

Application of Regression Analysis to Enhance the Trade Facilitation Model in the Philippines

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Abstract: *The study gathered information on the current practices of customs brokerage in the Philippines. Moreover, the main element of this study was the development of an enhanced trade facilitation model based on regression analysis which will be used by the customs brokers in their practice of their profession. The customs brokers will be the agents for trade facilitation and the output of the study will provide them a better understanding of trade facilitation with ASEAN integration. A framework will not only specify the ASEAN standards but will also determine and enrich the current practices of the customs broker profession having determined the strengths, weaknesses, and gaps between the current practices and the ASEAN integration policies. It also determined the level of compliance of trade facilitation in the Philippines with the ASEAN integration policies. The increase in import and export trading in the Philippines may be one of the indicators that the customs broker profession is improving but may not project a long-term paradigm because of the current international integration.*

Index Terms: ASEAN, Trade Facilitation, Regression Analysis

I. INTRODUCTION

The Customs brokerage profession is a profession that has several contributions to the economy of the country. The customs broker is the one who practices the profession and is a partner of the Bureau of Customs which is in charge of the tax collections on import and export activities. The scope of the customs broker profession involves services consisting of consultation; preparation of customs requisite documents for imports and exports; declaration of customs duties and taxes; preparation, signing, filing, lodging and processing of import and export entries; representing importers and exporters before any government agency and private entities in cases related to valuation and classification of imported articles; and rendering of other professional services in matters relating to customs and tariff laws, its procedures and practices. It is also evident through Republic Act 9280 that there is already an established standard to the practice of the customs broker profession. Despite the current development, the practice of this profession, together with the Bureau of Customs has faced several issues like customs fraud and corruption that affects the economy of the country.

The solution to this problem relies on the people behind the system. One of them is the customs broker. Several procedures are already established like the ASEAN implementation which is believed to be the key to free trade that will become an avenue to new and global trade facilitations. However, there is no established framework to

unify the scope of practice of the profession of customs brokers in terms of trade facilitation and the standards of ASEAN. The main ingredient of this study was the development of an enhanced trade facilitation model which will be used by the customs brokers in their practice of their profession. The customs brokers will be the agents for trade facilitation and the output of the study will provide them a better understanding of trade facilitation with ASEAN integration. A framework will not only specify the ASEAN standards but will also determine and enrich the current practices of the customs broker profession having determined the strengths, weaknesses, and gaps between the current practices and the ASEAN integration policies. It also determined the level of compliance of trade facilitation in the Philippines with the ASEAN integration policies. The increase in import and export trading in the Philippines may be one of the indicators that the customs broker profession is improving but may not project a long-term paradigm because of the current international integration. The Association of Southeast Asian Nations (ASEAN) occupies a significant role in trade facilitation. The implementation of the ASEAN Framework Agreement on Mutual Recognition Agreements, the Multimodal Transport, the Facilitation of Goods in Transit, and the ASEAN Customs Agreement has contributed to trade facilitation in 10 ASEAN members. One of the strategies of ASEAN customs integration is to harmonize the Tariff Nomenclature and to standardize information parameters for trade facilitation. The cooperation of ASEAN member countries in transport, infrastructure, standards and conformance, and information and communication technology (ICT) is also needed to harmonize not only trade facilitation but also the determination of impacts on trade facilitation. It is proven that these initiatives have contributed to reducing the range of trade transactions among ASEAN members. According to the report from [1], the entry into force of the ASEAN Trade in Goods Agreement (ATIGA) on May 17, 2010, prompted the ASEAN Free Trade (AFTA) Council to endorse the ATIGA Full Tariff Reduction Schedule established to prepare the ASEAN nation country to its full implementation in 2015. ASEAN Member States (AMSs) also issued the legal enactment to liberalize commodities. By the end of 2011, the average intra-tariff rate for ASEAN-6 countries namely Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore and Thailand under the ATIGA was reduced to 0.05% from 3.64% percent in 2000. The full establishment of ASEAN Free Trade Area (AFTA) in January 2010 was focused mainly on trade facilitation. The elimination of Non-Tariff Barriers (NTBs) under three tranches continued and gained drive with the elimination of third tranche of NTBs by Malaysia and Thailand in 2011. Following up the current mechanism of voluntary submission of the list of NTBs, ASEAN is now in the process of stock taking and updating the ASEAN Non-Tariff Measures (NTMs) database.

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This pertains to the free flow of goods that has something to do with trade facilitation which is one of the roles of a customs broker. The integrative report of Milo reveals that the Philippines has already started to provide good progress in the ASEAN standards and conformance roadmap defined for the eight Priority Investment Sectors, namely automotive, cosmetics, electrical and electronic equipment, medical devices, pharmaceutical products, prepared foodstuff, rubber-based products, and traditional medicine and health supplements. The results of the Standards and Conformance scorecard in the ERIA Phase 2 study on the ASEAN Economic Community (AEC) Scorecard monitoring system generally show a notable conformance of national standards with international benchmarks across the sectors under survey and harmonized technical policies.

The study of [2] revealed that ASEAN countries' performance in trade facilitation is diverse. Singapore, Malaysia and Brunei are far better whereas the Philippines, Vietnam and Cambodia fall behind average on trade facilitation. There is a slight improvement in ASEAN's score over time in port efficiency, and a remarkable improvement in service sector infrastructure. Within ASEAN, Vietnam, Cambodia and the Philippines tend to experience a greater percentage increase in their trade flows as a result of their own efforts, thus supporting the idea of capacity building in countries with relatively poor performance.

The [3] is a Philippine government agency under the Department of Finance. It is one of the revenue collecting agencies that is responsible for revenue collection and assessment, stopping customs fraud, and devising and managing a customs management system for trade facilitation. The annual report of the BOC revealed that there is an increase in collections despite the issues faced by the agency. In 2014, the total volume of imports grew by 7.5% from 72,187 to 89,127 million tons in the previous year. However, 62 percent of the total imports are non-dutiable, which grew by 27.2 percent from 43,549 to 55,408 million tons mostly due to free trade agreements (Executive Order No. 890, which eliminates the duty on crude oil and refined petroleum products from non-ASEAN countries) and duty and tax free importation under Philippine Export Zone Authority (PEZA) and Customs bonded warehouse. In 2013, the United States of America (USA) set \$2,294 billion of imports. Myanmar reached an all-time high of 1,824.80 million. In the Philippines, the final value of total imports was \$62,411,000 which crossed the Philippine borders annually [4]. This may not have happened without the help of the customs brokers. A customs broker in the Philippines has a degree in Bachelor of Science in Customs Administration and has passed the Customs Broker Licensure Examination conducted by the Professional Regulation Commission. He is a professional who holds a Professional Identification Card issued by the Professional Regulation Commission (PRC). The practice of this profession is regulated by Republic Act 9280 otherwise known as the Customs Brokers Act of 2004. The customs brokers in the Philippines have been recognized by their name and reputation for a long time in professional practice like handling customs clearance for different types of cargoes for importers, exporters and traders. They are trade facilitator's agents acting as mediators for the traders in the customs process. As quasi-customs agents, they have been able to help the government in the collection of the much-needed revenue through the customs duties and taxes from imported and exported goods [3].

One of the main reasons for hiring a customs broker is to free up the importer's time in clearing the imported goods from the Bureau of Customs custody which generates and ensures the revenue of the government from the imported articles, and suppresses smuggling in any forms. As of June 02, 2015, there were 1,385 active brokers and 11,894 active importers and exporters in the Philippines.

Because the Philippines is one of the members of ASEAN, the Bureau of Customs has already embraced the ASEAN roadmap in their operations. The past few decades ASEAN integration has been significantly moving forward in its implementation. The ASEAN is composed of ten (10) member countries, namely, Brunei Darussalam, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam. This initiative is driven by the countries being involved in a growing number of agreements on trade, investment and economic partnership as well as the progress in developing regional transport connectivity. ASEAN's ultimate goal is to deliberately push forward greater regional economic integration. The implementation of ASEAN integration came about on December 31, 2015.

According to [5], a meeting on November 7, 2013 was attended by delegates from the 10-member countries of the ASEAN Customs Procedures and Trade Facilitation Working Group that formulated the Strategic Plans of Customs Development (SPCD) for the ASEAN Integrated Economy by 2015. In this endeavor, the Philippine Customs Commissioner expressed optimism that the Bureau of Customs (BOC) may be able to catch up with the rate of modernization of its ASEAN counterparts and to interact with the ASEAN integration initiatives.

BACKGROUND OF THE STUDY

A. Theoretical Framework

In the present scenario where ASEAN integration has just started, concerns about widening differences in some issues among the ASEAN members will arise as a result of integration. The spread of regional trade liberalization to ASEAN members will motivate the development of a new trade framework capable of guiding a new road map of integrated nations. In particular, the Bureau of Customs of the Philippines will also be affected considering that trades and imports are their primary sources of revenues. The role of customs brokers in negotiating crucial transactions are also taken into consideration since the competition will increase. It is also necessary to take a look at the customs brokerage activity and its vital role in facilitating undertakings between the importers/exporters and Bureau of Customs. Given the above-mentioned circumstances, this study will use traditional trade theory of comparative advantage because this theory shows an optimistic view on the concerns in trade liberalization that brings about productivity gains across the ASEAN-member countries produced by several industries. It is supported by the study of [4] which aims at bringing a new perspective to existing quantitative studies on ASEAN integration.

What makes economic location relevant in international trade is the existence of trade costs and increasing returns. In the study of [4] a successfully incorporated the two concepts into a new framework by combining the concept of regional science to the new trade theory under monopolistic competition. On the other hand, greater market potential prevailing in large markets tends to influence the firms' decision to locate and transfer, giving rise to "home-market effect". Since the study will focus on the development of a new model for customs administration, New Economic Geography (NEG) will also be used. The theory has been supported and consolidated by Fujita, Thisse, and Baldwin, allowing realistic applications to develop afterward.

B. Conceptual Framework

The conceptual framework of the study is based on the theoretical framework used by [4] and the developmental model approach. It is depicted in diagram shown below. The *input* refers to the assessment of the practice of trade facilitation using ASEAN Trade in Good Agreement (ATIGA Article 47). The *process* refers to the identification of significant gaps in ATIGA as prescribed and as practiced and identification of significant difference in the respondents' assessments, and the *output* was the proposed Enhanced Trade Facilitation Model.

C. Paradigm of the Study

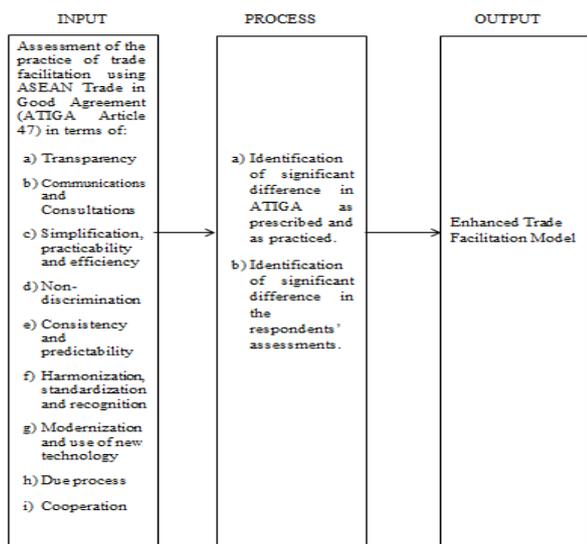


Fig. 1: Paradigm of the Study

D. Statement of the Problem

The main purpose of the study was to evaluate the current practices of the customs broker in trade facilitation. Specifically, the study sought to answer the following questions:

1. How do the three groups of respondents assess the ASEAN standards in terms of transparency, communications and consultations, simplifications, practicability and efficiency, non-discrimination, consistency and predictability, harmonization, standardization and recognition, modernization and use of new technology, due process, cooperation
2. What significant differences exist in the respondents' assessment when grouped according to the sector they represent?

3. Based on the findings of the study, what enhanced trade facilitation model can be proposed?

II. RESULTS AND ANALYSIS

A. Assessment of the Three Groups of Respondents of the ASEAN Standards in Terms of (a) Transparency, (b) Communications and Consultations, (c) Simplifications, Practicability and Efficiency, (d) Non-discrimination, (e) Consistency and Predictability, (f) Harmonization, Standardization and Recognition, (g) Modernization and Use of New Technology, (h) Due Process, and (i) Cooperation.

Table I: Summary of Assessment

ATIGA STANDARDS	Composite Mean					
	As Practised					
	BOC Adm	Imp/Exporters	Cust. Brokers	Comp. Mean	Interpretation	Remarks
A. Transparency	3.00	2.56	2.50	2.69	Sometimes	Weakness
B. Communications and Consultations	3.00	2.89	2.80	2.90	Sometimes	Weakness
C. Simplification, practicability and efficiency	2.50	2.78	2.50	2.59	Seldom	Weakness
D. Non-discrimination	2.40	2.78	2.70	2.63	Sometimes	Weakness
E. Consistency and predictability	2.60	2.70	3.40	2.57	Seldom	Weakness
F. Harmonization, standardization and recognition	2.80	2.30	3.00	2.70	Sometimes	Weakness
G. Modernisation and use of new technology	2.70	2.45	2.40	2.52	Seldom	Weakness
H. Due process	2.80	2.40	2.40	2.53	Seldom	Weakness
I. Cooperation	2.70	2.56	2.40	2.55	Seldom	Weakness

Scale: Always - 4.20-5.00, Often - 3.40-4.19, Sometimes - 2.60-3.39, Seldom- 1.80-2.59, Never - 1.00-1.79

The above table is the summary table of assessment on ASEAN standards of the three groups of respondents. It was noticed that "communications and consultation" got the highest composite mean of 2.90 with a verbal interpretation of "Sometimes" and "Modernization and use of new technology" got the lowest composite means of 2.52 with a verbal interpretation of "Seldom". Moreover, all of the nine areas of ATIGA standard are weak. These imply the need to enhance the practice of trade facilitation.

B. The Significant Difference that Exist when Grouped According to the Sector they Represent.

The following data shown in the succeeding tables presents the results of the significant differences on the respondents' assessment when grouped according to the sector they represent.

Table II: Summary of Result of Assessment of the Three Groups of Respondents

Statement (BASED FROM ATIGA)	BOC Administrators	Importers/ Exporters	Customs Brokers
A. Transparency	3.00	2.56	2.50
B. Communications and consultations	3.00	2.89	2.80
C. Simplification, practicability and efficiency	2.50	2.78	2.50
D. Non-discrimination	2.40	2.78	2.70
E. Consistency and predictability	2.60	2.70	2.40
F. Harmonization, standardization and recognition	2.80	2.30	3.00
G. Modernisation and use of new technology	2.70	2.45	2.40
H. Due process	2.80	2.40	2.40
I. Cooperation	2.70	2.56	2.40
COMPOSITE MEAN	2.72	2.60	2.57

Table above shows the summary of the responses of the respondents.

The table was used to determine the significant differences exist in the respondents' assessment when grouped according to the sector they represent. The following table reveals the result of the ANOVA Analysis.

Table III: Output of Data Analysis Using ANOVA

ANOVA: Single Factor					
SUMMARY					
Groups	Count	Sum	Average	Variance	
Column 1	5	24.5	2.722222	0.041944	
Column 2	5	23.42	2.662222	0.039319	
Column 3	5	23.1	2.566667	0.0475	

ANOVA						
Source of Variation	SS	df	MS	F	P-value	F crit
Between Groups	0.119585	2	0.059793	1.393075	0.267677	3.402826
Within Groups	1.030111	24	0.042921			
Total	1.149696	26				

The table above shows the output of the ANOVA analysis of the composite means of assessments. This reveals that the significance value is 0.267677 (p = 0.267677), which is greater than 0.05 and therefore, there is no statistically significant differences exist in the respondents' assessment when grouped according to the sector they represent. It is also evident that the F value (1.393075) is less than the F-critical (3.402826) which also indicates that there is no significant difference exists in the respondents' assessment when grouped according to the sector they represent.

C. The Derived Enhanced Trade Facilitation Model

The derived enhanced trade facilitation model is in the form of equations. Regression analysis results are as follows:

$$Y = a + bx_1 + bx_2 + bx_3 + bx_4 + bx_5 + bx_6 + bx_7 + bx_8 + bx_9$$

Where:

- a - Constant
- Y - Trade facilitation
- b - Coefficients
- x1 - x9 - Nine items of ATIGA (A to I)

C.1. For BOC Administrators

Table IV: Summary of Basis of Regression Model Equation of BOC Administrators

STATEMENTS	Coefficients	P-Value	Relationship	Interpretation
Constant	4.017083121	0.000		
(x1) Transparency	0.020000000	0.067	Positive	Not significant
(x2) Communications and Consultations	0.285313616	0.710	Positive	Significant
(x3) Simplification, Practicality and Efficiency	0.395716471	0.001	Positive	Significant
(x4) Non-discrimination	-0.461754207	0.012	Positive	Significant
(x5) Consistency and Predictability	-0.638449771	0.023	Negative	Significant
(x6) Harmonization, Standardization and Recognition	0.641254462	0.001	Negative	Significant
(x7) Modernization and Use of New Technology	0.089750127	0.045	Positive	Significant
(x8) Due Process	-0.109892912	0.032	Positive	Significant
(x9) Cooperation	-0.360102010	0.012	Negative	Significant

Table above shows the results of the regression analysis for BOC Administrators as expressed by the equation:

$$Y = 4.017 + 0.02x_1 + 0.28x_2 + 0.39x_3 - 0.46x_4 - 0.63x_5 + 0.64x_6 + 0.08x_7 - 0.10x_8 - 0.36x_9$$

Results reveal that Communications and Consultations (x2), Simplification, Practicality and Efficiency (x3), Non-discrimination (x4), Consistency and Predictability (x5), Harmonization, Standardization and Recognition (x6), Modernization and Use of New Technology (x7), Due Process (x8) and Cooperation (x9) are significant predictors of trade facilitation (Y). Result however show that Transparency (x1) is not a significant predictor of trade facilitation (Y) (p = 0.067). This means that the transparency

does not affect the trade facilitation according to BOC's view point.

C.2. For Importers/Exporters

Table V: Summary of Basis of Regression Model Equation of Importers/Exporters

STATEMENTS	Coefficients	P-Value	Relationship	Interpretation
Constant	4.710002	0.000		
(x1) Transparency	0.805886	0.004	Positive	Significant
(x2) Communications and Consultations	-0.17251	0.019	Negative	Significant
(x3) Simplification, Practicality and Efficiency	0.689418	0.001	Positive	Significant
(x4) Non-discrimination	-0.46165	0.003	Negative	Significant
(x5) Consistency and Predictability	-0.12884	0.007	Negative	Significant
(x6) Harmonization, Standardization and Recognition	-0.10441	0.018	Negative	Significant
(x7) Modernization and Use of New Technology	-1.26753	0.049	Negative	Significant
(x8) Due Process	-0.06606	0.039	Negative	Significant
(x9) Cooperation	0.311365	0.031	Positive	Significant

Table above shows the results of the regression analysis for Importer/Exporter as expressed by the equation:

$$Y = 4.71 + 0.80x_1 - 0.17x_2 + 0.68x_3 - 0.46x_4 - 0.12x_5 - 0.10x_6 - 1.26x_7 - 0.06x_8 + 0.31x_9$$

Results reveal that Transparency (x1), Communications and Consultations (x2), Simplification, Practicality and Efficiency (x3), Non-discrimination (x4), Consistency and Predictability (x5), Harmonization, Standardization and Recognition (x6), Modernization and Use of New Technology (x7), Due Process (x8) and Cooperation (x9) are all significant predictors of trade facilitation (Y). This means that all of the nine items affect the trade facilitation according to Importers/exporter's view point.

C.3. For Custom Brokers

Table VI: Summary of Basis of Regression Model Equation of Custom Brokers

STATEMENTS	Coefficients	P-Value	Relationship	Interpretation
Constant	4.720192	0.001		
(x1) Transparency	-0.85252	0.014	Negative	Significant
(x2) Communications and Consultations	0.991275	0.046	Positive	Significant
(x3) Simplification, Practicality and Efficiency	0.381208	0.000	Positive	Significant
(x4) Non-discrimination	-0.40403	0.001	Negative	Significant
(x5) Consistency and Predictability	0.094128	0.023	Positive	Significant
(x6) Harmonization, Standardization and Recognition	-0.11409	0.009	Negative	Significant
(x7) Modernization and Use of New Technology	0.0100	0.780	Positive	Not Significant
(x8) Due Process	-0.3099	0.006	Negative	Significant
(x9) Cooperation	-0.19581	0.036	Negative	Significant

Table above shows the results of the regression analysis for Custom Brokers as expressed by the equation:

$$Y = 4.72 - 0.85x_1 + 0.99x_2 + 0.38x_3 - 0.40x_4 + 0.09x_5 - 0.11x_6 + 0.01x_7 - 0.30x_8 - 0.19x_9$$

Results reveal that Transparency (x1), Communications and Consultations (x2), Simplification, Practicality and Efficiency (x3), Non-discrimination (x4), Consistency and Predictability (x5), Harmonization, Standardization and Recognition (x6), Due Process (x8) and Cooperation (x9) are all significant predictors of trade facilitation (Y). And item (x7) is not significant (p = 0.780) in the model. Result however show that Modernization and Use of New Technology (x7) is not a significant predictor of trade facilitation (Y) (p = 0.780).



This means that the Modernization and Use of New Technology does not affect the trade facilitation according to customs brokers view point.

Consolidated Summary Model

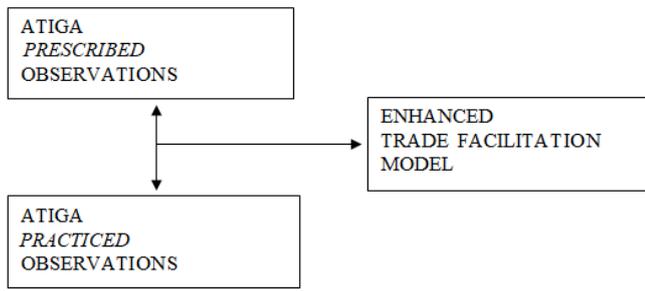


Fig. 2: Summary Model of the Study

From the findings of the results, it can be noticed that the assessment of trade facilitation shows that there is a need to enhance the trade facilitation. On the other hand the difference and gaps is also noticed between the prescribed and practiced observations. On the other note, Transparency, Communications and Consultations, Simplification, Practicality and Efficiency, Non-discrimination, Consistency and Predictability, Harmonization, Standardization and Recognition Modernization and Use of New Technology, Due Process and Cooperation are all significant in the model with positive and inverse relationships. Moreover, it can be noticed that there is congruency between the prescribed (predictor) and practiced (variables/contributing factors) result based on the regression analysis that could be the basis for effective trade facilitation.

III. CONCLUSION AND FUTURE WORKS

Based on the result of the study, the following conclusions were made:

1. The assessments of the respondents on the ASEAN standards on trade facilitation are determined based on the prescribed and practiced observations. Interestingly, the result of the prescribed observations is “Often” while the result of the practiced observation is “Seldom”.

2. It is also evident that in the as prescribed observations, significant differences exist in the respondents’ assessment when grouped according to the sector they represent. However, It is also evident that the as practiced observations showed that there is no significant differences exists in the respondents’ assessment when grouped according to the sector they represent.

3. The enhanced trade facilitation model was already designed and represented by the regression equation. Interestingly, the result seems that the focus of the model must be in the prescribed responses to come up with an enhanced model. This means that the standard of ATIGA and the existing laws and regulation must be properly implemented to come up with an enhanced model. Moreover, the model shows that it is evident that there is congruency between the pprescribed (Predictor) and practiced (variables/contributing factors). Future works may focus on the benchmarking activities with other ASEAN member countries to further enhance the output of the study and to find out the best practices with regard to trade facilitation, data collection from the other ASEAN member countries on the implementation of

article 47 of ATIGA must be taken into consideration so that it will be used as a predictor of the future research, monitoring on how the customs brokers, importers/exporters and BOC administrators do their job to regulate and to further improve their services. It is evident that the prescribed observation is greater than the practiced observation on the respondents’ assessment on trade facilitation and determination of the reasons why the BOC Administrators did not find transparency to have significant relationship with trade facilitation must be taken into consideration in the future studies.

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REFERENCES

1. ASEAN economic community scorecard, Retrieved August 2, 2016 from <http://www.asean.org/storage/images/archive/publications/AEC%20Scorecard.pdf>, 2012
2. Otsuki. Quantifying the Benefits of Trade Facilitation in ASEAN retrieved August 2, 2016 from [http:// www.osipp.osakau.ac.jp / archives / DP / 2011 / DP2011E006.pdf](http://www.osipp.osakau.ac.jp/archives/DP/2011/DP2011E006.pdf), 2011
3. Bureau of Customs Annual Report, 2014
4. Premchit. The Economic Effect of ASEAN Integration, 2013
5. Riga. The Filipino Customs Brokers’ Perception on the Proposed Customs Modernization and Tariff Act (CMTA) of the Philippines, 2016

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