment; take advantage of the third-party credit guarantee institutions and credit management system, and effectively control payment risks.

The measurements for paperless trading benefits in payment process and management are:

- Time needed for payment processing

- Document making error rate
- re-keying times
- Document making speed
- Financing cycle
- Bad debts / bad debts ratio
- Ease of financing
- Mode of financing (financing and logistics coordination)
- Accounts receivable management
- Capital control flexibility
- Risk controllability
- Time needed to open an electronic letter of credit
- Time needed to negotiate a letter of credit
- Time needed to prepare a full set of documents presented to a bank for payment (certificate of origin, inspection certificate, invoice, Bill of Lading, draft, packing lists, shipping advice, insurance policy)

4.2 Benefits Analysis of Paperless trading from Participants Perspective

4.2.1 The benefits of paperless trading to participating enterprises

Various businesses can benefit from paperless trading.
- Minimize the constraints of time and space in import and export procedures;
- Reduce the cost of carrying out formalities and improve the efficiency;
-Achieve online shipping space booking, online insurance, online payment, etc; a variety of declaration procedures can be conducted online.
- Improve the level of supply chain integration for enterprises to gain opportunities for competition.
- Obtain transparent and relatively stable services. If paperless, all formalities associated with customs declaration and clearance can be carried out on the internet with a more transparent process than the traditional manual way. With the electronization of customs clearance process, many of the rules will become more stablized and be fixed during a relatively longer period.
- Get easier to acquire trade-related financing services. The emergence of electronic bills of lading makes it more convenient for companies' financing. On one hand, electronic bills

of lading facilitate supervision; on the other hand, the efficiency of processing documents will also be further enhanced.
- Collect real-time information on the location of goods in transit, tariff rates and so on.
- Reduce the errors in data entry and re-keying times.

4.2.2 The benefits of paperless trading to small and medium-sized enterprises

-Enjoy the benefits of process simplification. In the traditional paper-based customs clearance process, the small and medium-sized enterprises may be fined because customs declaration process or requirements for filling out the forms are not very clear. To avoid this situation, most small and medium enterprises tend to outsource customs clearance to brokers. After implementation of paperless trading, simplified and transparent processes will lower customs clearance costs. Even if customs brokers are still used to deal with customs clearance, relevant costs will decrease too. As the whole process will become computerized in paperless trading, an error, if any, can be pointed out by the system, so small and medium enterprises can be exempted from these penalties. It allows small and medium enterprises to clear customs in- house, thus saving on fees paid to customs brokers.
- Utilize electronic letters of credit, electronic bills of lading to finance more quickly. Small and medium enterprises often face financial constraints. Paperless trading can allow them to use electronic letters of credit and electronic bills of lading to apply to banks for loans.
- Shorten the time for small and medium enterprises to obtain export rebates. Enterprises need to submit a large number of documents to apply for export refund, but after the implementation of paperless trading, the time from customs clearance until payment is made is shortened. The relevant agencies can work jointly through a single window, and businesses will be able to conduct procedures and obtain tax refunds more rapidly.
- Shorten transportation cycle, while reducing the funds being tied up. The implementation of paperless trading will greatly reduce the transit time of the goods, thus the funds used in the trading process.
- Reduce discrimination against small and medium enterprises in the course of customs clearance.

Measure:
- The proportion of customs clearance outsourcing
- Changes in customs fees
- Limit of loans against Cargo Manifest
- Limit of loans against Bill of Lading
- Number of days for export rebates
- Change in arrival time of the goods at destination

- Cash flow situation in a firm

4.2.3 The benefits of paperless trading to large enterprises

- Save human resources.
-The process of EDI implementation may help companies realize process reengineering, reduce unnecessary links and improve overall operational efficiency of enterprises.
-Paperless trading can simplify customs clearance procedures and improve the operational efficiency of multinational companies.
-Paperless trading can improve the efficiency of information flow in a supply chain; reduce market risks triggered by delay in information transmission.
- Enterprises in a supply chain can achieve effective information sharing by EDI. Paperless trading will simplify the trade process and improve efficiencies of enterprises in different economies and regions.

Measure :

-The number of staff engaged in customs clearance
-The number of staff engaged in accounts settlement
- Business overhead cost
- Lead time (from supplier's acceptance of an order to purchasers' receipt of the goods)
- Key products' production preparation cycle
-Savings on manpower
-Import and export processing cycle

4.2.4 The benefits of paperless trading to banks

-Save on business overhead costs, involving document printing, notification and reception to business employees and so on.
-Prevent frauds from happening. Electronic documents allows for data verification in many ways to prevent fraud.
-Keep abreast of goods on a real-time basis and assist in financing decision through paperless trading.

Measure:
- The number of employees handling letters of credit
- The number of documents printed (letter of credit, certificate of origin, invoice, packing list and bill of lading)

4.2.5 The benefits of paperless trading to insurance companies

- Cover insurance through the network and save human resources.
- Prevent frauds happening. Networks and electronic documents can make it easier to monitor and verify the information on goods, vessels, transportation and authenticity of trading, and examine the consistency of all information, thereby prevent frauds more effectively.
- Keep abreast of goods in real time through paperless trading and support the decision-making in insurance coverage and claim settlement.

Measure:
- The number of frauds
- Time needed to arrange for insurance
- Time needed to prepare for claim settlement

4.2.6 The benefits of paperless trading to government authorities

The government authorities involved in cross-border trade encompass the Customs (import and export declarations), Commodity Inspection Bureau (commodity inspection and quarantine), Tax Bureau (export tax rebates), Foreign Exchange Administration, Commerce Department (Bureau) (licenses, quotas) and so on.
- Information sharing for easier statistics.
- Safe and reliable systems and data.
- Promote operational efficiency, and enhance the good image of the government. Speed up cargo customs clearance, improve service capabilities, and lift government's image on the international stage.
- Unify management of data and prevent frauds. Paperless trading platform is built based on the relevant legislation and rules of customs clearance and the handling of trade process will keep high consistency. This will fundamentally put an end to human factors, and prevent the occurrence of various frauds.
- The unified electronic port is conducive to enhancing the overall performance of governments. In particular, it is to enable government departments to make enforcement of administrative laws more standardized, uniform, and transparent. Various departments

are restrained and supervised with each other. Contacts of businesses with Customs officers and other law enforcement personnel are minimized, thus reducing and preventing corruption with a good mechanism.

- Improve supervision and control by the Customs over commodities. Through electronic cargo manifest submission and the visualization management of goods, the Customs can know the condition before the arrival of goods. According to the pre-established goods classification management system, the goods with different security levels will be treated separately. This, on one hand, can boost the efficiency of general merchandise clearance, on the other hand, can improve the capacity of the Customs in supervision and control over the goods.
- Strengthen tax administration. Supervise and control the bonded goods, especially those in the Free Trade Zone. Avoid inconsistency in name of commodities for import and export, improve consistency in customs declaration and guard against tax evasion.
- Make trade data submitted by participants strictly conform to the requirements of the Customs and other government authorities, eliminate non-standard data entry, reduce errors, increase accuracy of the data submitted, improve audit efficiency, and meet supervision and audit requirements.

Measures:

- Service quality improvement
- Increased customer satisfaction
- Reduction in customer request for improved service
- Reduction of inferior service
- Complaint Rate
- The Visualization proportion of cargo clearance
- The proportion of the goods to achieve a pre-clearance
- Cargo clearance time
- Re-keying times
- Data error rate
- Time needed for the Customs to check documents
- Time needed for the inspection department to issue certificates
- Approval time of Commerce Department and other departments

Part V Pathways to the Application of Paperless Trading

5.1 Application Mode

Application mode refers to the fact that paperless trading examines the optimization degree of business processes, the innovation of contents and service innovation organization mode from business model, technical programs, organization management, etc., whether each application mode operates effectively, and the degree of its adaptation to the economic and social development of the economic body in which it is applied.

The application of paperless trading in a sense is carried out in the enterprise-centered microcosmic area. It involves many procedures of the international trade such as the conclusion of transaction, the delivery of goods, payment, administrative examination and approval, and the entry of goods. The application mode of paperless trading is diversified and can be studied from different perspectives. It varies with the different situations of APEC economies.

We can examine the paperless trading application mode of each economy from different perspectives.

As far as the content of transaction is concerned, the application mode can be classified as commodity-trade-oriented application mode and service-trade-oriented application mode. The former focuses on the transfer of ownership of goods. The application of paperless trading is involved in all the procedures of the traditional trade such as the delivery of goods, payment, administrative examination and approval, and the entry of goods. The latter focuses on the application of paperless trading in the area of service trade which is different from the traditional trading of goods. The service-trade-oriented application mode puts its emphasis on the supply of services. In fact, many innovations on the paperless trading are concentrated in the service trade, because although the Internet can not take the place of the actual delivery, it can improve the method of service, the content of service and the other areas, and even change the traditional content and method of service. The more developed an economic body’s service trade is, the more maturity and popularity the service-oriented application will reach. Consequently, more relevant innovations will be made.

As far as technology is concerned, the application mode of paperless trading can be

classified as private network application mode, open Internet application mode, and mobile business application mode. From this perspective, we can come to know the technical pathways and the application pathways to paperless trading. Private network application mode is the earliest application mode of paperless trading. Regardless of the developed economies such as the United States and Japan, or the emerging developing economies in APEC such as Singapore and Korea, the application of their paperless trading all began with the private network application mode. Private network application mode developed on the basis of EDI standards at the earliest. The technical realization of their commercial data transmission depends mainly on the highly corresponding closed EDI standards. Network infrastructure is relatively closed as well. Although Private Network application mode can avoid many costs of coordination and provide high security, the application cost inclusive of the establishment of standards and a large number of network infrastructures is very high. The open internet application mode which appeared later cast off the original isolated information exchange system. It changed from the high-cost private network mode into the open Internet application mode. The popularity of the Internet provides much convenience for a wider range of business data exchange. At present, paperless trading application in many economies has been gradually shifted to the open Internet system. Based on the open Internet application mode, the mobile business mode is more miniaturized and easier to use. The personnel mobility of enterprises can not hinder the application of paperless trading any longer. The emergence of mobile business application mode shows the trend of innovation in the area of paperless trading and has a wide application prospect.

As far as the application areas are involved, the application mode of paperless trading can be classified as administrative applications application mode, customs clearance application mode, and the mode of cross-border transaction. Some economies such as Singapore and Korea prefer administrative applications mode, while other economies such as Hong Kong, China, China prefer customs clearance mode. In addition, many economies including China are exploring the mode of cross-border transaction, because the goal of the development of paperless trading is to ultimately establish a global cross-border trading system and trading platform, to achieve seamlessly efficient transmission of business documents and business information. In the developed economies, the general cross-border transmission of trade documents mainly depends on industry and large multi-national Corporations' internal network service system. Multinational Corporations usually take advantage of their leading position to make many small and medium-sized enterprises get attached to their trade networks. At present, the realization of cross-border transactions mainly relies on the service provided by value-added network service providers. However, it requires the governments of all the economies to coordinate with each other because such cross-border application calls for the effective co-ordination in standards, interests, and etc.

5.2 Development Mode

From the use of EDI in 1970s to the emergence of the Internet in 1990s, the application of modern information technology has been involved in all aspects of the business area. The application of modern information technology is driven by two factors. One is the corporate power, and the other is the government power. What the enterprise is concerned is to build up their own competitive advantage, the controllable value chain system so as to maintain their own long-term advantages. The basic strategies are to reduce costs, increase efficiency, and create means of competition different from other enterprises. Apart from macro adjustment and control, the government should take the economy's competitive advantage into consideration as well. The basic starting point of the government is how to create an environment for the society to run with high efficiency and at low cost so as to create a favorable environment for the economy's enterprises to operate in the international market, and thus enable the country to obtain national competitive advantage in the international market and gain benefits for its companies and citizens.

The Governments of the APEC member economies are increasingly aware that modern information technology can bring economic benefits to the whole society. They are making good efforts to promote the application of paperless trading. However, owing to the differences in their levels of economic development, market structure, the role of government in the economy, the application mode of paperless trading varies in different economies. Some governments play a leading role in pushing the application of paperless trading, the other governments put more emphasis on the role of enterprises in pushing the application of paperless trading with the Government just to create a good regulatory environment. In the APEC member economies such as the United States and Japanese, the government mainly eliminates barriers to enterprises' application of paperless trading by making macro-policy and perfecting the regulatory environment. While in other economies such as Australia, Singapore, Korea, and Hong Kong, China, government plays a leading role in pushing the application of paperless trading. Government makes investment in Internet trading service institutions, and practices the paperless trading by starting with the government's administrative examination and approval, and documents approval, and usually authorizes the institution to implement the authentication, data exchange, and other paperless trading applications.

The application mode of paperless trading in APEC is divided into three types: government-led mode, government-backed mode and enterprise-led mode.

5.2.1 Government-Led Mode

The Government-led mode refers to the fact that the government plays a leading role in the application of paperless trading. Usually government agencies are highly involved in the establishment of internet trading service institutions by either wholly owning it or taking a large proportion of the shares. For example, the Hong Kong, China, government takes a 12% stake in Tradelink Hong Kong, China. China International Electronic Commerce Center is a service institution wholly owned by the government. The KTNET of Korea, an internet trading service institution, is established wholly by Korea's trade association. The Government's Financial Department takes a 37% stake in Chinese Taipei's TRADEVAN.

5.2.2 Government-Baked Mode

Government-backed mode refers to the fact that although the government is not directly involved in investment, it is an important participant. Australia sets up a non-profit institution TRADEGATE, whose members include government agencies and industry associations, etc. The Australian Government does not directly interfere in the application of EDI customs clearance which is instead pushed by the relevant industry associations.

5.2.3 Corporate-Led Mode

Corporate-led mode refers to the fact that the government is less involved in the specific application of paperless trading, instead, the enterprises or the industry push forward the application of paperless trading. For example, Japan's TEDI is a service institution established by the trade association and the leading Japanese trading companies in service. By and large, the application of paperless trading in USA is mainly pushed by the industry or large multinational corporations as well. In this mode, the government tries to create a good environment by reducing intervention.

It is difficult for us to draw a conclusion that one implementation mode is better than others as different government plays a different role in the application of paperless trading. According to our analysis, the role of government in the application of paperless trading is affected by the following factors:

1. The structure of corporation

In many developed economies such as the United States and Japan, it is the large

multinational corporations that play an important role in the economy. In fact, these corporations have attempted to apply the information technology inside and among companies, and transmit Commercial documents by making use of computer network technology since 1970s and 1980s. EDI was first used inside and among the companies and became the cross-border business data exchange. These large multinational companies widely used electronic means to deliver business data for intra-corporation trade. In addition, they also took their competitive advantage to force their trading partners to apply paperless trading, for instance, to transmit orders, commercial invoices and other commercial documents. Our research shows that the more powerful the large enterprise is in the economy, the stronger desire the enterprise will have to push the application of paperless trading. For example, Wal-Mart of United States set up its competitive global supply chain system with its global electronic order system and logistics information system. For economies possessing many small and medium enterprises, as there are no large enterprises playing a leading role, the application of paperless trading mainly relies on the efforts from the government. For example, in Hong Kong, China, Singapore, Chinese Taipei and other emerging developing economies, governments have adopted various initiatives to facilitate small and medium enterprises to adopt paperless trading to enhance operational efficiency.

2. The structure of market

The developed economic bodies are usually the buyers in the international market. For example, the United States ranks top among the world's major trading nations and the APEC member economies. The other developed economies are in the similar situation. Affected by the economic globalization, the rational practice of the procurement, production, and sales propelled by large manufacturers has led to the rapid increase in volume and scale of business transactions between headquarters and overseas outlets of the large multinational companies in these economies. The internal trade even accounts for more than 90% of their overall business transaction.

As for the transactions inside and among companies, it is easy to apply paperless trading as fewer problems of coordination are likely to appear. Furthermore, these large multinational companies have a deep understanding of the benefits that the paperless trading, therefore they actively push forward the networking between their headquarters and their overseas locations. At present, many large multinational companies own the global purchasing system. In the fierce market competition, in order to maintain their dominant position in the international market, they have all established their own global supply chain system. This requires its global suppliers to provide goods at the lowest cost and in the most convenient way, which forces many developing economies to actively apply paperless trading. For example, the United States buyers require that all suppliers must have the capacity of electronic data exchange, and the needs of logistics must be met with through the interaction of electronic means. This almost becomes the usual

practice of the large multinational companies.

3. Competitive advantage of nation

With the popularity of the Internet, network technique has become the basic infrastructure for global business. Many emerging developing economies make their efforts to improve their own competitive advantage of nations by applying paperless trading. First of all, the application of paperless trading can maximize the cost of the whole society, and thus increase the efficiency of the resource utilization. Secondly, the application of paperless trading pushed by the government can achieve remarkable results, because the government departments can play a leading role. Improving the paperless trading environment can provide the enterprises with trade facilities, and thus make innovations on management, mechanism, system, operation and other aspects to the utmost extent. Thirdly, the application of paperless trading pushed by the government can enhance the economy's overall efficiency. Owing to their relatively high trade dependency, emerging developing economies such as Hong Kong, China, Singapore, Chinese Taipei and Malaysia, are making their efforts to gain their competitive advantage through the application of paperless trading.

5.3 Degree of Integration

The benefits of applying paperless trading come from the integration of different divisions. In the original EDI mode, the paperless trading was mainly carried out through the exchange of business data between two large enterprises. The exchange of data is relatively easy to realize and does not involve the complicated standards and the services from a third party, therefore the benefits of paperless trading are not very prominent. As a result, paperless trading in 1970s was mainly applied within the enterprises, and the main purpose was to improve the efficiency of the enterprise’s internal operation. With the rise in the application level of the information technology in the whole society, the application of information technology begins to stretch out of the enterprise. This calls for the information integration of the whole society.

Integration consists of two aspects: sector integration within an economic body and cross-border integration. Sector integration within an economic body: in fact the inter-enterprise business data exchange based on computer emerged at the end of 1960s. In the late 1980s, with the continuous improvement of network infrastructure as well as the formation of EDI standards, some Value-added Networks specializing in providing commercial data transmission services for business-to-government (B2G) and business-to- business (B2B) appeared. The formation of value-added service networks helped to develop the bilateral commercial data transmission of B2B, B2G in the trading chain into a multilateral data exchange network system which revolves around

value-added network service providers in operation. Value-added network service providers actually become a data exchange center to provide transmission and certification services for B2G and B2B.

For many economic bodies, their value-added network services all started from the government's administrative services and customs clearance. For example, SNS (Singapore Network Services Company, now known as Crimson Logic), the earliest net-work service company established by the Singapore government was created in March 1988 to develop and operate the TradeNet system - world's first Single Electronic Window. Tradelink and two other service providers in Hong Kong, China, started to provide electronic services from the Government's administrative services. The application of paperless trading often starts with the government and the Customs. This is mainly based on two considerations: First, the government and Customs are often an indispensable link in the international trade chain, and the requirements of trade data exchange involve higher standardization. Secondly, the government and Customs are generally the demand side of the commercial data, not a provider. The data that the enterprises provide to the government and Customs are largely the raw data, and are used repeatedly.

Beginning commercial data integration from government agencies and Customs helps to increase data transmission efficiency, and avoid errors and omissions brought by duplication data. However, there are also some economic bodies beginning to integrate data from the application of paperless trading between companies.

Therefore, examining the integration pathways of paperless trading in the member economies of APEC, two pathways are found. The first is to the integration from the e-government, such as customs clearance and the administrative examination and approval to the national multi-sectors; the second is the integration from the application of paperless trading among the enterprises or industries to the domestic multi-sectors. The former takes Singapore, Hong Kong, China, and Korea as its representative, while the latter is represented by the United States and Japan.

The implementation of paperless trading is not a matter with a single department, but requires the integration of a number of departments. In addition, the degree of integration is related directly to the benefits brought by the application of paperless trading. It should also reflect the degree of the application of paperless trading on the on hand.

Cross-border integration: the realization of cross-border integration in paperless trading calls for the promotion and efforts from all the economic bodies. At present, although efforts are being made to realize the transmission of commercial data inside, among and outside various economic bodies, it is still testing the water. The relatively good cross-border integration we have seen is highly specialized and majorly realized within the enterprise and industry such as international transport and banking settlement. Currently,

the applications based on enterprise are mostly carried out within large multi-national companies. These companies are establishing their own internal network system based on international Internet solutions so as to program the commercial data transmission and exchange from the perspective of the supply chain.

Currently, barriers to the cross-border integration mainly come from two areas: One is the standards. It refers to the commercial documents and the transport protocol standards. The other is the cross-border coordination. It refers to the effective coordination among the governments. The government of each economic body should overcome the obstacles in these two areas, and create an effective paperless trading environment.

From our review, we can see that although the industry integration of large multi-national companies plays an important role, owing to the limited ability of the enterprise, there are still some obstacles to standard data exchange existing among different economic bodies as well as different administrative departments. This is what we should be concerned.

It is notable that paperless trading coordination organizations, like PAA , Pan Asian e-Commerce Alliance, play an increasingly important role in the cross-broad integration in APEC. Although the integration of cross-border exchange of business data is far more difficult than that at home, the cross-border paperless trading data exchange is in its trial. At present, the above alliance boasts 13 member economies in Asia the Asia and has accumulated nearly 150,000 institutional clients through the paperless trading services among the 13 members. Its business has covered all trade markets in Asia.

Part VI Development Proposals in the APEC Paperless Trading

6.1 The Latest Development Trends in APEC Paperless Trading

First of all, the developed economies have largely achieved the basic application of paperless trading, while developing economies are making improvement, strengthening capacity-building. Since 2005, the APEC members have made certain achievements on the IT environment construction, regulatory environment construction, intellectual property protection, governments' support and investment, coordination with departments and so on. Further more, all member economies promote paperless trading and the implementation of single window actively through the co-operation and participation in activities of international organizations. Coordination and cooperation of cross-border international organizations, as well as the preliminary attempt and practice of cross-border paperless trading provides a good development prospects for the development of paperless trading.

In recent years, the latest trend of APEC paperless trading development is reflected in the following aspects:

6.1.1 The realization of paperless trading depends on integration of commercial data using the global supply chains as the main line.

The realization of paperless trading depends on data exchange between the different commercial institutions, commercial and public service agencies, as well as government and other non-commercial public service. The reason why trade efficiency is low is, in these institutions, methods and formats of business documents preservation are different, so that trade-related documents transactions is very complicated and complex, which results in low efficiency in trade. These institutions spend a lot of manpower, material and time to rearrange files and input business data in computer. Therefore, in order to enhance trade efficiency, there is a need to integrate information in global supply chain. At present, some economies have offered the corresponding service, integrated business data exchange with supply-chain as the main line.

For example, in Hong Kong, China, the DTTN (Digital Trade and Transport Network), a business-to-business e-platform for data exchange and data processing amongst parties along the supply chain, started operation in 2006. The system provides a neutral, secure and open platform to deal with interchange issues of electronic documents of different formats.

Government of Singapore in October 2007 launched TradeXchange project. The project is a neutral and secure trade platform, whose goal is to provide business data exchange service to companies in trade and logistics supply chain. It provides seamless network connectivity to trade and logistics sectors in the commercial and regulatory systems.

Korea's KTNET as data change and service platform of paperless trading has completed the electronic services from the customer information to electronic logistics system; from a single customs clearance procedures to the entire electronic trading process; From the information services of port to the bank's electronic service, whose services have been involved in each link of global supply chain.

The Thailand government in 2006 launched the ASEAN Single Window initiative (Asean Single Window Initiative), led by the Thailand Customs to promote trade facilitation, and the concrete implementation of Thailand's logistics development plan (Thailand Logistics Development Master Plan). The initiative and plan is to implement information integration of the customs, government approval agencies, transportation, logistics and traders.

6.1.2 The simplification of trade procedures and paperless trading shows trends of regionalization and regional integration.

The implementation of paperless trading requires the coordination and integration between sectors, which is very difficult in many economies. Business data exchange and integration system may encounter constraints and barriers. If the interests of the various departments can not be effectively co-ordinate and protected, it is difficult to integrate information of paperless trading. Therefore, how to coordinate interest within an economy, as well as different conflict between the economies is the key issue of the implementation of paperless trading.

What is heartening is that we have seen integration platform emerged within regional or regional in the economy. For example, in Shanghai, China, in order to be able to enhance the regional trade competitive advantage, through the coordination of trade participants, and various public services, local governments has established a cross-sector integration of paperless trading platform (Shanghai billion-pass), in order to realize single window within the region. In Beijing, China International Electronic Commerce Center shifted their work to the construction of a regional e-commerce platform. CIECC has cooperated with a number of provinces in Mainland China in accelerating e-government, integrated network resources, accelerated the construction of comprehensive e-commerce service platform, built comprehensive certification system of e-commerce CA, Online payment system, cargo insurance system, modern logistics support system and e-commerce support services system, provided effective services to support creation of conditions for regional and social enterprises to develop various e-business applications in various fields, in order to achieve a real sense of regional e-commerce.

In addition, we have also seen that paperless trading cooperation has achieved outstanding results in the region with similar culture, trade, or the geographical proximity. For example, paperless trading and a single window in the ASEAN economies have developed rapidly. Many economies, in the negotiation of free trade agreements, consider trade facilitation and promotion of the implementation of paperless trading as an important part of the agreement. That reflects regionalization and integration trends of the development of paperless trade.

6.1.3 Electronic data interchange of cross-border paperless trading began to be realized

Electronic data exchange of Cross-border paperless trading is the highest stage of development of paperless trading. In different countries or between different economies paperless trade data exchange need government co-ordinate and recognize the legal validity of electronic documents. Such cross-border coordination, consultation and integration do not only involve interaction between departments, but also mutual cooperation and collaboration of networks value-added services related to paperless trading. The realization of paperless trading sooner or later depends on cross-border exchange of data, in order to show the overall effect of the implementation of paperless trading. Fortunately, in recent years, thanks to many efforts, especially the Pan-Asian E-Commerce Business Alliance (PAA), cross-border paperless trading data exchange has made substantial progress.

For example, in November 2008, Chinese Taipei and Korea signed an agreement between the Governments, recognizing the electronic certificate of origin transmitted through their respective paperless trading platform. August 2009 Chinese Taipei and Korea officially opened a certificate of origin and mutual recognition of electronic transmission. Exporters transmit, receive and a recognized electronic certificate of origin on internet, also can submit the electronic certificate of origin to the Customs. Although the current certificate of origin does not hold a mandatory electronic exchange, but it has marked the cross-border paperless trading has crossed a new milestone. It is expected that there will be more economies attempt cross-border paperless trade data exchange.

6.1.4 Paperless trading promoted by the government shows a market-based trend gradually

Initially, the promotion of paperless trading is made by the government, which aims to enhance the efficiency of public services, such as Tradelink Hong Kong, China, Singapore Crimsonlogic, Chinese Taipei TradeVan, Korea's KTNET are started from improvement of the customs and other government services. China has launched in 90 years Golden Gates Project, established China International Electronic Commerce Center, to promote the building of China E-Port. These organizations are government-funded, relying on public services, to establish information integrated paperless trading platform.

With the popularity of the network and services, private and public service partners begin cooperating, for example, Tradelink Hong Kong, China and commercial private sector Alibaba establish partnership to begin the commercial market-oriented services; Chinese Taipei has also taken the road of the market to provide integration services for Chinese Taipei's supermarket distribution industry. China International Electronic Commerce Center set Trade2cn website to provide trade opportunities and international trade management processes online services to China's trade enterprises. The Government of Japan as early as 1977 has started automatic customs procedures (NACCS) construction, the project funded by the Ministry of Finance, at first provided services of trade flow , now offers international cargo customs clearance and integrates the management of port, establishes a national single window. 1 October, 2008, the organization is all privatized and renamed, Nippon automated cargo clearance system has become Nippon automated cargo and port consolidated system, began to integrate the logistics system. In April 2008, the system has joined the PAA, has now become a public portal (common portal) of paperless trading, promote the realization of single-window mode.

As a result, we can see that the development of paperless trading has changed from the public service platform to the private sectors. Even economies where paperless trading developed earlier , such as Hong Kong, China and Singapore, have introduced new paperless trading network service providers, the government has gradually promoted marketization of public service areas, with particular emphasized on cooperation of private and public service partners, promoted the market construction, in order to promote efficiency and build long-term paperless trade development mechanism.

6.1.5 Regional cooperation of paperless trading emerges on the global and regional platform

Pan Asia e-Commerce Alliance (PAA) first promoted electronic data exchange and cooperation of cross-border paperless trading. The organization was founded in July 2000, is Asia's cross-border regional enterprise-class e-commerce co-operation organization, aims at the use of safe, reliable and high value-added information technology for the Asia and global traders and logistics companies, providing cross-border electronic trade services. Alliance promotes the Asian and global e-commerce and the development of logistics services, takes a dominant position in the trade documents transmission projects, pay effort to achieve cross-border transmission of the certificate of origin, and customs Clearance Form B2G trade-related instruments, also expand electronic trading services to the financial and logistics areas, builds a comprehensive basis for the pan-Asian trade portal.

Based on the development model of PAA, in 2004, Korea, France, Germany and Britain co-sponsored the Asia-Europe Paperless Trade Association (The Asia Europe Alliance for Paperless Trading, ASEAL). In April 2005 it formally accepted the TradeVan of Chinese Taipei to become the first one outside member except the founding members. In 2007, Dagan Net of Malaysia was accepted as a member. The organization also called for institutions from Asia and Europe, and even some African economies to participate in some activities as observers. The organization became the first global cross-regional cooperation organization of paperless trading.

Similarly, following the example of Pan-Asian e-Commerce Alliance (PAA) model, a number of African economies in March, 2009 formally established the African e-Commerce Alliance (African e-Commerce Alliance).

These Unions learn from each other, Pan-Asian e-Commerce Alliance, as the first formed League of Nations organization of paperless trading value-added service providers is also actively working with the alliance from different regions to conduct exchanges and cooperation. In the expected near future, the global cross-regional cooperation of paperless trading will enter the substantive stage of development

6.2 Barriers and obstacles of APEC paperless trading development

In recent years, regional development achievements of APEC paperless trading made great achievements, paperless trading in many economies developed in the world's leading position. Model of value-added network service provider's business of paperless trading are affirmed by the international community. However, the development of paperless trading is still facing many barriers and obstacles, mainly reflected in the following aspects:

6.2.1 Path-dependence

Path-dependence is the main obstacles to development of paperless trading in economies. Both in developed and developing economies, technology, culture, customs, government institutions and market structure have a great impact on the development of paperless trading. These effects largely affect the implementation of paperless trading. Particularly, the Government and public service organizations are conservative, lagging behind in innovation and reform, resulting in gaps of interests and conflicts of interest in

departments, making the development of paperless trading more difficult.

Paperless trading does not only need technological innovation, but require the reorganization of the relationship between departments. Both developed and developing economies may encounter the problem of path-dependence. In developed economies, the difficulties of path-dependence may be more from business processes which has already established large enterprises as the core, relying on the technology may make horizontal integration of Paperless trading hesitate; But path-dependence in developing economies was more reflected in institutional conflicts of interest in the government sectors. How can we break through the technical, social, and many other aspects of the system of government restrictions, hoe to most effectively integrate social resources to develop paperless trading has become a very matter of concern.

6.2.2 Legal Environment

In recent years, APEC economies have made great achievements in laws and regulations related to paperless trading. Laws and regulations are continuous improved, a good social environment is provided for the implementation of paperless trading. However, most APEC economies have not introduced more mandatory measures and bills to promote the implementation of paperless trading.

According to our research and analysis, laws and regulations of the measures is key driver to promote the implementation of paperless trading. We will not only promote the Government to introduce a series of strong policy measures of paperless trading, but also hope the legislative bodies of all economies to set the vision of a series of relevant bills in order to establish a sound legal environment. Because the implementation of paperless trading requires a strong mechanism to promote, at the same time, the law could allow the effectiveness of the transmission of electronic data recognition. Paperless trading, not only involve the relevant participants in the legal responsibilities and obligations, but also those related to whether the interests of the participants can be effectively safeguarded.

6.2.3 Operation and Technology

In the APEC context, economies have different levels of economic development, the developed economies with strong economic strength, will not have many problems in the technical and operational aspects in general, but for many developing economies, the lack

of technical and operational management experience is one of the obstacles hindering the development of paperless trading. The implementation of paperless trading requires a corresponding software technology development and software technical support, needs to establish widely accepted standards for paperless trading in order to resolve the conversion problems between different standards. In addition, how can we protect the service provided by the paperless trading value-added services providers is safe, reliable, and able to guard against external risks are technical and operational issues. How to solve the technical and operational management in developing economies is great challenges to overcome the digital obstacles.

6.2.4 IT infrastructure

IT infrastructure is the basic premise to implement paperless trading. Although in the developed and developing economies infrastructure gaps still exist, many APEC developing economies are catching up actively. We have also seen that in different economies degree of emphasis on IT infrastructure is different. Infrastructure requires government to keep investing, which is often subject to upgrading the level of economic strength.

6.3 Proposals for development of the APEC Paperless Trading

6.3.1 Pay effort to reduce the gap between the level of implementation of paperless trading and trade status of the economy

In our study we found that the development of paperless trading and economic development level are connected, while situation still exists that trade status and level of implementation of paperless trading can not coordinate. Level of development of paperless trading economies and trade status can not be compatible, is a signal that we need to put efforts. This reflects these economies can not effectively promote the

development of paperless trading, we should try to find the development gap, identify the factors impeding the development.

6.3.2 Establish a good environment for the implementation of paperless trading

The implementation of paperless trading environment includes legal, technical, infrastructure construction, also includes culture, customs and institutional factors. The implementation of paperless trading can not ignore the overall construction of system and environment. Propose to strengthen the in-depth study on the following issues:
---impact of human factors on the implementation of paperless trading
---assessment and analysis of benefits brought by paperless trading to relevant participants

6.3.3 Strengthen economic co-ordination of the Government and increase input

The implementation of paperless trading departments needs coordination of the relationship and the integration of information in various departments. After research we have found that government's investment and support is key driver to promote paperless trading construction. Therefore, strengthen the Government's policy and increase input is very effective promotional measure. From the legislative aspects promotion of the development of paperless trading is also a very effective means

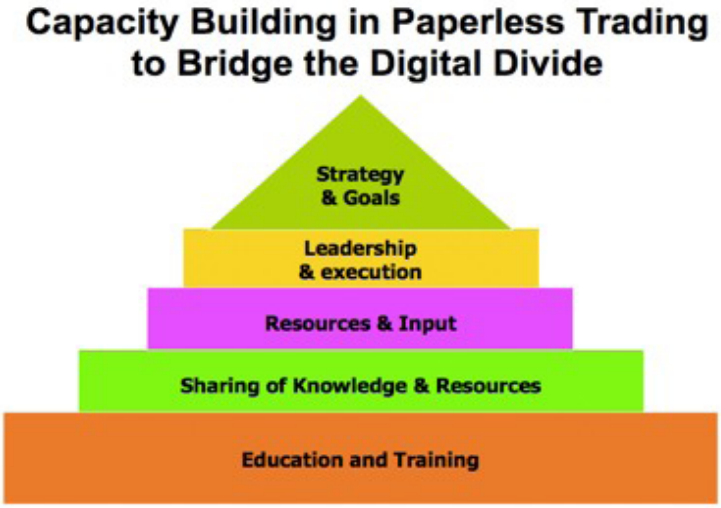
6.3.4 Strengthen capability of paperless trading construction

Capacity-building plays a very important role in the implementation of paperless trading of economies. Capacity building in paperless trading includes the following aspects (see picture):

- **Strategy and goals.** Economies should have clear direction of development in paperless trading, and develop practical and clear strategies and objectives.

Short-term and long-term goals should be mutually coordinated and connected. Many economies set the construction of single window system and platform as ideal goal of paperless trading.

- **Leadership and execution.** Leadership and execution is the basic premise to implement paperless trading strategy. Exchange and information integration of electronic data between sectors and regions requires strong leadership and implementation capacity. Many economies put the implementation of paperless trading in the level of the top decision-making leadership.
- **Resources and inputs.** Resources and inputs are the basic guarantee of the implementation of paperless trading. The top leaders of the economies should have not only the determination, but also have to input. Paperless trading implementation requires the input of human resources, IT infrastructure investment, as well as technology development investment. This is often associated with the strength of an economy. The developed economies may have a strong advantage of resources and inputs, while developing economies, if they efficiently use resources to conduct a reasonable investment, may also achieve a multiplying effect.
- **Sharing of Knowledge and resources**. The implementation of paperless trading tends to lead to innovation in technology and business models. The innovation needs the knowledge sharing. Capacity-building needs in these areas to share knowledge within an economy, but also the economies associated with external knowledge-sharing participants. Both the domestic value-added network service providers, public services of economies, or external agencies and international organizations, should strengthen the exchange of experiences and mutual sharing of experience in the technical, legal, social and environmental aspects to enhance the paperless trade capacity.
- **Education and training**. Education and training is the foundation of all business innovation. The construction of paperless trading can not be built in one day, it is a long-term construction projects. This need to upgrade the consensus of the industry, and even of all social sectors. Education and training is a very important basic work to enhance capacity building of paperless trading.



Capacity Building Pyramid