

*Developing of Cyber Resilience System of the International Trade Facilitations: Specific
reference Indonesia*

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Abstract :

Modernization of trade facilitation indispensable given the increasingly complicated and complexity of high standards trade regulations due to rapid development multilateral agreements. Implementation of trade facilitation involves many factors one of which is the information technology infrastructure, human resources, and operational budgets. Cyber technology used in the trade facilitations must be a technology that has a level of resistance or high resilience given to the complexity and dynamics of global trade regulations and trade change at any time. Cyber infrastructure resilience of trade facilitation can be the driver to the increase intra- and extra-trading volume, as it offers comfort and security in the business. In this point, improvement of trade facilitation services are expected to boost economic growth and competitiveness of the industry by reducing the transaction costs and the harmonization of regulations and trade process. This study will be focused on how to design the legal instrument and technology policy of cyber resilience in international trade facilitation in Indonesia? What is the impediment factors in the development of cyber resilience system in the trade facilitation in Indonesia?

Introduction

In the current information society era, economic activities and rapid development of communications and information technology are two things that can not be separated from each other. In this sense, the interaction within cyber space intended to carry out normal economic activity becoming increasingly high intensity. Such situation supported by several factors, such as ease of development and access to technology, increasing information literacy cultures, and international mobility of goods and services that are increasingly easy and affordable. People begin to absorb information from various media such as computers, gadgets, and networks. Thus, it has increased information literacy.¹ Literacy network or network literacy is an important part of modern life which is more integrated into the global system. According to Eisenberg (2004) literacy network is able to

¹ Arif Rifai Dwiyanto, Peran Perpustakaan Nasional RI dalam Pengembangan Literasi Informasi Sebagai Amanat Konstitusi.

use networked information to analyze and solve problems related to decision-making, both for the sake of tasks, problem solving and generate services that can improve the quality of life.

According to the data, there are 3 billions people are connected to online networks², which amount is covering 40% of the world population.³ With the development of technology that is more trustworthy and affordable, the number of people connected to the online facility tends to grow. Two decades ago at the beginning of the Internet era, the number of public users less than 1 percent of the total population. The increase in internet users increased significantly from 1999 to 2013, then reached 1 billion in 2005, 2 billion in 2010, and 3 billion in 2014.⁴

Asia ranks first as the world's largest Internet users by the number of shares amounted to 48.1% or 1.6 billion population of the 3.3 billion total number of internet users in the world. The second place occupied by the EU with a share of 18.1% or 604 million people of the total population of the world. Then the third place is occupied by the countries of Latin America and the Caribbean with a share of 10.1% or 339 million people of the total population of the world. Africa and the Middle East have a very rapid growth in the last 15 years. The development of internet users is very significant in both these areas have changed geo-political through mediated social movements which then drove the revolution of the country. Therefore, in 2011 movement of the arab spring started in North Africa and the Middle East. Online social media playing important role in the mobilization, empowerment, share opinions, and influence people to participate in making political and socio-run movement.⁵

In terms of the economy and democracy, the development of Internet usage has promoted transparency of the free trade agreement negotiations. The Internet users considered as a population literate of information so that they are aware of the things that

² Kathy Brown, President and CEO, <<http://www.internetsociety.org/globalinternetreport/section/0>>

³ <http://www.internetlivestats.com/internet-users/>.

⁴ Ibid.

⁵ See The Arab Spring and the Internet: Research roundup, 25 September 2013, <<http://journalistsresource.org/studies/international/global-tech/research-arab-spring-internet-key-studies>>. See also jugaCivil movements: Facebook and Twitter in the Arab Springs, 22 August 2011, <<http://journalistsresource.org/studies/international/global-tech/civil-movements-the-impact-of-facebook-and-twitter#sthash.sHjbxPt2.dpuf>>. Twitter Revolution: How the Arab Spring Was Helped By Social Media, 3 Juli 2012, <<http://mic.com/articles/10642/twitter-revolution-how-the-arab-spring-was-helped-by-social-media#.Jo3GqeJKE>>. See also Taking power through technology in the Arab Spring, 26 October 2012, <<http://www.aljazeera.com/indepth/opinion/2012/09/2012919115344299848.html>>.

happen at the level of international could affect their lives directly.⁶ In respect of market development, rapid internet usage by world population has formed a new market structure with the support of digital and automatic infrastructure. The proliferation of free trade trade that growth rapidly over the past two decades in line with the development of the Internet network, which borderless market is not only the elimination of tariff and non-tariff barriers but also jurisdiction boundaries. Since it can not be ignored that potential cyber market covered 3.2 billion population across borders.

Among the ASEAN member states, Indonesia has a population of internet users as many as 73 million of the 255 million of country population. While in the Asian region Indonesia ranks fourth after China, India, and Japan. Number of Internet users is expected to grow with the support of the services liberalization of communication and information technology. However such circumstances may incur threats to Indonesia, in terms of transnational crimes.

With regard to cyber attacks case, in 2014 Indonesia Security Incident Response Team on Internet Infrastructure (IdSIRTII) reported about 48.8 million cyber attacks. These attacks are calssified into three types malware, security gaps, and leaks of track record or record leakage. Malware placed as the largest attacks, as much as 12,007,808 incidents. The second place occupied by the attacks due to security gaps, as much as 24,168 incidents. The third place or minor attack is the track record leakage, as many as 5,970 cases. Then there are two cyber attacks with a smaller number of incidents i.e attacks through password hacking, as many as 1,730 cases, phishing and domain attack, as many as 215 cases.⁷

Government cyber domain (go.id) is the major target of attacks. According to data compiled by Media Indonesia, the Cyber Crime Police Criminal Investigation from 2012 to April 2015 arrested 497 criminal of cyber crime. Where 389 of whom are foreign nationals and 108 Indonesia citizens. The total loss of cyber crime in Indonesia reached 33,29 billion rupiah. During 2012 to 2014, there were 101 requests of investigation related to fraud cases

⁶ See TPP secretly trading away your rights : Negotiated behind closed doors, what effect will the Trans-Pacific Partnership have on consumer rights and privacy?, <https://www.choice.com.au/shopping/consumer-rights-and-advice/your-rights/articles/tpp-secretly-trading-away-your-rights>. See also TPP revealed: Pact details ignite debate over privacy, internet freedom, whistleblowers, 15 November 2015, <https://www.rttom.com/usa/321002-tpp-details-revealed-trade-privacy/>. See also The TPP's dirty labor laundry, 7 Mei 2015, <http://www.laborrights.org/blog/201505/tpps-dirty-labor-laundry>.

⁷ Ancaman Siber di Depan Mata, 5 Oktober 2015, <<http://mediaindonesia.com/mipagi/read/15984/Ancaman-Siber-di-Depan-Mata/2015/10/05>>

or cyberspace deception from around the world.⁸ Indonesia Security Incident Response Team on Internet Infrastructure (IdSIRTII) established under the Ministry of Communication proposes the concept of protection by creating a road map of cyber security. Indonesia needs an agency that given authority to establish a system to ensure network security for the public such as transportation services, banking services, electricity services, gas services, water services, mining, health services, industry, education services, and trade services.⁹

According to data from [hackmageddon.com](http://www.hackmageddon.com), cyber attacks are divided into two classification i.e. targeted distribution and attack techniques. There are four major groups of the motivation behind the cyber attack, ie cyber crime, hacktivism, cyber espionage, and cyber warfare. Cyber crime is the highest motivation of cyber attacks with the value of the incident as much as 68.0 percent of the total attacks. Then hacktivism ranks second as much as 14.7 percent. Third and fourth rank is occupied by 12.0 percent of cyber espionage and 5.3 percent cyber warfare. While the global distribution of the main targets of cyber attack is an industry and government. The cyber attack techniques are difficult to track it due to advanced and sophisticated technology used.¹⁰

Since two decades ago trade facilitations offered by the developed countries in the negotiation table, especially countries with favorable geostrategic location and benefit more from international trade. Joining Mega FTAs means that countries are required to drive their public services on trade sector to ensure flow of goods and services. With adequate of trade facilitation that provide wide access, faster, reliable, and transparent expected to boost intra and extra trade of the country. Since it can reduce the high cost economy due to excessive document and long chains beaureucracy. Better trade facilitations believed could increase competitiveness of local product in international market.

On the other hand, trade automation that develops a data base and integrated information sharing provides advantage in preventing the illicit trade and trade crimes. Trade crimes still considered as a *silence crime*, which public lack of awareness that such crimes exist in the daily trade activities. Trade crimes has caused financial loss to the government, destabilize the economy and lead to unfair competition for businesses, but

⁸ Ancaman Siber di Depan Mata, 5 Oktober 2015, <<http://mediaindonesia.com/mipagi/read/15984/Ancaman-Siber-di-Depan-Mata/2015/10/05>>

⁹ Ibid

¹⁰ <http://www.hackmageddon.com/2015/11/09/october-2015-cyber-attacks-statistics/>

also suspected of great potential as a source of funding other criminal acts such as terrorism. Financial Global Integrity (GFI) in 2012 estimated that losses incurred from evil specialized trade for goods around 650 USD.¹¹ Indonesia is vulnerable to trade crimes such as trade-based money laundering, cyber crime, fraud of origin, transit fraud, and transshipment. Indonesia needs a cyber systems are resilient and secure in the Mega FTA era.¹²

Mega FTAs encourage modernization in trade facilitation, especially in the use of sophisticated, reliable, affordable, and secure cyber technology. Modernization of trade facilitation is very necessary given the increasingly complicated and complex high standards of trade regulations in terms of multilateral agreements. Trade facilitation is a complex and integrated systems like financial services (e-banking), transport, port system, taxation (e-tax), certification (e-certification), health (e-health), import-export bureaucracy (e-trade / National Single Window), insurance (e-insurance), intellectual property rights (e-IPR), and regulatory (e-law). If one system is not running properly then it will be able to inhibit the smooth flow of goods in and out. In addition to the guaranteed flow of services, data security of trade becoming main core of cyber resilience. So that an effective, responsiveness secure, and reliable cyber resilience system is indispensable to anticipate and predicted any circumstances that could change at any moment.

Design of the legal instrument and technology policy of cyber resilience in international trade facilitation in Indonesia

Research on the development of cyber resilience in the field of trade facilitation in Indonesia is very rare. Therefore, not many literature that discussed cyber resilience and more specifically associated with the facilitation of international trade. Legal research on the cyber in Indonesia still largely focused on the field of cyber crime, cyber security, cyber defense, and e-commerce.

Hugh Boyes researching on how to build safe relationships and resilience between cyber systems and infrastructure aimed at improving the quality of life and proactive in managing the limited resources. The use of cyber systems which secure and have a resilience in the smart city is an important requirement. Hugh Boyes fundamental research is the importance of the development of cyber systems in order to ensure resilience of vital

¹¹ World Custom Organization, *Illicit Trade Report*, 2012.

¹² See Grainger, Andrew., *Customs and Trade Facilitation: From Concepts to Implementation*, World Customs Journal, 2007, http://www.eibd-conference.com/assets/files/TradeFacilitation_web.pdf.

public infrastructure in the community, such as electricity, not being impaired. In addition, the development of the sophistication of cyber systems and infrastructure also encourages the proliferation of interaction between the individual communities with cyber system interface.¹³

While Reza Arghandeh, et al, examined the resilience system related to power grid that connected to cyber network technology. Electricity network vulnerabilities can be evaluated through the interdependence of physical infrastructure and cyberspace.¹⁴

Alexander A. Ganin, et al., define resilience or resistance as the ability for planning, setting up, absorb, responds to, and recovery from attacks as well as adaptability to new situations. The main feature in this resilience is the temporal dimension where the system is able to recover and maintain the primary function over the attacks from known or unknown sources.¹⁵

Caitríona H. Heintl, outlining ASEAN regional cooperation efforts to fight cross-border cyber threats and identify the gaps that exist, and require urgent treatment. In this regard, need a comprehensive approach to build cyber security in the ASEAN region. She gave some recommendations for the implementation and development of cyber regime resilience at the regional level.¹⁶

In 2014 ASPI International Cyber Policy Centre (ICPC) reports a study of 14 countries throughout Asia Pacific regarding cyber maturity. In this research cyber maturity evidenced by the existence, implementation and effective operation of which relate to the cyber world like structures, policies, legislation and organizations. Cyber indicators include overall government policy and legislative structures, military organizations, businesses, and digital economic power and public awareness of cyber world. Alberto

¹³Hugh Boyes(B), Roy Isbell, and Tim Watson., “*Critical Infrastructure in the Future City : Developing Secure and Resilient Cyber–Physical Systems*”, Springer International Publishing Switzerland, 2016, DOI: 10.1007/978-3-319-31664-22.

¹⁴ Reza Arghandeh, Alexandra von Meier, Laura Mehrmanesh, Lamine Mili, On the Definition of Cyber-Physical Resilience in Power Systems, 2016. <<https://arxiv.org/ftp/arxiv/papers/1504/1504.05916.pdf>>

¹⁵ Alexander A. Ganin, Emanuele Massaro, Alexander Gutfraind, Nicolas Steen, Jeffrey M. Keisler, Alexander Kott, Rami Mangoubi, and Igor Linkov, *Operational resilience: concepts, design and analysis*, <<https://arxiv.org/ftp/arxiv/papers/1508/1508.01230.pdf>>

¹⁶ Caitríona H. Heintl, *Regional Cyber Security: Moving Towards a Resilient ASEAN Cyber Security Regime*, S. Rajaratnam School of International Studies Singapore, 2013, <<http://www3.ntu.edu.sg/rsis/publications/WorkingPapers/WP263.pdf>>

Avritzer, et al, arguing that testing level of resilience is important element in critical infrastructures.¹⁷

Michal Choras, et al, examined the European project as the implementation of the CAMINO roadmap to counter cyber crime and cyber terrorism. The CAMINO cyber security project has four important dimensions, i.e, technical, human resources, organizational, and regulations. The purpose of the project is to increase cyber resilience to cope with cyber crime and cyber terrorism, with projections up to 2025.¹⁸

Iginio Gagliardone and Nanjira Sambuli, analyzing the continuity and discontinuity of the joint efforts to increase cyber security in East Africa, with a focus in Kenya, Ethiopia, Somalia and. In this research, cyber resilience is not just about how to reduce the technology gap and to build the infrastructure, but also the development of cyber resilience has to do with politics. Where there are no adequate checks and balances it will impact the freedom of the individual and society.¹⁹

Internasional Dimensions

United Nations Economic Commission for Europe (UNECE) defines trade facilitation as an integrated and comprehensive system to reduce complexity and transaction costs to a more efficient, transparent, and predictable, based on the norms, standards and best practice internationally.²⁰ APEC defining the trade facilitation in a broad sense as simplification, harmonization, use of new technologies and other measures to address trade barriers that are procedural and administrative, such as tax laws, regulations related to sanitary and phytosanitary, harmonization standards, e-commerce, transparency of administrative procedure, and global financial compliance.²¹ The World Bank defines trade facilitation as domestic policy, institutional, and infrastructure related

¹⁷ Alberto Avritzer, Felicita Di Giandomenico, Anne Remke and Martin Riedl, *Assessing Dependability and Resilience in Critical Infrastructures: Challenges and Opportunities*, Springer-Verlag Berlin Heidelberg, 2012, < http://eprints.eemcs.utwente.nl/24235/01/chp%253A10.1007%252F978-3-642-29032-9_3-1.pdf >

¹⁸ Michal Choras, Rafal Kozik, María Pilar Torres Bruna, Artsiom Yautsiukhin, Andrew Churchill, Iwona Maciejewska, Irene Eguinoa, and Adel Jomni, CAMINO Roadmap and Research Agenda: Comprehensive Approach to Increase Cyber Security and Resilience, 10th International Conference on Availability, Reliability and Security, 2015, < <http://www.fp7-camino.eu/assets/files/CAMINO-ARES.pdf>>

¹⁹ Iginio Gagliardone and Nanjira Sambuli, Global Commission on Internet Governance: Cyber Security and Cyber Resilience in East Africa, Paper Series : No. 15 - May 2015, Chatham House (The Royal Institute of International Affairs), 2015, < https://www.cigionline.org/sites/default/files/no15_web.pdf >

²⁰ Zanamwe, Gainmore, Trade facilitation and the WTO : a critical analysis of proposals on trade facilitation and their implications for African countries, <http://www.tralac.org/cause_data/images/1694/WTO_Book_Ch8_Zanamwe_Trade_Facilitation_MBFin_20091116.pdf>

²¹ Ibid.

to the movement of goods between countries, which includes the port, customs administration, transit, transportation systems, and management of information systems and technology.²² WTO defines the purpose of trade facilitation as the simplification and harmonization of international trade procedures, including the activities of collecting, presenting, communicating and processing data required for the movement of goods in international trade.²³

The purpose of trade facilitation is to simplify formalities and procedures related to foreign trade and transit of goods, to harmonize regulations and laws, and to standardize and integrate the definitions and requirements of information and use of information. In sum up trade facilitation as a simplification, harmonization, standardization and modernization of trade procedures.²⁴

Trade facilitation is also defined as the simplification of trade interface between the trader and the trader or traders and authorities.²⁵ Trading interface consists of several elements and continuously evolving in accordance with the dynamic needs of the user. International trade interface is divided into two aspects, i.e. tangible aspect²⁶ and intangible aspects.²⁷ Intangible aspects related to international supply chains consisting of geography, transportation, storage, and physical inspection of goods and documents by the competent authority. Therefore, it is associated to improve the interface between the competent government agencies either with the domestic or international trader.²⁸

Since the function of trade facilitation as an interface, therefore its development purposes is lowering the minimum transaction costs, cutting red tape, speeding up the services, reducing excessive document requirements, and avoiding transnational trade crime, for instance trade fraud.²⁹ For example related to declaration and verification of document traceability and sanitary and phytosanitary standards, which includes certificate of origin, certificate of catching fish, timber certification, HACCP certificate, and other accompanying documents required under the FTA.

²² Ibid.

²³ WTO 1998; Grainger, Andrew., 2007.

²⁴ Grainger, Andrew., 2007.

²⁵ See Christophe Maur, Jean., Regionalism and Trade Facilitation: A Primer, Policy Research Working Paper, WPS4464, The World Bank Development Research Group Trade Team January 2008, <<http://siteresources.worldbank.org/EXTAFRSUBSAHTRA/Resources/wps4464-Regionalism-Facilitation.pdf>>

²⁶ For example intangible aspect is payment procedure.

²⁷ For example tangible aspect is infrastructure and transport facilities.

²⁸ Grainger, Andrew., 2007.

²⁹ Grainger, Andrew., 2007

Implementation of trade facilitation involves many factors, i.e., information technology infrastructure, human resources, and operational budget. Information technology infrastructure or cyber technology regarded as one of the high-value investment. Cyber technologies used in automated trading services must be a technology that has a level of resistance or high resilience given the complexity and dynamics of trade change at any time. Cyber infrastructure resilience of trade facilitation could be the driver of the increase in trading volume out of a country, as it offers comfort and security in the business.

So that an increase in trade facilitation services are expected to boost economic growth and competitiveness of the industry by reducing the transaction costs and the harmonization of trade administrative and procedures. Moreover, the government get the benefit by increasing their revenue or taxation through protection and prevention against crimes.³⁰

Arrangements on trade facilitation agreement has been integrated into the GATT / WTO Agreement, which covering the evaluation of customs, import licensing, pre-shipment inspection, a certificate of origin, technical barriers to trade and sanitary and phytosanitary agreement.³¹ There are three important articles in the GATT 1994 relating to the facilitation of trade, i.e, Article V (freedom of transit), Article VIII (procedure of import export) and Article X (transparency and administration of trade).³²

In international dilevel, the World Trade Organization (WTO) and World Customs Organization (WCO), plays an important role in promoting the modernization of trade facilitation. WCO is an international organization that supports international trade related to the tax system. WCO plays an important role in trade facilitation related tax aspects at the border and trade procedures. WCO function is to encourage harmonization and uniform application of customs systems and procedures to be more simple and effective.³³ WCO recommends the use of cyber-based technologies to support trade facilitation services. They have developed the concept of single window system, standardization and

³⁰ Draft WTO Trade Facilitation, Negotiations Support Guide, A Guidebook to assist developing and least-developed WTO Members to effectively participate in the WTO Trade Facilitation Negotiations, Prepared by the Centre for Customs & Excise Studies, University of Canberra, for and on behalf of the World Bank 2005.

³¹ Zanamwe, Gainmore, 2005; Zanamwe, Gainmore, 2009.

³² Grainger, Andrew., 2007. See also Zanamwe, Gainmore, 2005; See Zanamwe, Gainmore, 2009.

³³ Ibid.

simplification of taxation and trade documents, the simplification of trade procedures and the application of international standards in the management of flow of goods.

Nasional Dimensions

Indonesia as one of the countries that experienced remarkable progress in international trade established specific policies related to trade facilitation. In which trade facilitation considered as an integral part of the business promotion of the local products to compete in the international market.

Carol Cosgrove-Sacks defines trade facilitation as "public goods" that provides a set of rules that benefit both the government sector and the private sector. In an economic perspective, "public goods" are defined as items that can not be contested and can not be excluded³⁴, which means it must be free and accessible for public. Therefore, trade facilitation must deliver benefits for all parties. It delivered either directly or indirectly to economic operator, stakeholders, competent authority, and society.³⁵

Trade facilitation is very complex because all of its elements are interrelated. Therefore, it needs a system that is integrated and synergic between the parties involved. Each country should ensure that the trade facilitation strategy has been integrated into their national and regional trade policy, including economic development blue print. At the regional level, trade facilitation benefits to promote the competitiveness and market integration. Improving transparency and speedy procedure considered an essential element for building a successful competition on the world market.³⁶

Trade facilitation has the potential to save billions of dollars for the growth and development of the world economy. This allows the liberalization of trade as an important tool for the development of the world economy based on predictable rules, transparency, and eliminating discrimination.³⁷ Carol Cosgrove-Sacks insert predictable rules and logistics infrastructure as part of the "public goods". The government did not meet the needs of society, as "public goods" is not available, in this poin trade facilitation.³⁸ Demands to the government to provide trade facilitation has increased because of the rapid

³⁴ Public good, <<http://are.berkeley.edu/courses/EEP101/spring05/Chapter07.pdf>>.

³⁵ Cosgrove-Sacks, Carol and Apostolov, Mario, Trade Facilitation: The Challenges for Growth and Development, United Nations Economic Commission for Europe, United Nations New York and Geneva 2003,ECE/TRADE/299, United Nations Publication, Sales N°. E.03.II.E.10, ISBN 92-1-116824-4.

³⁶ Ibid, hal. 15

³⁷ Ibid, hal. 11

³⁸ Cosgrove-Sacks, et.al., 2003; Carol Cosgrove-Sacks, Op. Cit., hal. 19.

development of information and communication technology.³⁹ In order to provide trade facilitation as part of the "public goods", cross-sectoral collaboration, and cooperation needed. Therefore, trade facilitation will be adequate established throughout the willingness of all parties to contribute to beyond costs. However, bringing together the interests of all parties into one vision is not easy work.⁴⁰ Initial efforts has made by the government to build a cyber resilience in international trade facilitation it can be seen from legislation in which are at least nine (9) legislations that can be used as the legal basis.

a. Indonesia Act Number 36/1999 concerning Telecommunication.

Article 2 states that telecommunications is administered based benefits, equitable, rule of law, security, partnership, ethics and self-confidence.

Article 3 states that telecommunications was held with the aim to support national unity, improving the welfare and prosperity of the people in a fair and equitable, support economic life and government activities, and to improve international relations.

b. Indonesia Act Number 11/2008 concerning Information and Electronic Transactions.

Act concerning Information and Electronic Transactions Law accommodating the new forms of legal acts, such as electronic signatures and the like, that has not been regulated under the law. This law provide legal certainty for the economic operators to conduct their activities in the cyber world. Utilization of information technology plays an important role to foster trade and national economy growth for the public welfare. The government supports the development of information technology through the legal and regulatory infrastructure, so that the use of Information Technology carried out safely to prevent abuse by taking into account the social and culture values of Indonesian. Article 3 stated that the use of Information Technology and Electronic Transactions have to be conducted under the principles of legal certainty, benefits, prudence, good faith, and freedom to choose technology or technology neutral. Whereas Article 4 arranged towards the utilization of

³⁹ Ibid, hal. 19

⁴⁰ Cosgrove-Sacks, et.al., 2003; Carol Cosgrove-Sacks, Op. Cit., hal. 19-20.

Information Technology and Electronic Transactions that are in line with the concept and paradigm of national development. Therefore the utilization of Information Technology and Electronic Transactions must embrace concept of educating the nation as part of the world information society; developing trade and the national economy in order to improve the welfare of society; improve the effectiveness and efficiency of public services; opens a wide opportunity for every person to advance thinking and capability in the use and utilization of information technology optimally and responsibly; providing security, justice, and legal certainty for users and providers of Information Technology.

c. Indonesia Act Number 3/2002 concerning National Defence.

State defense as one of the functions of state government. It is defined as efforts to bring the unity of the state defense in order to achieve national objectives, to protect all the people and the country, promote the social welfare, educating the nation, and participate in establishment of world order based on freedom, peace and social justice. The national defense effort implemented based on the principles of democracy, human rights, public welfare, the environment, the provisions of national law, international law and international practice, as well as the principles of peaceful coexistence. The purpose of national defense stipulated in Article 4 is to maintain and protect the country's sovereignty, territorial integrity of the Unitary Republic of Indonesia, and the safety of the entire nation of all forms of threats. While the function of defense of the country to realize and maintain the entire territory of the Republic of Indonesia as a whole defense. State defense was organized through the efforts to build and maintain capability, deterrent power state and nation, as well as tackling any threats. Article 7 governs the non-military threats by putting government agencies outside the defense sector as a key element, according to the shape and nature of the threats faced by supported by other elements of national power.

d. Indonesia Act Number 7/2014 concerning Trade.

Trade has an important role in improving economic development and importance of harmonization of the laws on trade within the framework of national economic unity to address the situation of trade globalization in the present and the future.

e. Indonesia Act Number 24/2000 concerning International Agreements

Article 4 governs the subject of international law to which the government of the Republic of Indonesia can make international agreements, such as states, international organizations, or any other subject of international law based on the agreement. International agreements must be made and executed in good faith. In making the treaty, the Government of the Republic of Indonesia shall be guided by the national interest and based on the principles of equality, mutual benefit, and take into account national law or applicable international law.

f. Indonesia Act Number 17 /2011 concerning State Intelligence.

The need for early detection and warning of various shape and nature of the threat, whether from inside the country and outside is complex and has a very broad spectrum and to support efforts to deter all forms of threats that endanger the existence and integrity of the states.

Impediment factors in the development of cyber resilience system in the trade facilitation in Indonesia

From a development perspective, it must be considered that Indonesia is a country with unique characteristics in terms of geography, culture, population distribution, and economic conditions.⁴¹ As an archipelago, Indonesia has vast number of islands reaches 17 thousand with a population of 255 million people and the economic development gap is still high. This gap led to divergent levels of information technology capabilities and accessibility to information technology. People who live in big cities have more access to information technology as compared to those living in rural areas who may have difficulty accessing these technologies.⁴²

However, the use of technology products such as computers and other high-tech gadgets become more prevalent in society regardless of social economic status. This situation occurs due to an increase in people's living standards, education (human development index), and household income. In the era of information society, technology

⁴¹ e-Government Development in Indonesia, e-Government Workshop, Doc No. telwg29/EG/04, Submitted by: Indonesia, APEC Telecommunications and Information Working Group, the 29th Meeting, 21-26 March 2004, Hong Kong, China, available at : <http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN017960.pdf>.

⁴² Ibid.

is no longer seen as a luxury but as a necessity to help people in their daily activities. Trade liberalization is one of many factors driving the rapid development of information society, where it provides a large selection of information and communication technology products with a variety of affordable prices and wide range of performance. In short, trade liberalization improve competitiveness in the information and communication technology sector that has benefited the society, where people can get an affordable product with the lowest price. Features of the public services, which is characterized by a closed bureaucracy, excessive documentation, time-consuming procedures, and corruption. Against this background into thoughtful consideration for the Indonesian government to transform the public service into e-government. Cyber devices required to implement features of better public services. Migration of manual services into cyber-based services as a response to the transform the bureaucratic culture.⁴³

E-trade is a manifestation cyber systems to connect the government and the business world. E-trade provide public services in the e-commerce sector. There are five priority programs, which is the main program of development of national cyber Indonesia, including e-government, e-infrastructure, e-industry, e-learning, and e-commerce.⁴⁴ The use of cyber systems bring consequences in areas such as trade facilitation infrastructure readiness, human resources, and operational budgets. The use of cyber systems in trade facilitation provides benefits, but at the same time also created several constraints such as those related to infrastructure standards, standardization documents and electronic data, electronic exchange of international trade data, network security and data protection.

The use of cyber technology in all aspects of public administration will encourage the migration of public services, which used to be a support tools, it is now becoming a primary requirement. The structure and function of cyber technology applications in matters of bureaucracy not only deal with the documentation but also becomes more complex either technically or socially. These changes driving public administration reform, public service delivery, and the pattern of institutional partnerships between governments, citizens and their local communities.⁴⁵

In terms of cyber resilience development related to trade facilitation in Indonesia at least has four basic problems. Firstly, the low awareness of cyber attack and mitigation of

⁴³ Haryono, Tisyo., and Widiwardono, Y. Kristianto., Current Status and Issues of E-Government in Indonesia, < <http://www.aseansec.org/13757.htm>>.

⁴⁴ e-Government Development in Indonesia, e-Government Workshop, Doc No. telwg29/EG/04.

⁴⁵ Szilard Molnar, E-Government in the European Union, Budapest, July, 2007, < http://www.itk.hu/netis/doc/ISCB_eng/09_Molnar_final.pdf>.

cyber resilience. Information literacy and knowledge of cyber security awareness⁴⁶ is the key element in the development of cyber resilience that responsible, responsive, and dynamic. A study conducted in the Asia Pacific region highlight the lack of awareness on the majority of respondents as many as 68 percent concerning online security issues. Respondents had no knowledge of how to perform the actions of cyber security during the attacks.⁴⁷ The low level of education, for instance Indonesia, most of its citizen has the level education at the junior secondary level or eight years of study. It is leaving many Internet users who do not have sufficient knowledge and ability to manage cyber attacks. Although there are some among them, who were then self-learning based on experience.⁴⁸ However, due to the lack of knowledge of cyber security causes many internet users who conduct unnecessary risks to jeopardize safety.⁴⁹ For examples, the use of cloud computing and online shopping, if the user does not have well understanding of cyber security, it is necessary to profiling and find out about the risks that may arise. With respect to knowledge and awareness of internet users, many of them without further checking and profiling providing important data or information to the websites that are not secure or via phishing or spam, so that their data is to be taken over by third parties who have criminal intentions. Indonesia Security Incident Response Team on Internet Infrastructure in 2014 reported that there were 48 million cyber attacks in Indonesia. Cyber attacks come about almost every minute per day. Internet user's knowledge and mindset that underestimate cyber security issues can pose a danger to individuals, communities, and countries.

The public sector in this regard e-government facility both at the level of central government and at local levels often be hacked. In a country that have a security system and the resilience of the most sophisticated cyber, such as the United States often experienced cyber attacks, for instance cyber attacks of social security systems and banking systems resulting disturbance of comfort and security of public services. Indonesia, since the late 1990s began to transform public service to electronic systems or so-called electronic government. However, it is often disturbed even tampered with by

⁴⁶ ESET Report: Huge Gap in Cyber Security Knowledge Leaves Asia Vulnerable, 24 Agustus 2015, <<http://prnw.cbe.thejakartapost.com/news/2015/eset-report-huge-gap-in-cyber-security-knowledge-leaves-asia-vulnerable.html>>. See also ESET Asia Cyber-Savviness Report 2015, <<http://www.eset.sg/pdf/ESET%20Asia%20Cybersavviness%20Report%202015.pdf>>

⁴⁷ Ibid.

⁴⁸ Ibid.

⁴⁹ Eset report ranks Malaysia and Singapore as the top two most cyber-savvy nations in Asia – but many internet users still take unnecessary security risks, 14 September 2015, <<http://www.computerweekly.com/news/4500253424/Malaysia-the-most-cyber-savvy-nation-in-Asia-claims-Eset-but-security-gaps-remain>>

third parties who are not responsible. The most endangered state security related to the use of electronic systems in general election called as e-democracy, which would potentially threaten the security of the country when the vote hijacked could to disrupt both national and regional stability.

The private sector such as industry, trade, transport, energy, and telecommunication in Indonesia still considered pay less interests on cyber security and cyber resilience. These sectors are still using a very simple system, or even sober even without updating data and information on the latest development of the cyber security. Globally about 50% of existing companies, the majority in the United States, are generally not aware of, and does not take any action, against the most dangerous cyber threat.⁵⁰ This puts such sectors at the state vulnerable to cyber attacks. The most dangerous attack is invisible anonymous attack that attack the system unnoticed and and leaves no trace.⁵¹ According to the survey of Global Information Technology Security Risk conducted by B2B International for Kaspersky Lab, half of companies worldwide surveyed did not know about the security threats that may be approached. So companies do not have sufficient resources to obtain relevant knowledge, to handle security systems technology.⁵²

All this of course reduces the company's ability to deal with cyber security threats. The lack of understanding at the managerial level to establish the information technology department and therefore contributes to mapping out planning and implementation of cyber security and cyber resilience.⁵³

There is an interesting research that was launched by an antivirus software company, ESET, about cyber security. The study, titled Asia Cyber Savviness Report 2015 shows the behavior of Internet users in Asia on the issue of cybersecurity. ESET conducted a survey of Internet users in six countries in Asia, one of which is Indonesia. Of the six countries surveyed, Indonesia ranks second lowest in terms of knowledge related to cyber security after Hong Kong. One contributing factor is the lack of education, especially in the realm of formal education.⁵⁴ However, internet users in Indonesia who have knowledge of this

⁵⁰ Perusahaan Kurang Menyadari Ancaman Cyber, 11 Desember 2012, <<http://www.tribunnews.com/iptek/2012/12/11/perusahaan-kurang-menyadari-ancaman-cyber>>

⁵¹ Orang Indonesia Rentan Jadi Korban Kejahatan Dunia Maya, 10 November 2015, <<http://blog.eikontechnology.com/orang-indonesia-rentan-jadi-korban-kejahatan-dunia-maya-cyber-crime>>.

⁵² Ibid.

⁵³ Ibid.

⁵⁴ Cyber Security : indonesia masih kurang peka!, 26 Agustus 2015, <<http://geekhunter.co/cyber-security-indonesia-masih-kurang-peka/>>

issue, they tend to be more proactive to conduct relevant action to secure and rescue the system from attacks. Same with the Indian Internet users, Internet users in Indonesia is considered the most proactive cyber security-related issues compared to other countries. According to the study, cyber-savviness or knowledge of Indonesian Internet users related to cyber security issues rated most poorly compared to the other five countries. Indonesia got a score of 25, 1 percent, while the Malaysian Internet users are considered the most savvy with a score of 29.9 percent.⁵⁵ However, on the side of security measures, secure, and rescue system of cyber attacks, Indonesia occupies a high position, which is second only to India. Then Indonesia can be considered as a country that is proactive in terms of security, safety, and rescue for the device as well as its online activities. Examples of such proactive measures initiated smallest things such as changing passwords regularly, back up the data to install the latest version of security software⁵⁶, and do not use USB or other devices without caution, do not click the unsecure link.⁵⁷

According Yudhi Kukuh, Technical Consultant, PT. Prosperita-ESET Indonesia, the understanding of cyber savviness also determine the level of security of the person in the virtual world. According to him the Indonesian generally adopt knowledge about cyber security partially and only dependent on cyber security software. In this case cyber security is not only about security software, but also a matter of behavior, discipline in updating information, vigilance, and even social engineering.⁵⁸ But the interesting part of the study, despite having less knowledge, internet users in Indonesia is the least concerned about the issue of cyber security.⁵⁹ Based on the research of Internet users are more likely to worry about the activities involving direct transactions such as banking (70 percent) and online shopping (62 percent).⁶⁰

Results of the study also shows that Indonesia is in the lowest position among the six countries. Indonesia also came in second place in terms of cyber knowledge, as well as placing Indonesia as the country's second most likes to take risks online after India.⁶¹ This is also consistent with the results of research conducted by Akamai, which stated that 15

⁵⁵ Ibid.

⁵⁶ Ibid.

⁵⁷ Orang Indonesia Rentan Jadi Korban Kejahatan Dunia Maya, 10 November 2015, <<http://blog.eikontechnology.com/orang-indonesia-rentan-jadi-korban-kejahatan-dunia-maya-cyber-crime>>.

⁵⁸ Ibid.

⁵⁹ Ibid.

⁶⁰ Ibid.

⁶¹ Ibid

percent of cyber attacks in the world comes from Indonesia. Ironically, according to Kaspersky study, about 15 percent of Indonesian Internet users do not believe the existence of cyber attacks. Therefore, it is important to change the mindset, increase knowledge of cyber security and cyber resilience at the macro level.⁶²

Related to trade facilitation, common awareness and knowledge about cyber safety and security becomes very important, as it relates to data that have economic values. In this point, the government, private sector, and individuals should have an awareness of the importance of cyber resilience in the trade facilitation. Because trade facilitation is not just an instrument to regulate and ensure the flow of goods in and out of the country but rather the sovereignty and economic independence in a free market.

Second impediment factors is weak institutions and lack of coordination among stakeholders. The debate over the dichotomy cyber resilience that are defense and non defense, resulting in differences in the regulatory and institutional authority. The facilitation of international trade is a service system that involves many elements in the government due to aspects of international trade is not only related to the trade ministry, but across sectors and institutions. Such as Food and Drug Supervisory Agency, the Directorate General of Intellectual Property Rights, Ministry of Health, Ministry of Agriculture, Ministry of Environment and Forests, Ministry of Maritime Affairs and Fisheries, Police, Customs, and other sectors. Until now the establishment of the National Cyber Bureau, which has a position at the level of national to manage cyber resilience still in delay due to debatable over authority.

Third impediment factors is overlapping of cyber legislation. Regulations governing information and communication technology need to be harmonized due to overlap of existing arrangements. In order to build cyber resilience need a system of rules and regulations that are harmonized, aimed to avoid multiple interpretations and authority overlaps. Enforcement of law with the different legal system and different jurisdictions pose many obstacles. Law and regulation is the basic instrument of all transnational economic integration.⁶³ Promoting the process of harmonization of legal instruments at

⁶² Orang Indonesia Rentan Jadi Korban Kejahatan Dunia Maya, 10 November 2015, <<http://blog.eikontechnology.com/orang-indonesia-rentan-jadi-korban-kejahatan-dunia-maya-cyber-crime>>.

⁶³ Wagner, Helmut., Legal Uncertainty – Is Harmonization of Law the Right Answer? A Short Overview, Discussion Paper No. 444, January 2009, Diskussionsbeiträge der Fakultät für Wirtschaftswissenschaft der FernUniversität in Hagen, Herausgegeben von der Dekanin der Fakultät, Alle Rechte liegen bei den Autoren.

regional, national, and local levels is crucial to improve market access and competitiveness, and to ensure protection to the consumer. Member states are obliged to follow the provisions in the agreement that has been agreed as the elimination of tariff barriers and non-tariff, the application of market standards and openness of the market system.

The plurality of legal systems within the scope of global or regional increase transaction costs in cross-border business. The incurrence of costs of transactions take place through the provision of information about, and adapt to the national regulations of each country. However, many provisions of the law and the process of formality increase legal uncertainty in cross-border transactions.⁶⁴

According to National Law Development Agency Ministry of Law and Human Rights of Indonesia, as written in the Harmonization Establishment of Laws and Regulations, defines the notion of harmonization of law as a scientific activity towards processes harmonization (alignment / compliance / balance) written law refers to the values of the philosophical, sociological, economical and juridical, where the legislation is harmonized form an integral part of the system or sub-system of law in order to achieve the objectives of the law. So in this sense that the harmonization of the law should not ignore the four values which becomes the spirit of the establishment of a law. In other words, harmonization must absorb the legal nature so as not to injure the objectives to be achieved by the law itself.⁶⁵

While according to Indonesia National Development Agency, harmonization of law is defined as an attempt to harmonize the legislation with the others regulations within the system, either higher, equal, or lower, and those things other beyond legislation, so arranged systematically, not conflicting or overlapping (overlapping) so that benefits can be delivered to all society.⁶⁶

Demands for a more comprehensive legal harmonization between the legal field is generally based on the assumption that the legal diversity led to high transaction costs and lower economic trade and prosperity, especially by creating legal uncertainty. Legal

⁶⁴ Wagner, Helmut., Legal Uncertainty – Is Harmonization of Law the Right Answer? A Short Overview, Discussion Paper No. 444, January 2009, Diskussionsbeiträge der Fakultät für Wirtschaftswissenschaft der FernUniversität in Hagen, Herausgegeben von der Dekanin der Fakultät, Alle Rechte liegen bei den Autoren.

⁶⁵ Setio Sapto Nugroho, Harmonisasi Pembentukan Peraturan Perundang-undangan, Dokumentasi dan Informasi Hukum, Bagian Hukum, Biro Hukum dan Humas, Sekretariat Negara, Jakarta, 2009.

⁶⁶Ibid 20.

diversity increase the cost of cross-border transactions thereby inhibiting consumers and small businesses involved in the transaction.⁶⁷ According Zampia in the Civil Procedure Harmonization in the EU: Unravelling the Policy Considerations, that the pluralism of formal system in the international environment may increase uncertainty about the benefits and advantages of commercial activities between countries. The legal uncertainty could lead to a slowdown in economic growth, due to the cost of information on the various legal regimes and the formal procedures possible higher profits.⁶⁸

Fourth impediment factors, the inadequate infrastructure and research and development systems in the cyber resilience. Cyber resilience infrastructure in Indonesia mainly related to the public services, still far from sufficient to be responsive and resilient to cope with cyber attacks. Integrated infrastructure, responsive, up to date and able to reach all stakeholders will be an investment that is very expensive especially related to the geographical factor that has the hallmark of an archipelago with minimum connectivity in some areas. On the other hand, the lack of human resources in the field of information technology led to the fulfillment of government cyber services performed by third-party systems or outsourcing contracts, with less considering the sustainability and resilience of data and existing services. Outsourcing systems for government cyber services such as e-government has the potential danger of cyber attacks and cyber crime, therefore the government needs to build a cyber system that is independent and sustained.⁶⁹ A system that sustain and resilient should be supported by the logistics research and development that serves as the central driving force for innovation in cyber resilience.

Concluding Remarks

Cyber resilience is an urgent need in the trade facilitation due to demanding high standards of digitization and automation. Where this is in line with the development of Mega FTAs in the Asia Pacific region put the situation in Indonesia is very vulnerable to potential cyber attacks. Therefore, it is important to increasing knowledge of human

⁶⁷ Wagner, Helmut., Legal Uncertainty – Is Harmonization of Law the Right Answer? A Short Overview, Discussion Paper No. 444, January 2009, Diskussionsbeiträge der Fakultät für Wirtschaftswissenschaft der FernUniversität in Hagen, Herausgegeben von der Dekanin der Fakultät, Alle Rechte liegen bei den Autoren.

⁶⁸ Vernadaki, Zampia., Civil Procedure Harmonization in the EU : Unravelling the Policy Consideratio, Journal of Contemporary European Research, Volume 9, Issue 2 (2013).

⁶⁹ Cyber Crime Marak, Perlu e-Government, 5 September 2013, <<http://tekno.tempo.co/read/news/2013/09/05/072510449/cyber-crime-marak-perlu-e-goverment>>

resources in terms of individual (public), professionals, private sector, and public sector over cyber attacks and mitigate cyber resilience. It is urge to strengthening coordination among stakeholders related to cyber resilience, and harmonization of legislation in the field of cyber resilience. Development of adequate infrastructure and the Development system of research and development in cyber resilience would be a necessity.

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