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Supply chain security initiatives: The authorized economic operator and Indonesia's experience

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ABSTRACT

Discussion of security in supply chains has been intensified since the tragedy of 9/11 in the United States. The World Customs Organization's SAFE Framework with its Authorized Economic Operators (AEO) program is one of the prominent supply chain security initiatives. At the time of its introduction in 2005, 168 member countries signed their support for its implementation. However, the last AEO Compendium reports only 69 countries currently have AEO program in place. This relatively slow development indicates the complexity of issues that might challenge countries to implement the initiative. Against this background, this paper aims to look at the AEO implementation in an environment where supply chain security initiative is relatively new. It focuses on policy development perspectives where the case study of Indonesia might represent challenges of other countries. Involving methods of desk research, interviews, and field observation, this paper starts with the development of various international supply chain security programs where the AEO finds its prominence. It follows with a discussion on the Indonesian AEO implementation where challenges and its policy development process are explored.

1. Introduction

Supply chain security has become increasingly important, particularly following the tragedy of 9/11 when terrorism was added as a threat. However, even though there is a consensus that imminent danger of terrorism presents a new dimension in the operations of international supply chains, it is believed that the area still lacks exploration despite high demands in its application (Bichou 2010; Burgess et al. 2006; Martens et al. 2011).

Following the catastrophe, potential misuse of supply chains for terrorist purposes has been identified as a modern risk with massive potential consequences beyond the supply chain. The risk is amplified in the context of global international trade where more than 600 million containers are used annually, and only 2% are inspected (UNODC 2013). This situation leaves a critical risk, for example, of a nuclear device smuggled inside a legitimate container among these millions of uninspected containers. The magnitude of the risk has compelled authorities, internationally or nationally, to design measures to detect and deter the threat.

Against this background, this paper aims to describe the process of policy development related to an implementation of a relatively new international supply chain security initiative in a national context. It presents a case study of the Authorized Economic Operator (AEO) program in Indonesia. It expects to serve as an example of supply chain security implementation in an environment where policy foundation and awareness of its importance are still lacking. A case study interviews and observations are utilized to provide insights from business and policy makers.

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2. Literature review

Nowadays, supply chain security is increasingly important where terrorism has been included in many of its definitions (Allen 2007; Urciuoli and Ekwall 2012; Voss et al. 2009). The risk, for example, of tampering with cargo and smuggling explosives by using legitimate containers has become a major concern where, in response, a number of security measures and procedures have been developed. In a national context, Customs-Trade Partnership against Terrorism (C-TPAT) and Container Security Initiative (CSI) are examples of immediate reactions by the United States (US) to detect risks from a very early stage in supply chains. Under the C-TPAT, the US Customs and Border Protection (CBP) examines companies exporting to the US and ensure they have accomplished and maintain sufficient security measures. In return, their cargoes are deemed to contain less risk and enjoy less interference from customs at ports of destinations in the US (US Customs and Border Protection 2004). The CSI seeks to increase cooperation with partner countries to allow the US CBP to conduct risk analysis and execute examinations on US-bound containerized cargoes at ports of export (US Customs and Border Protection 2011). Strongly representing national interests with an approach of expanding control beyond borders, these initiatives are among 33 programs enlisted in the US' "Strategy to Enhance International Supply Chain Security" issued by Department of Homeland Security (US Department of Homeland Security 2007).

In the international context, The United Nations' associated bodies, the United Nations Office for Drugs and Crime (UNODC) and the International Maritime Organization (IMO), introduced the Container Control Programme (CCP) and International Ship and Port Security (ISPS) respectively. The two are examples of security initiatives that expect participation from all countries to enhance control at certain nodes in supply chains. Even though primarily designed to combat the smuggling of drugs, the CCP mitigates the risk of international organized crimes, which includes terrorism. By organizing a task force composed of related law enforcement bodies and with the support of intelligence exchange systems, the CCP aims to intercept and control anomalies at international ports (UNODC 2013). The ISPS, on the other hand, focuses on the security of the premises of ships and port facilities and regulates minimum security standards to prevent and detect security threats. It has been in force since 2004 and provides prescriptions for governments, shipping companies and related port authorities to identify security risks and prepare measures to overcome potential security incidents at port facilities and on ships (IMO 2003).

The above security initiatives are global in coverage and obtain significant participation, both in terms of the number of countries and type of patrons in the chains. The CSI currently has 58 international ports participating, which covers 80 percent of the entire containerized cargoes shipped to the US (US Customs and Border Protection 2011). The C-TPAT has been growing significantly and has certified more than 11,400 business entities since it was established in 2001 (US Customs and Border Protection 2017). It represents all functions in the US import chains, which includes importers, carriers, customs brokers, terminal operators, as well as exporters and manufacturers abroad who serve as their trade partners. The CCP and ISPS have also gained substantial response where the United Nations as their developer must have brought significant influence and is now operating in 28 countries with more than 50 port control units contributing to the increasing detection and confiscation of illicit drugs (UNODC 2013). Unlike the three examples of which participation is voluntary, the ISPS is mandatory for 108 country signatories to the Safety of Life at Seas (SOLAS) Convention (IMO 2003).

As briefly described above, different security initiatives have been fragmented relevant to the interests and authorities of the country and the promoting bodies. There are certain aspects that are missing from these programs preventing them from becoming more globally accepted and connecting all patrons in a borderless environment. Considering that supply chains in international trade are connecting the countries through the flow of goods, documents, and funds, it is necessary to have a security initiative that is accepted by all patrons in the chains, including their partners overseas. Within this context, the following shortcomings of previous security initiatives are identified.

First, the sense of common and mutual global interest is missing in C-TPAT and CSI. The strong national interests of the US as the developer and promoter to push forward the threat beyond their national land, other countries may hesitate to participate except they have strong business interests to export to the US. Second, while the programs that are developed by international bodies are more globally accepted, the orientation does not sufficiently accommodate the complex and multifaceted characteristics of supply chains. The ISPS only focuses on security at ports and the CCP only focuses on control, without offering facilitation to balance the cost of tighter control. The common perception that security programs imply additional cost and time may aggravate the already complex procedures in supply chains.

3. Authorized economic operator (AEO) – The new initiative

In response to the impediments noted above, the World Customs Organization (WCO) introduced the Framework of Standards to Secure and Facilitate Global Trade (SAFE Framework), which offers a global perspective on its orientation and a balanced approach towards control and facilitation. With 180 national customs administrations as its members, the WCO plays a vital role in developing an international program that is more adaptive to shared interests in international trade. Indonesia was among the WCO's 168 member countries who endorsed the program once it was

introduced at the Leaders Conference in 2005 (Polner 2010). This signature of endorsement implies a consequence of program introduction in their countries. These features have brought optimistic views that the AEO brings a more promising future of a global secured supply chain, where patrons are not burdened by different overlapping programs. However, the fact that currently only 69 have implemented the program of 168 countries that signed the commitment on its inception in 2005 (WCO 2014), triggers questions and concerns. The case of Indonesia in implementing the AEO might reflect the reasons behind its relatively slow development.

Mikuriya (2007), the Secretary General of the WCO, notes that as a response to the increasing expectations from customs function, in 2002 the WCO commenced the development of programs and introduced the SAFE Program in 2005. This program is built upon principles that require active cooperation between customs administrations as well as tight partnership between customs and private sectors. The Framework involves the key concept of AEO as key actors to contribute to the security in supply chains. An AEO is defined as:

"A party involved in the international movement of goods in whatever function that has been approved by or on behalf of a national customs administration as complying with WCO or equivalent supply chain security standards. AEOs may include manufacturers, importers, exporters, brokers, carriers, consolidators, intermediaries, ports, airports, terminal operators, integrated operators, warehouses, distributors and freight forwarders" (WCO 2012).

These chain players must be certified by customs after meeting a set of specific requirements which includes the firms' compliance record, financial viability, information accessibility, cargo, conveyance, premises, personnel, and trading partner security (WCO 2014). Their commitment to participate in trade security must be prominent to qualify for additional benefits from customs, which are not given to non-AEO companies. The benefits may be in the form of less inspection, fewer documents, and direct assistance.

When nationally oriented programs may not represent the interests of other countries, and international initiatives are more fragmented in their focus and object, the implementation of security measures in a supply chain that accommodates a complexity of actors and operations -so that an accepted global platform may be achieved- remains a challenge. Against this backdrop, the WCO's SAFE Framework, which formulates the AEO program, offers to sustain a holistic approach. Integrated orientation and balanced character of control and facilitation are unique features in the AEO program that make it more acceptable for stakeholders in the supply chains. It seeks to establish standards of supply chain security with an end-to-end approach, supported by two pillars of strong partnerships. The first is customs-to-customs. Customs administrations play an influential role at borders, where cooperation between customs to employ commonly accepted standards will contribute significantly to supply chain integration. The second is customs-to-business where the AEOs are vital elements allowing customs to manage risks, thus creating seamless supply chains for legitimate trade (WCO 2006). For customs, it enhances the risk management system and provides an avenue for a coordinated border control management. For business, together with uniformity and predictability, it offers faster clearance at borders. In turn, this contributes to economic development and security protection.

It is argued that the threat of terrorism calls for further research to ensure better security without deterring legitimate trade. This is where many researchers agree that the AEO serves as an instrument to both secure and facilitate international trade (Altemöller 2011; Mikuriya 2007; Urciuoli and Ekwall 2012; Zhang and Preece 2011). Thus the program has successfully attracted 168 out of 180 member countries to sign their commitment, albeit not obligatory for members (WCO 2014). Intense promotion from the WCO that AEO offers substantial benefits and potentially helps to improve companies' competitiveness in global trade may be some of the reasons it has attracted such enthusiasm.

4. AEO implementation in Indonesia

Indonesia is among the first signatory countries to the SAFE Framework that carries the AEO program in 2005 although it was not implemented until 2012. A pilot program was introduced in December 2013 involving nine selected exporters in Tanjung Priok Port (DGCE 2013). In March 2015, five of these companies were finally awarded AEO status (Ministry of Finance 2015). Despite the fact that Indonesia currently has 46 AEOs (Ministry of Finance 2017), this lengthy period of policy development epitomizes a complicated situation which involves complex issues relating to international relations, economic benefits, and policy orientation. In Indonesia, the initiative finds a relatively new environment for its implementation.

Indonesia became a member of the WCO on 30 April 1957, shortly following WCO's inaugural session in 1953 (Ministry of Finance 2016). It is unclear why Indonesia became a member very early together with only four other countries apart from the thirteen European countries that found the organization. The other four countries are Egypt, Syrian Arab Republic, Iran and Pakistan (WCO 2016). Indonesia has shown that its membership in the WCO is very important. It has been involved in the development of conventions and other WCO products and incorporated important and relevant best practices into its customs laws and regulations. The current Indonesian Customs Laws adopts a high degree of principles and articles from The International Convention on the Simplification and Harmonization of Customs procedures. Active participation in the WCO was likely one of the reasons of Indonesia's immediate consent to

support the AEO.

The reputation of AEO in international fora was also considered favorably. In Asia-Pacific Economic Cooperation (APEC), developed countries eagerly provide their assistance for other members to develop national AEO schemes (APEC 2016). Similarly in ASEAN, although implementation of the AEO varies and is at different stages, it is agreed that the AEO is necessary to support integration efforts in the region and increase regional competitiveness in global markets (Pangestu et al. 2015). Besides, the WTO has developed an Agreement on Trade Facilitation that stipulates the inclusion of supply chain security as one requirement to access further facilitation measures in international trade. WTO members agreed to adopt the Agreement in 2014 (WTO 2014). Under this agreement, the AEO is an accepted scheme that recognizes businesses with certified security should be treated differently and enjoy more facilitation. This agreement will come into force after 2/3 of the WTO ratifies the agreement. This development has brought stronger leverage for the AEO program to be implemented. The prediction of AEO potential to become a new trade preference that possibly creates a new international trade map is becoming more imminent.

In general, AEO regulation revolves around supply chain activities in export and import that involves the flow of goods, documents, information and funding in international trade. These multifaceted activities involve different government agencies who issue a complex set of regulations that must be observed by their relevant stakeholders. A current study on import dwelling time in Tanjung Priok Port, Jakarta shows that at least nine agencies are involved in the process of clearing goods from the port. Thirteen other agencies are responsible for issuing import and export permits and certifications. This does not include land site transportation or flow of funds where other law enforcement agencies are responsible. Among these agencies, customs is the most relevant government agency regulating export and import with the responsibility to both control and facilitate the flow of goods at borders. In most cases, customs enforces regulations issued by other agencies especially related to permits and certification to assure lawful imports or exports.

Further, it is relevant to consider the logistic performance in the discussion of AEO implementation. It provides insights on how the AEO can contribute to the efforts for improvement. The Logistic Performance Index (LPI) of the World Bank is a widely used reference to measure logistic performance in a country (Arvis et al. 2014). Indonesia's position in the LPI has been fluctuating from the highest 43 in 2007 and the lowest 75 in 2010. In 2016, Indonesia ranks 63 which is a decline from 53 in 2014 and 59 in 2012 (Arvis et al. 2016). This ranking does not compare well with neighboring countries like Malaysia (32) and Thailand (45), even though it is still better than Vietnam (64) and Philippines (71) in 2016.

There are six elements measured in LPI, and all are complementary to the objectives of AEO, apart from the security perspective, to improve logistics performance. They are customs, Infrastructure, International Shipment, Logistic Quality and Competence, Tracking and Tracing, as well as Timeliness. This is where the AEO is expected to improve speedier customs clearance processes, more integrated operations in supply chains, more secure and reliable tracking system - all are likely to improve supply chain security.

Another consideration in implementing security measures in supply chains is country security status. According to a world risk map developed by the Global Intake, Indonesia's general security level is at 21% which is classified as "heightened security concerns." It is based on threats of crime, civil unrest, terrorism, and internal as well as external conflict. Under the specific risk of terrorism, Indonesia is marked 45% that means "highly dangerous business environment" (Globalintake 2016). Also, the Telegraph has created a global security map where Indonesia is considered to bear high threat related to terrorism (Smith 2016). These assessments represent the international perception of Indonesia's security and suggest the need to enhance Indonesia's security image of which the AEO is expected to achieve.

The above considerations have led to the policy decision of AEO implementation in Indonesia. In addition to that, relevant international initiatives are believed to inspire governments in initiating change and modernization (Obradovic 2012). In the era of intense competition, a government is compelled to produce business-friendly regulations so that efficient business practices are possible. Against this background, customs administrations are expected to shift the paradigm from being a regulatory body to a facilitating body. The relationship between government and business is no longer subject and object but more of a partnership. As Zhang and Preece (2011) argue that, in most cases, a government-business relation is more rhetoric rather than action, they believe that AEO represents an effectual partnership program between government and the private sector. The AEO is designed to benefit both sides with a mutual contribution to security and facilitation.

5. AEO rationales: Business perspectives in Indonesia

For Indonesia, the AEO constitutes a new level of partnership between customs and business for the mutual benefit of all. The program helps customs in managing the risks of compliance in security and revenue collection, and at the same time, the AEOs enjoy less interference from customs. Many references in supply chain literature show that businesses are highly concerned with impacts and returns that companies may expect in implementing security programs (Dekker and Stevens 2007; Grainger 2007; Hintsa and Hameri 2009).

In order to provide more insights on business perspectives, interviews were conducted with four of five running AEOs, including their chain partners. The interviews were semi-structured using open-ended questions, and field observations were conveyed to see operating procedures and practices. Interviewees were mid-level managers and their operational staff from the four AEO exporters in Indonesia and employees of the same level from their chain partners - these included trucking companies, warehouse operators, container yard operators, empty container park operators and freight forwarders. Companies with different functions in supply chains participating in the interviews provided valuable insights on other relevant issues of integration and security interests.

For the purpose of this article, findings on their reasons and expectation to participate in AEO program are relevant. Surprisingly, it was not the promoted benefits of AEO that attract business participation. AEO pioneers in Indonesia are companies who have been actively participating in various programs initiated by customs. Supported by their high compliance level and strong willingness to take part in the partnership program with customs, they decided to apply for AEOs. All of the current AEOs were participants in the AEO pilot projects developed prior to the formal introduction of the program. Customs invited them for their excellent reputation in import and export. It was their enthusiastic involvement in customs policy development that had driven them to become AEOs. However, their understanding on AEO varies, and some were unaware of the AEO policy before participation. Three participants are multi-national companies and have their affiliates overseas and, hence, had more exposure to the program. One AEO is a national company, for whom it was a completely new concept.

The four AEO exporters recognized that export procedures were already simple before the AEO implementation and they have not seen any differences after one year of AEO certification. However, they understand the long term benefits of having AEO brands for their companies and its potential to improve their competitiveness in international trade. They just do not want to be left out from programs proposed by customs, especially when there is no significant cost required since their conditions had virtually met the AEO standards at the time of application. They all agree with the AEO objectives and the importance of Indonesia to provide the program. Therefore they have their commitment to support the continuity of the program.

6. AEO challenges and Indonesia's experience

The WCO promotes the success of AEO as 168 out of 180 WCO member countries have signed the commitment to implement AEO (WCO 2014). However, the last AEO Compendium issued in 2016 shows that there are 69 countries implementing the AEO. It means that, to date, less than 40 percent of the signatories have made their commitment into practice. Relatedly, a number of concerns have been raised in the literature that may explain the slow development of AEO to become a global security regime in supply chains.

Zhang and Preece (2011) note several AEO challenges discussed in a WCO's regional capacity building that include legal frameworks, tangible benefits, equal access for small and medium-sized enterprises (SMEs), customs expertise on security verification, and mutual recognition agreement (MRA) across countries. While it is too early to discuss MRA for Indonesia, other presented challenges were encountered during AEO introduction in Indonesia and discussion of AEO implementation is guided by these challenges.

6.1 Legal frameworks

The adoption of international initiative into national legislation is not simple and requires lengthy processes that involve the agreement from different agencies. This has been identified as one of the most time-consuming impediments in regulating national AEO. Some policy systems in many countries even require parliament agreement for a regulation to have acceptable legal standing. Inevitably, this system involves an extensive political process that takes considerable time for hearings and negotiations. For Indonesia, the DGCE has been the primary driver of AEO policy development. Under the Ministry of Finance, DGCE must seek support and agreement from the Ministry of Foreign Affairs and Presidential Office. The AEO regulation is stipulated by Ministry of Finance decree with further technical procedures elaborated in the directives of Customs Director General.

6.2 Tangible benefits

The WCO regularly issues AEO compendium that reflects the development of the program worldwide. It also contains brief information on requirements and benefits of AEO program in each country. Even though the main objectives of security and facilitation are reflected, every country has different details on their elaboration of requirements and benefits. Indonesia, as well as other countries listed in the compendium, offers the benefit of minimum document and physical inspection for companies certified as AEOs. This has been one of strongest selling points during AEO promotions. However, export is not the focus of control for customs in Indonesia, as also commonly found in other customs administrations. Generally, countries aim to increase their export by relaxing export regulations, so that tighter control on export is avoided. Governments also tend to put more control on import to protect their

countries from harmful and illicit goods. In many cases, taxes on import have also been the more preferred source for revenue, rather than on export.

For these reasons, as expressed during interviews with Indonesian AEOs, the reduction of inspection levels on export may not benefit AEOs substantially as they have enjoyed smooth export processes prior to AEO certification. The intangible benefits are likely to be more influential - these benefits include a better company profile, improved internal security awareness, closer relations with trade partners, and more privileges from customs. Additionally, the future potential of AEO to improve country's competitiveness has kept the program attractive to participate.

6.3 Customs security orientation

The WCO's AEO implementation guide (WCO 2006) highlights the program's conditions both for customs and business that includes, in general, business performance and security compliance. It is the aspect of security which may reflect a paradigm shift in customs conventional priority of control. To certify an AEO, customs must verify security in all business operations that include cargo, conveyance, premises and personnel. Moreover, customs are expected to look at the security of trading partners which might be out of customs' radar prior to this scheme. However, trading partner security is a factor that potentially contributes to a wider participation in creating integrated supply chain security.

Security is not something new for most customs administrations (Widdowson and Holloway 2009). Historically, it has been one of many functions that customs typically carries. It is included in the four customs general functions as summarized by the WCO, which are widely adopted by its members (Widdowson 2007). Indonesia has these functions translated into its organizational missions. They are trade facilitation, industrial assistance, community protection and revenue collection. It has been a prominent duty of customs to protect the nation and its people from the unlawful traffic of goods such as firearms and illicit drugs. In fact, this function is more popularly appreciated. It serves as a good promotion for customs performance since the impact is easier to measure than other functions. However, customs around the world have a different balance of priorities in performing these duties.

From government perspectives, supply chain security may fall under different domain of authorities. Recognizing complex activities in supply chains from manufacturing, warehousing, and transporting, it is understandable when there are regulations needs to be followed from different government agencies pertinent to the activities. In general, the police is the authority mostly relevant with security issues, in particular on the land side and on the premises of chain patrons. With the AEO, customs is expected to engage with the relatively new role to assess security in these areas.

AEO triggers a discussion that has long existed in customs. It is related to the seemingly confronting areas of priority: control versus facilitation. Indonesian customs has addressed this dilemma by introducing risk management approach since the adoption of Customs Law No 10/1995. It adopts the principle from WCO's Convention on the efforts to better address the different level of risks in customs duties with minimum disruption to legitimate trade. At the same time, it assures efficient use of resources. The establishment of different lanes on import that determines the level of customs control is an obvious manifestation of risk management approach. Red lane is for highest risk imports with full physical inspection, yellow for lower risk that is addressed by document inspection only, whereas green contains the lowest that enjoys speediest customs clearance with inspection conducted regularly after importation. These lanes are decided based on risk level carried by importers, goods, country of origin, and other considerations. Importers with high compliance level will be more likely to use green lane. This lane system does not occur on export that constitutes another reason to introduce AEO on export at its early development.

The features of the AEO initiative that carries both control and facilitation, and embeds a familiar risk management approach, have made the initiative more acceptable in the customs environment. However, the emphasis on security that lies behind the initiative may not be as familiar for many customs administrations, which might be the case for Indonesia where revenue collection remains highest in its key performance indicators. In Indonesian customs laws, terrorism was only included in its 2006 amendment - indeed the term terrorism was not found in the early customs laws 1995 (Customs Law 2006). Nevertheless, despite the elevated attention on security and terrorism, including its inclusion in the legal system and the emergence of several bodies focusing on terrorism concerns, Indonesian customs has long employed risk management principle required to deter and detect modern risks such as terrorism (Customs Law 1995). Utilizing this principle, customs assesses the risks carried by an importation or exportation. Some elements are included in determining factors such as goods, country of import/export/transit, and most importantly, consignor/consignee. In relation to this, customs develops risk groupings of its stakeholders based on their compliance level. It can be relevant to their number of breach, size, nature of business and commodity. This approach is internationally known as customs compliance program (WCO 2014). At this junction, the philosophy of AEO is compatible with Indonesian customs' functions and its relevant approach.

6.4 Challenges for SMEs

The principle of AEO to detect threat as early as possible from the source of the goods indicates that control needs to be tighter on export. On the surface, it may contradict with the objective that has long been upheld to facilitate export. However, security in supply chains is becoming more important and the AEO is more suitable compared with other

similar initiatives. Moreover, a discussion that predicts security will become a new trade preference, or even a requirement in international trade (Altemöller 2011), and may add more leverage to AEO implementation and improve a country's competitive advantage (Urciuoli and Ekwall 2012). Additionally, the nature of its voluntary implementation allows business to calculate the benefits over the necessary investment before deciding to apply for AEO.

However, it is the issues of investment to meet the AEO standards that may discriminate SMEs over larger companies. Price Waterhouse Coopers (Coopers 2012) found that Multi-National Companies (MNCs) are more likely to have more interests to access the AEO. It is their cross-country production and market base that demands the needs for a smoother process at borders. On the other hand, the issue of security investment may hamper small enterprises to access AEO. The importance of small industries for Indonesia requires this issue to be addressed carefully so that the policy does not only benefit large companies. Note that SMEs constitute 99.99% of Indonesian business entities which contribute 58% to GDP and absorb 97.6% of labor when compared with large enterprises (Ministry of Cooperatives and SMEs 2014). SMEs that are considered to be more "genuine" national assets are expected to enjoy more facilitation from the government to prepare them for the tight, competitive challenges ahead.

In contrast, the current AEOs in Indonesia are all multi-national companies. It may justify the notion that security is more accessible for bigger companies. Nevertheless, the fact that only 14% of Indonesian export involves SMEs may explain the fact that interest of SMEs towards global supply chain security is not as big as the MNCs.

7. Concluding comments

Despite the ideal perspective of AEO and its coherent approaches with supply chain characteristics, some potential challenges can be identified within the program itself and its application in different national supply chain environments. Challenges of the AEO program are, firstly, the potential of variation in the number and quality of chain players that implement AEO programs; secondly, variation of details in their requirements and benefits in national contexts; thirdly, the tendency of supply chains to operate in fragmented frameworks. The implementation guide from the WCO that is general in design by not regulating detailed provisions may have been the cause of these challenges. In national perspectives, the inclusive characteristic of AEO allows ample room for adjustments at national level that encourage members to participate. On the other hand, it may also partly contribute to the challenges in its implementation for variation in details across implementing countries. In the policy framework of Indonesia, it includes dilemma of priority in the DGCE, i.e., security vs. revenue; import vs. export control; control vs. facilitation.

Prior to the AEO implementation, terrorism was not included as a risk in Indonesia's customs policy, especially relating to exports. AEO highlights a new horizon in policy development and is, at the same time, prompted with challenges from the traditional perspective of customs as the government revenue collection agency. Arguably it is premature to evaluate the result of AEO implementation in Indonesia. However, this situation might be similar in other countries, and the Indonesian experience may provide a reference for related policy development. The benefits of AEOs - compared with earlier security endeavors - offer greater benefits regarding its global perspectives and balanced approach to security, control and trade facilitation. The AEO reasonably addresses the challenges from earlier initiatives, which include national sentiment in protecting other countries, fragmented measures in limited nodes of the chains and the lack of facilitation appeal. Moreover, the voluntary characteristic of the program is believed not to add an additional burden, rather the policy provides an opportunity for businesses to enhance security and facilitate trade with overseas customers.

For future research, a further challenge is a tendency where supply chains operate in a fragmented environment. This requires a more detailed observation to describe the connection between integration and security in supply chains. Also, with the recognition of AEO in many international forums and in conjunction with AEO's ultimate objective to develop a global security measure in the supply chain, AEO implementation at national level calls for standards that are internationally acknowledged. This concern necessitates further research on the potential of AEO to become a new global trade preference.

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