

Secure Global Trade:
Collateral Benefits of the European AEO program for Traders

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List of Abbreviations

3PL	Third Party Logistics Provider
ACI	Advanced Cargo Information Program
AEO	Authorized Economic Operator
AEOC	Authorized Economic Operator for Customs Simplifications
AEOS	Authorized Economic Operator for Security & Safety
BASC	Business Alliance for Secure Commerce
CBP	US Customs and Border Protection
CCTV	Closed-Circuit Television
C-TPAT	Customs-Trade Partnership Against Terrorism
EMEA	Europe, Middle East and Africa
ERP	Enterprise Resource Planning System
EU	European Union
FoS	Framework of Standards
FTA	Free Trade Agreement
GSTI	Governmental Security-Trade Initiatives
GTM	Global Trade Management
HMRC	UK Her Majesty's Revenue and Customs
ISO	International Standards Organization
ROI	Return on Investment
SCS	Supply Chain Security
TAPA	Transported Asset Protection Association
UCC	Union Customs Code
WCO	World Customs Organizations

1. Introduction

In recent years, the goal of facilitating international trade by improving security of global supply chains has gained more and more attention from the public and private sector. This is mainly due to the increasing pressures of the turbulent environment in which companies operate nowadays. The Import/Export industry, whose supply chains comprise an extensive network of organizations disseminated around the planet, has been one of the sectors most impacted by trade disruptions¹. Not only natural disasters such as the major earthquake and tsunami impacting Japan in 2011 or the hurricanes striking North America in 2005 have caused significant problems in the sourcing, distribution and supply systems of global trade firms, but also human-made attempts such as the US terrorist attacks suffered on September 11, 2001, or the London bombing attacks in 2005 have brought detrimental effects to the global field in which these organizations exchange goods². These criminal attempts coupled with new forms of supply chain crime and emerging business risks have provoked considerable damages to critical transport infrastructure, distribution routes, business relationships and manufacturing facilities of organizations which have led to significant shipment delays, production stoppages, low product quality and deficient customer service³. Thus, improving security has become paramount for the trade compliance community to allow the seamless importation and exportation of cargo worldwide.

In addition, acknowledging that companies' supply systems could be targeted by criminal bodies to perpetrate terrorist attacks Government and Customs Agencies around the globe have reinforced the conditions and regulations concerning the international movement of goods seeking to protect the welfare and interest of their citizens and national economies while promoting a safe environment for international trade⁴. As a precautionary measure to prevent illegal contraband and harmful events Federal Offices and International Organizations have launched diverse initiatives that encourage the business community to incorporate stricter security standards into its global supply chains⁵. As import/export firms need cross-border trade to distribute their products globally their participation in governmental security-trade initiatives has become crucial for business success. However, in order to comply with these new obligations organizations must design, adapt and enforce extensive customs compliance and security programs which require significant modifications in logistics networks, enterprise processes and business relationships. Even so, firms eagerly seek to meet the security and trade criteria set by these initiatives in order to shield their organizations and benefit from various simplifications to streamline, optimize and improve their international commercial flows. This new requirement placed on companies to protect their global supply chains to facilitate global trade is known as "Supply Chain Security (SCS)"⁶.

Nowadays, the study of SCS is important for all kind of organizations because disruptions caused by security breaches and new regulations have been proved to impact negatively companies' overall performance and can even limit their access to critical markets⁷. For instance, poor SCS measures have resulted in numerous property and cargo losses, customs clearance delays and increasing inspections on shipments during importation. Also, companies have experienced more compliance audits and scrutiny from Tax Authorities, and considerable decreases in revenues due to their inability to procure goods and services to

¹ Yang & Wei, 2013

² Autry & Bobbitt, 2008

³ Speier et al., 2011

⁴ US Government, 2012

⁵ Williams et al., 2008

⁶ Williams et al., 2008

⁷ Lee & Whang, 2005

customers when required⁸. Furthermore, the incorporation of security standards has become essential for organizations to achieve supply chain resilience. The term resilience refers to the capacity of a supply chain to survive, adapt and thrive in the face of turbulent change⁹. The relationship between Global Trade Management and Supply Chain Security is important because even the most carefully designed supply chain is susceptible to unforeseen events. Hence, as companies' operations become more global, complex and therefore vulnerable, it becomes more urgent for Trade Compliance, Logistics and Supply Chain practitioners to understand how they can create more cost-effective, flexible, agile, compliant and sustainable but also more secure supply chains.

Although more and more companies recognize that poor security measures lead to low performance and despite the intense promotion of governments about the benefits of improving security in global trade operations, still there are high levels of skepticism among the industry regarding the contribution of SCS in achieving the traditional goals of the trade compliance and supply chain function of organizations. These traditional goals encompass all those efforts directed to improve the quality, cost, speed, visibility, reliability and resilience of the supply chain in order to increase profitability, sustain operations, facilitate new product introduction and enable country expansion. Moreover, trade compliance and supply chain executives are not fully aware of the strong influence of SCS in reducing cost, decreasing lead times, developing competitive advantages and facilitating access to markets¹⁰. Additionally, there is a dearth of research explaining the influence of SCS programs on the way how companies configure their logistics networks, which encompass procurement, transportation, customs processing and distribution systems¹¹. Therefore, current literature is not enough to understand how trade & supply chain security programs such as the Authorized Economic Operator (AEO) impact the processes, influence the configuration and support the goals of the logistics function of organizations given the conditions of today's business environment. In this thesis I want to investigate how the EU Authorized Economic Operator program can contribute to the achievement of those traditional goals of the supply chain & trade compliance function of organizations by researching the direct and indirect benefits that traders can obtain from their AEO status and discussing its impact on the quality, cost, speed, visibility, reliability and resilience of the global supply chain.

2. The increasing interest to secure cross-border trade

The most successful companies have always focused on mitigating risks that could jeopardize their business operations¹². For many years organizations have resorted to risk and crisis management to identify, analyze and eliminate potential threats to the business in order to ensure continuity and protect their supply chains from disruptive events¹³. However, supply chain risks have been mainly associated either with natural disasters affecting companies' logistics systems or with the suppliers' inability to procure goods on time impacting production plans, inventory stocks and manufacturing runs. But firms deal with more complexity nowadays. Man-made incidents happening around the world have also shown the extreme vulnerability of supply chains, bringing even more serious repercussions to businesses¹⁴.

⁸ Autry & Bobbitt, 2008

⁹ Pettit, et al., 2010

¹⁰ Williams et al., 2008

¹¹ Speier et al., 2011

¹² Tang, 2006

¹³ Speier et al., 2011

¹⁴ Gould et al., 2010

Some authors point out that today enterprises also need to strengthen planning and prevention processes to impede the development of criminal attempts that could damage not only the organization but also its stakeholders or the general public¹⁵. After 9/11 the approach on strategic risk management changed dramatically to include matters related to international security as it was proved that supply chains are susceptible to being directly or indirectly affected by terrorism¹⁶. In addition, during the last decade organizations have experienced many traditional and emerging forms of crime that have threatened their customers such as counterfeiting of goods; products such as theft, smuggling and malicious damage; employees such as black-mailing and hijacking; infrastructure such as sabotage, vandalism and terrorism for destruction; intellectual property such as espionage and cyber-attacks; and brands such as fraud and corruption¹⁷.

Moreover, given the fact that organizations' distribution and transportation systems could serve as the mechanism to deliver the tools for the execution of illegal acts, several Governments have reinforced trade regulations to ensure that consignments of import/export firms are free of contraband and weapons of mass destruction¹⁸. For instance, the US Customs and Border Protection (CBP) launched the regulation known as Advance Cargo Information (ACI), which is the first compulsory security requirement that establishes the 24 Hour Manifest Rule incorporated in the US Customs Federal Register No.19. This regulation forces companies to provide detail information of inbound and transit shipments to customs offices 24 hours before the arrival of cargo bound to the country. In case of non-compliance authorities prohibit unloading of cargo provoking customs clearance delays and affecting the import logistics flows of enterprises¹⁹.

Furthermore, companies recognized that security breaches could also lead to negative financial results and severe reputation damages that might put their own survival at stake. For instance, Eggers (2004) claims that the detection of a weapon of mass destruction shipped in a container could cost the supply chain about USD \$1 trillion. Hardy and Roberts (2003) state that 40% of companies affected by terrorism never re-open; of those that manage to resume operations 30% close within two years due to permanent damages to the brand image. Other authors point out that poor security measures provoke loss of consumer confidence and lead to onerous legal repercussions²⁰. Finally, firms suffering from supply chain disruptions experienced 33-40% lower stock price in comparison to their competitors²¹. Some researchers support these facts by arguing that terrorism decreases brand equity and devalues stock price of affected organizations²². Thence, the need to shield the supply chain became evident and therefore critical for business success. Thus, current literature establishes that firms are driven to implement security measures due to pressures originating from the industry, the business environment and government regulations²³. As a result companies have devoted more attention to Supply Chain Security within the scope of Global Trade Management.

The following section provides a critical discussion of this emerging concept in the field of Trade Compliance and Supply Chain Management.

¹⁵ Williams et al., 2009

¹⁶ Williams et al., 2008

¹⁷ Hintsa, 2010

¹⁸ Meixell & Norbis, 2012

¹⁹ Donner & Kruk, 2009

²⁰ Speier et al., 2011

²¹ Tang, 2006

²² Voss & Williams, 2013

²³ Voss & Williams, 2013

3. Definition of Supply Chain Security (SCS)

Prior to the terrorist attacks in 2001, it was mainly left to organizations to design and manage their strategies regarding the fight against supply chain crime affecting day-to-day operations²⁴. Some authors point out that security measures were applied in a micro level including solely prevention mechanisms that mitigated risks threatening companies' products and property which were mainly associated with their transportation and distribution processes²⁵. Thus, firms used to evaluate and implement security improvements in an isolated way according to their specific needs. However, after the 9/11 incidents the scope of security in global trade expanded largely to incorporate prevention instruments to fight against threats facing not only individual organizations but also their business networks and diverse stakeholders encompassing industrial sectors, customers, societies and governments²⁶. Some researches comment that companies were forced to take action against real and potential risks threatening all processes performed along their global commercial flows²⁷. Consequently, security measures were required in core business activities such as supplier development programs, customs clearance processing, information sharing and the wide range of logistics operations. Thence, the new security plans of organizations should necessarily include communication with diverse stakeholders and should reference preferably to security standards, programs and frameworks promoted by governments and international organizations. In other words, companies' threat assessments and risk analysis must be created based on the rational security principle which refers to "all activities that establish, cultivate, and maintain successful security exchanges between parties"²⁸. This broader scope to prevent security breaches across the global supply chain in cooperation with business partners and international stakeholders is covered by the concept of Supply Chain Security. Current literature defines Supply Chain Security (SCS) as the set of policies, systems, processes and technology oriented to protect companies' products, buildings, equipment, information and employees from hazardous events such as theft, damage, sabotage, organized crime or terrorism; as well as to prevent, detect and deter the introduction of unauthorized contraband, people or weapons of mass destruction into the global supply chains, all of these in collaboration with business partners, service providers, governments and international stakeholders²⁹. In order to understand the concept and scope of supply chain security one must take into consideration the transcendental role of Governments which have established a series of standards, frameworks and best practices to better shield companies against criminal attacks and improve the security of global supply chains in order to facilitate international trade. This set of standards promoted by public entities are known as Governmental Security-Trade Initiatives (GSTI). The following section discusses the main purposes and characteristics of such initiatives.

4. The emergence of Governmental Security-Trade Initiatives (GSTI)

Just as private organizations Governments and public entities also paid little attention to supply chain security prior to the terrorist attacks in 2001³⁰. However, after witnessing the severe repercussions of such attacks in the global economy, the stability of the businesses environment, the productivity of industries and the welfare of society in general, Government

²⁴ Hintsä, 2010

²⁵ Lee & Whang, 2005

²⁶ Yang & Wei, 2013

²⁷ Ritchie & Melnyk, 2011

²⁸ Voss & Williams, 2013

²⁹ Closs & McGarell, 2004

³⁰ Rice & Spayd, 2005

Offices and International Organizations decided to reinforce regulations and launched diverse initiatives with the aim of securing the flow of legitimate commerce while protecting the supply chain of companies from exploitation³¹. As explained by the US Government the main goal of these SCS initiatives is to secure the worldwide network of transportation, postal, shipping pathways, assets, and infrastructures by which goods are moved from the point of manufacture to the point of consumption. To that end, these SCS initiatives pursue “the certification or credentialing of the actors of the supply chain, to ensure that only legitimate, bona fide entities or individuals with an adequate security awareness and self-discipline actively participate in Global Trade”³². Therefore, success of SCS initiatives depends heavily on proactive cooperation between all stakeholders of the global supply chain.

Researchers note that SCS certifications seek to create partnerships with the international community by engaging government, private sector, and other international stakeholders to the single purpose of fighting supply chain crime while streamlining import, export and customs clearance procedures³³. This is mainly because it is impossible for governments to secure international trade through the inspection of all cargo bound to their countries due to the high funding and manpower that would be required to do so³⁴. Thus, SCS initiatives allow Governments to focus on inspecting only high-risk and suspicious shipments from non-certified companies while facilitating access to critical markets for certified companies³⁵. These SCS initiatives are based on a set of customs and security standards or minimum security criteria that organizations must meet in order to obtain certification. However, although the main purpose of these standards is to improve security they are designed in a way that companies can gain collateral benefits and increase performance of main enterprise areas while augmenting the safety of the global supply chain³⁶. It is also important to note that participation in these programs is voluntary; companies are not forced to register in any program or to incorporate the security standards promoted by such initiatives³⁷.

According to Hints (2010) nowadays there is no global security standard predominating due to the political, economic, technical and legal environment in which organizations operate. However, current literature distinguishes three main categories of supply chain security frameworks: 1) Recommendations promoted by international governmental organizations such as the International Standards Organization (ISO) with its ISO 28000 series, or the World Customs Organization (WCO) with its SAFE Framework of Standards, which provide a non-mandatory set of best practices to improve the security and safety of the supply chain; 2) Guidelines promoted by business coalitions between the private sector such as the Transported Assets Protection Association (TAPA) or the Business Alliance for Secure Commerce (BASC), which are voluntary programs that address the problem of concealing contraband in commercial trade; and 3) Standards promoted by public bodies like customs or transportation offices such as the Authorized Economic Operator (AEO) program and the Customs-Trade Partnership Against Terrorism (C-TPAT) certification, which provide government mandates to improve security practices to deter smugglers and terrorists from using supply chains to introduce contraband and weapons of mass destruction in legitimate shipments³⁸. The following table shows the major trade & supply chain security programs currently enforced:

³¹ Williams et al., 2009

³² Donner and Kruk, 2009

³³ Voss & Williams, 2013

³⁴ O’Connell, 2009

³⁵ Ritchie & Melnyk, 2011

³⁶ Donner & Kruk, 2006

³⁷ Rice & Spayd, 2005

³⁸ Gutierrez & Hints, 2006

Name/Year Started	Originated Country/Institute	Covered Route	Transport Mode	Category	Goal
C-TPAT, 2001	US	From any country to US (import)	All	Governmental voluntary	Supply chain security
CSI, 2002	US	Applied to imports to US	Sea	Governmental voluntary	Supply chain security
WCO SAFE FoS, 2005	WCO	Worldwide	All	International voluntary	Standards for SCS and trade facilitation
ISO 28000 Series, 2005	ISO	Worldwide	All	International voluntary	Improve SCS
EU-AEO, 2008	EU Commission	Any country to EU (import/export)	All	Governmental voluntary	Trade facilitation and SCS
BASC, 1996	Private Sector	Applied to imports to US	All	Private Voluntary	Supply chain security
TAPA, 1997	US	Truck transport routes in US, EU, AF and Asia	Truck	Private Voluntary	Crime incident / identify solutions/ share information

Figure 1. Types of Supply Chain Security programs³⁹.

Although all types of SCS initiatives have the goal of institutionalizing and synchronizing security standards and procedures of companies to strengthen their global supply chains, this thesis centralizes in analyzing the impacts of public Governmental Security-Trade Initiatives, specifically the EU AEO program, because this is the largest public-private partnership in the EMEA region and because this is the SCS initiative broader in scope with more recognition among the Import/Export industry. The following sections provide a brief explanation of this supply chain security & trade facilitation program.

5. The European Authorized Economic Operator (AEO) program

In 2005 the WCO, which is the international body responsible for facilitating trade between countries, adopted the SAFE Framework of Standards to Secure and Facilitate Global Trade. According to the WCO the purpose of this framework is to create a holistic approach for the seamless movement of goods between organizations, encouraging and making it easier for buyers and suppliers to ship products through secure international supply chains. The SAFE Framework provides a consistent risk management approach to address security threats and establishes a set of global guidelines to deter international terrorism and improve the end-to-end management of goods moving across borders⁴⁰. In addition, this initiative establishes the figure of Authorized Economic Operators (AEO). As stated by Janowska (2008) AEO refers to all participants in an international trade transaction who have been approved by Government Agencies as observing specified standards in the secure handling of goods and relevant

³⁹ Donner & Kruk, 2009

⁴⁰ Janowska, 2008

shipment information. Thus, the AEO program requires companies involved in the international supply chain to “engage in a self-assessment process measured against pre-determined security standards and best practices to ensure that their internal policies and procedures provide adequate safeguards against compromise of their supply chains until cargo is released from Customs control at destination”⁴¹.

In the EU, the AEO program is promoted by the EU Commission and the certification is open to all traders who voluntarily meet a wide range of criteria and work in close cooperation with EU customs authorities to assure the common objective of supply chain security⁴². EU companies pursuing the AEO certification are required to have prevention mechanisms on physical security, access controls, personnel security, procedural security, conveyance security, business partners’ reliability, training and threat awareness as well as to have a solid trade & customs compliance program for their import, export and customs clearance operations. For example, companies must have control measures to ensure the integrity of goods and the security of processes related to transport, handling, customs clearance and storage of cargo along the supply chain. These procedures must be enforced and should be oriented to keep the integrity of company shipments from point of origin to final destination⁴³. At the same time, companies must have well-documented policies and standard operating procedures related to customs classification, origin determination, customs valuation, preferential treatment under Free Trade Agreements (FTA), customs brokerage execution, export controls, record-keeping and a solid post-entry audit program on import & export declarations. As indicated by Janowska (2008), Donner & Kruk (2009) and the WCO (2015), participation in the AEO certification could bring many potential benefits to the supply chain of organizations like reduced lead times due to expedited cargo releases at customs and special treatment from Customs Authorities around the globe for companies’ shipments during times of trade disruptions due to the AEO’s Mutual Recognition program; as well as decreased logistics cost due to the elimination of physical inspections in international consignments. The following section explores further the EU AEO program.

5.1 Legal Framework

The figure of Authorized Economic Operators is laid down in the Union Customs Code (UCC) which serves as the new framework regulation on the rules and procedures for customs throughout the EU and whose substantive provisions entered into force on 1 May 2016. Article 38 of the UCC establishes that “*an economic operator who is established in the customs territory of the Union and who meets the criteria set out in Article 39 may apply for the status of authorized economic operator...*”

The status of authorized economic operator shall consist in the following types of authorizations:

(a) that of an authorized economic operator for customs simplifications, which shall enable the holder to benefit from certain simplifications in accordance with the customs legislation (This is what is called certification AEOC).

⁴¹ World Customs Organization, 2015

⁴² European Commission, 2018

⁴³ Donner & Kruk, 2009

or (b) that of an authorized economic operator for security and safety that shall entitle the holder to facilitations relating to security and safety” (This is what is called certification AEOS).

Article 38 of the UCC also establishes that both types of authorizations referred before may be held at the same time by an Economic Operator.

Article 39 of the UCC clarifies that “the criteria for the granting of the status of authorized economic operator shall be the following:

(a) the absence of any serious infringement or repeated infringements of customs legislation and taxation rules, including no record of serious criminal offences relating to the economic activity of the applicant;

(b) the demonstration by the applicant of a high level of control of his or her operations and of the flow of goods, by means of a system of managing commercial and, where appropriate, transport records, which allows appropriate customs controls;

(c) financial solvency, which shall be deemed to be proven where the applicant has good financial standing, which enables him or her to fulfil his or her commitments, with due regard to the characteristics of the type of business activity concerned;

(d) with regard to the authorization referred to in point (a) of Article 38(2), practical standards of competence or professional qualifications directly related to the activity carried out; and

(e) with regard to the authorization referred to in point (b) of Article 38(2), appropriate security and safety standards, which shall be considered as fulfilled where the applicant demonstrates that he or she maintains appropriate measures to ensure the security and safety of the international supply chain including in the areas of physical integrity and access controls, logistical processes and handling of specific types of goods, personnel and identification of his or her business partners”.

Thus, the AEO program is a Supply Chain Security certification supported by Customs Law which focuses on protecting international cargo from tampering through Customs-to-Business partnerships. The following section describes in more detail the practical set of standards traders must meet to obtain certification.

5.2 Practical Framework

Based upon SCS literature and the guidelines of the UCC the following framework has been designed to illustrate the nine main categories of customs & security standards required by the EU's AEO program to obtain certification:

FRAMEWORK OF SUPPLY CHAIN SECURITY STANDARDS

RISK MANAGEMENT

Organizations must conduct a comprehensive assessment of its international supply chain risk based upon security criteria. This analysis should include threats such as terrorism, contraband smuggling and supply chain crime. Procedures should be in place to identify where vulnerabilities exist, and what procedures can be implemented or improved to reduce such risks.

PHYSICAL SECURITY

Companies must ensure that main manufacturing facilities, buildings, distribution centers, warehouses, cargo handling and storage facilities in domestic and foreign locations have physical barriers, alarm systems and deterrents that guard against unauthorized access of people, means of transport and suspicious materials.

PHYSICAL ACCESS CONTROLS

Companies must have access controls to prevent unauthorized entry to facilities, maintain control of employees and visitors, and protect enterprise assets. Access controls must include processes for the positive identification of all employees, visitors, and vendors at all points of entry and inside the organization.

BUSINESS PARTNERS REQUIREMENTS

Organizations must have written and verifiable processes for the selection of business partners including carriers, 3PLs, other manufactures, product suppliers and vendors (parts and raw material, etc.). Enterprises should encourage the other contracting party to assess and enhance its supply chain security practices.

PROCEDURAL SECURITY

Organizations must have control measures to ensure the integrity of goods and the security of processes related to transport, handling, customs clearance and storage of cargo along the supply chain. These procedures must be documented and should be oriented to keep the integrity of company shipments from point of origin to final destination.

TRANSPORT SECURITY

Companies must have control measures to maintain container and transport integrity in order to protect against the introduction of unauthorized material and/or people. At point of stuffing, procedures must be in place to properly seal and maintain the integrity of the shipping containers.

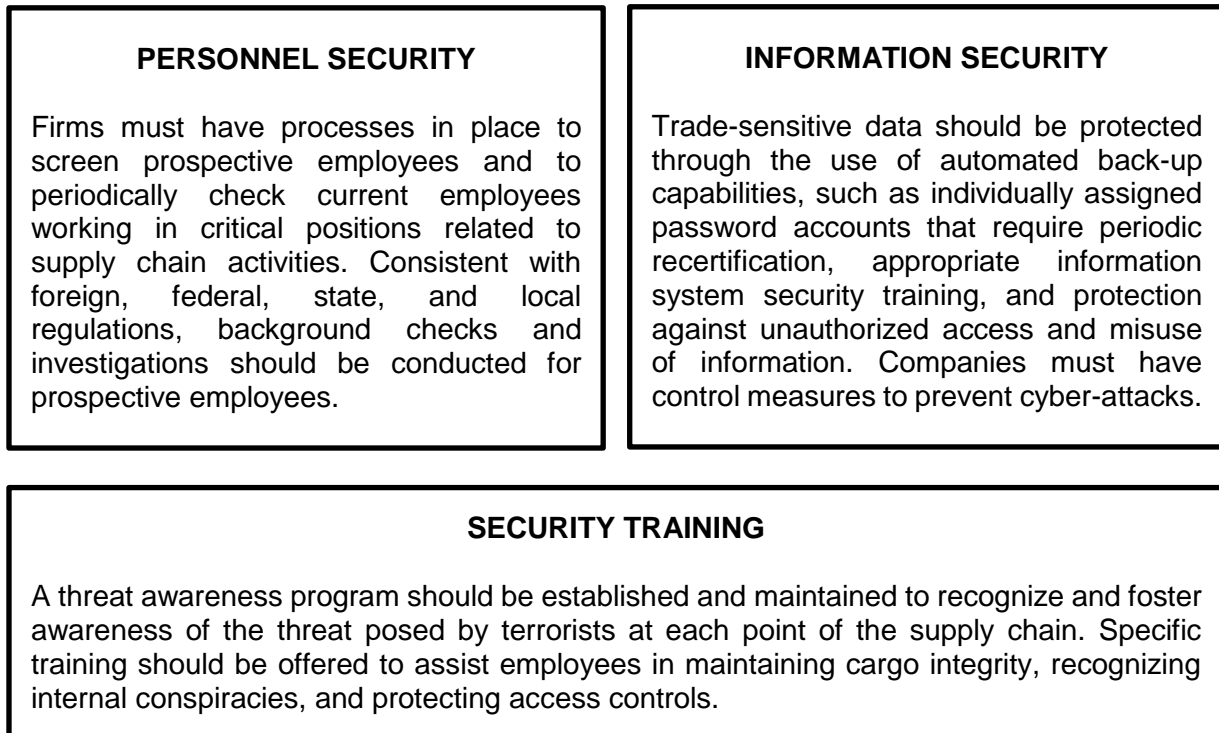


Figure 2. Framework of Supply Chain Security Standards

In order to provide detail about the Framework of SCS standards which constitute the main guideline to coordinate companies' efforts to improve the security of the supply chain, this section provides a critical discussion of the purpose, content and repercussions of each of the nine requirement categories:

Risk Management

Under this requirement organizations must enforce a policy to prevent and recognize threats related to the flow of goods across the supply chain. Firms must conduct risk analyses and develop prevention plans to mitigate threats to the business⁴⁴. Thus, the purpose of this standard is to align the efforts of all participants of the supply chain to fight against crime and prohibited acts of terrorism to ensure business continuity. Authors point out that compliance with this requirement can help organizations create more resilient supply chains⁴⁵.

Physical Security

Under this requirement companies must incorporate mechanisms to prevent, detect or deter the entry of unauthorized personnel and damaging materials to their facilities. All sensitive areas of the firm must have physical barriers and control elements against unauthorized access. Moreover, alarm systems and closed circuit television (CCTV) must be used for monitoring, reporting or deter unauthorized and prohibited access to the premises, especially to those areas involving the handling and storage of goods, raw materials and packaging

⁴⁴ WCO, 2015

⁴⁵ Autry & Bobbitt, 2008

materials⁴⁶. Thus, the purpose of this standard is to maintain product integrity through the use of physical barriers and surveillance systems. As noted by Gillai et al. (2006) compliance with this standard can be important for organizations to improve product safety and product quality by minimizing thefts, pilferage and tampering of cargo.

Physical Access Controls

Under this requirement firms must establish a system for the identification of employees, visitors and suppliers for purposes of granting access to the facilities and sensible areas of the organization⁴⁷. Thus, the purpose of this standard is to improve the capability of companies to detect suspicious people that could damage or steal cargo, or could introduce hazardous materials into companies' facilities or shipments such as weapons of mass destruction or explosives. Similar to physical security this standard helps organizations to safeguard product integrity and quality⁴⁸.

Business Partners Security

Under this requirement companies must implement strict processes for the selection of business partners involved in the supply chain including manufacturers, product suppliers and vendors. Thus, suppliers and service providers must be selected based on their security profile. Moreover, organizations must have procedures to evaluate security performance of business partners, for example through on-site audits on their facilities and operations. Researches point out that firms must also encourage their business partners to incorporate the security standards of an AEO-like certification. Some authors noted that in order to meet this standard the procurement function, for instance, should have prohibited to place purchase orders to non-certified suppliers and the logistics function should not hire non-certified providers for the transportation, storage and distribution of their products as well as not to use an uncertified customs broker to perform customs clearance of consignments⁴⁹. Hence, the purpose of this standard is to ensure that organizations establish business relationships only with certified secure partners and avoid relationships with suppliers with poor security profiles. Some authors suggest that this standard can help firms to improve coordination and communication across the supply chain⁵⁰.

Procedural Security

Under this requirement companies must develop a mapping of processes and flow of goods in order to have an overview of each of the steps and activities involved in the manufacturing and delivery of finished products⁵¹. Hence, the purpose of this standard is to gain information of the supply chain to design better security procedures in main supply chain functions. Some authors state that compliance with this requirement can be important for organizations to homologate and synchronize activities and procedures across the supply chain⁵².

Transport Security

Under this requirement organizations must have procedures in place to ensure that containers and means of transport to be used for the international distribution of products are free of illegal

⁴⁶ US Customs and Border Protection, 2015

⁴⁷ World Customs Organization, 2015

⁴⁸ Gillai et al., 2006

⁴⁹ Williams et al., 2008

⁵⁰ Rice & Spayd, 2005

⁵¹ World Customs Organization, 2015

⁵² Voss & Williams, 2013

contraband and terrorist intrusion⁵³. Furthermore, companies must utilize modern technologies to track consignments and detect when a shipment has deviated from its original route⁵⁴. Thus, the purpose of this standard is to improve the visibility of the distribution and transportation systems to react quickly in case of incidents that could cause a disruption to the supply chain. Gillai et al. (2006) state that compliance with this requirement can help organizations to get higher visibility of the supply chain increasing access to trade data and increasing timeliness of shipping information.

Personnel Security

Under this requirement companies must screen prospective candidates prior to hiring and investigate external staff working within their premises, especially when organizations want to cover positions with high impact on the safety of shipments and related information in accordance with the risk analysis⁵⁵. Thus, the purpose of this standard is to prevent that criminal organizations leak into companies to extract confidential information and coordinate terrorist attacks from inside. Academics state that compliance with this standard can support organizations to eliminate bad actors from hiring pool as well as increasing employee commitment to protect companies' business and fostering the vision to fight against supply chain crime in the whole company⁵⁶.

Information security

Under this requirement organizations should have preventive measures to maintain the confidentiality and integrity of information and documentation generated by enterprise systems, including those used for the exchange of information with other members of the supply chain such as ERP software or GTM systems⁵⁷. Hence, the purpose of this standard is to protect the company against data loss, to ensure that commercial information is accurate and shared between business partners in a secure way and to prevent that cyber-attacks could damage intellectual property of the organization. As suggested by some authors investments in new technology can help firms to improve productivity of supply chain processes and avoid redundant activities by information sharing⁵⁸.

Customs & Security Training

Under this requirement companies must develop training plans to promote awareness on Trade Compliance and Security policies in the supply chain aimed at all employees and main service providers. Additionally, firms should make available information material regarding the procedures established in the other eight requirement categories to better develop such activities. Thus, the purpose of this standard is to create compliance, security and threat awareness in the whole company helping employees to identify how they can contribute to create more secure supply chains.

Summarizing, the European Commission has played an important role setting the scope for the recent concept of SCS in the EU through the inclusion of the AEO program in the UCC. The EU AEO program requires to companies to apply stricter security standards along their global supply chains, included in nine main requirement categories, in order to fight against terrorism and supply chain crime. In exchange for meeting the minimum security criteria EU

⁵³ US Customs and Border Protection, 2015

⁵⁴ Yang & Wei, 2013

⁵⁵ World Customs Organization, 2015

⁵⁶ Rice & Spayd, 2005

⁵⁷ US Customs and Border Protection, 2015

⁵⁸ Autry & Bobbit, 2008

Customs Authorities provide to companies several benefits to streamline and expedite their logistics flows. However, since the AEO program is a voluntary program traders can assess whether it is worth seeking certification which would imply adapting their process to meet such trade & security criteria.

The following section discusses the view of Import/Export firms with respect to the framework of SCS standards established in the EU's AEO program.

6. The position of organizations regarding the AEO program

In spite of the growing interest of enterprises to improve the security along the supply chain there have been several issues like the complexity, size and interdependence of the system that have hindered organizations' best intentions to adopt the framework of the AEO program⁵⁹. Global Supply Chains are complex networks of interconnected organizations that require high levels of coordination between main enterprise functions and business partners to move goods effectively from point of origin to point of consumption; and the AEO program requires companies to meet strict security standards that are needed to prevent crime and terrorism as well as to ensure product integrity at each node of those global supply chains⁶⁰. Thus, it is understandable that adopting the AEO program is a difficult task for traders which would require a lot of efforts and resources for its successful implementation and therefore it must be carefully evaluated.

As it has been for several years the Trade Compliance & Supply Chain Functions of global trade firms continue to focus on achieving the traditional goals of improving quality, reducing total cost of ownership, decreasing lead times and increasing visibility while creating reliable, and resilient supply chains. According to Rushton et al. (2010) quality refers to the capacity of the supply chain to maintain product integrity by protecting goods from damages, loss and contamination; cost refers to the capacity of delivering products with minimal expenditure investments; speed refers to the capacity of delivering shipments on optimal time windows; visibility refers to the capacity of obtaining data to support logistics decisions; reliability refers to the capacity of the supply chain to deliver the right products, at the right time, at the right place, in the right conditions; and resilience refers to the capacity of the supply chain to recover from disruptive events to ensure business continuity. Thence, organizations keep investing most of their efforts and resources in finding effective mechanisms to create better, cheaper, faster, more visible, more reliable and more resilient supply chains⁶¹.

However, only a few companies have conducted a conscious cost-benefit analysis to evaluate how the incorporation of AEO's standards can contribute to the achievement of such goals⁶². Therefore, despite the fact that the industry is more aware of the repercussions caused by security breaches, several companies are not entirely convinced that improving security is an urgent requirement that could facilitate the execution of their supply chain strategies. Hence, there is large number of organizations that do not participate in governmental security initiatives or incorporate supply chain security practices into their operations because they do not see the relationship between security improvements and supply chain effectiveness⁶³.

⁵⁹ Speier et al., 2011.

⁶⁰ Donner & Kruk, 2009

⁶¹ PriceWaterhouseCoopers, 2013

⁶² Rice & Spayd, 2005

⁶³ Lee & Whang, 2005

Other reasons why companies remain reluctant to incorporate the standards of the AEO program include:

- Executives responsible for managing the supply chain function of organizations do not know the purpose, scope, benefits and application process of the AEO⁶⁴.
- Companies ignore the contribution of participating in the AEO program and improving SCS in achieving the goals of the supply chain department⁶⁵.
- Companies do not see an attractive ROI regarding the investments to meet the standards and the direct benefits to be obtained⁶⁶.
- Firms consider that they do not comply with the security standards required by the AEO, and think that making modifications to meet such requirements would be expensive and would impact significantly their operations⁶⁷.
- Organizations believe that the implementation of the AEO is a complex process due to the large number and strictness level of the security standards⁶⁸.
- Some organizations have not experienced any recent disruption in their supply chains to make them think they need security improvements⁶⁹.

Summarizing, in spite of increasing cases of organizations that participate in the AEO program which have improved safety and performance of their supply chains and trade compliance procedures, there is still a considerable number of companies that do not have clear how supply chain security can help them achieve their goals and increase the performance of their supply chain and logistics processes. Current literature indicates that this is due mainly to the lack of knowledge about SCS programs, because companies do not know how to exploit effectively the benefits of the AEO certification and because they ignore how to meet the security standards in a cost-efficient way. Thus, organizations do not see an attractive return on investment (ROI) in Supply Chain Security that encourage them to pursuit a certification. As highlighted by Jasinowski & Moffat (2006) “companies traditionally find it challenging to justify security-related investments because they focus largely on the direct expenses and not on the collateral benefits (e.g., supply chain efficiency, faster customs clearances, improved customer satisfaction, improved inventory management, etc.) that may be realized”. The following sections highlight the direct and indirect benefits traders can obtained if they participate in the EU’s AEO program.

7. Legal Benefits of the AEO program

As stated before, the AEO certification is a voluntary program laid down in the UCC, companies that obtained such certification are entitled to receive diverse benefits such as quicker access to certain simplified customs procedures and in some cases the right to ‘fast-

⁶⁴ Janowska, 2008

⁶⁵ Jasinowski & Moffat, 2006

⁶⁶ Rice & Spayd, 2005

⁶⁷ Ritchie & Melnyk, 2011

⁶⁸ Rice & Spayd, 2005

⁶⁹ Yang & Wei, 2013

track' their shipments through some customs and safety and security procedures⁷⁰. Legal benefits are those advantages companies can obtain due to their certification and which are included expressly in the same UCC. The AEO legal benefits, dependent on the type of the authorization, are summarized in the table below:

Benefit	AEOC	AEOS
Easier admittance to customs simplifications	X	
Fewer physical and document-based controls <ul style="list-style-type: none"> • related to security & safety • related to other customs legislation 	X	X
Prior notification in case of selection for physical control (related to safety and security)		X
Prior notification in case of selection for customs control (related to other customs legislation)	X	
Priority treatment if selected for control	X	X
Possibility to request a specific place for customs controls	X	X
Mutual Recognition with third countries		X

Figure 3. Legal benefits of the European AEO program

If traders hold an AEOC status, they could benefit from:

- a faster application process for customs simplifications and authorizations such as moving goods in temporary storage between different member states
- reductions or waivers of comprehensive guarantees
- a notification waiver when making an entry in a declarant's records
- a 70% reduction in a business's deferment account guarantee
- undertaking centralized clearance
- completing self-assessment.

If traders hold an AEOS status, they could benefit from:

- a lower risk score - used to determine the frequency of customs physical and documentary checks
- consignments being fast-tracked through customs control
- reduced requirements for the mandatory pre-arrival/pre-departure Entry Summary Declarations or Exit Summary Declarations
- reciprocal arrangements and mutual recognition with countries outside the EU - for example, USA or trading partners that adopt the WCO's SAFE Framework of Standards.

⁷⁰ Her Majesty's Revenue and Customs, 2018

However, as mentioned before many companies do not consider the legal benefits encouraging enough to pursue the AEO status either because their import/export operations are simple and streamlined, or the ROI is not sufficient to compensate for the efforts of being compliant. The following section describes some indirect benefits that traders could also obtain if they participate in the EU AEO program.

8. Collateral Benefits of the AEO program

This chapter highlights the indirect benefits of the EU AEO program for traders. Specifically, how the AEO status can contribute to the achievement of the traditional goals of the supply chain, those goals related to the quality, cost, speed, visibility, reliability and resilience of the global supply chain. The following sub-sections will describe in detail the opportunities traders can gain in each dimension due to their AEO certification.

8.1 Impacts of AEO on the quality of the supply chain

Regarding the quality of the supply chain, it has been proved that the AEO program can contribute greatly in maintaining the quality and integrity of all companies' goods from raw materials to finished products. Companies that meet the standards of the AEO, specifically under the requirements of physical security, physical access controls, procedural security and transport security, can protect better their goods from damage, thefts, contamination and loss. Thus, the new investments in infrastructure to meet the standards of the AEO allows companies to safeguard their inventory in a more effective manner. For instance, traders that invested in physical barriers inside the warehouse to protect high value cargo experienced less burglary after the implementation.

Some companies have opted for a better inventory segregation within the warehouse to store goods according to similar product characteristics which have prevented contamination, damage and mixed shipments. This is congruent with the statements of researchers who argue that through infrastructure adjustments organizations can reduce theft, loss and pilferage rates⁷¹. Likewise, AEO traders report that improvements in logistics processes derived from the certification like those related to loading, unloading, handling and packaging of cargo have made a big difference preventing damages in products. Moreover, by enforcing stricter process and new technology for receipts (imports) and dispatch (exports) companies improved inventory management. In fact, some authors suggest that security improvements can lead to less overages, shortages and damages which in turn reduces the number of post-entry customs amendments⁷². In addition, AEO companies report that due to the application of security clauses in commercial agreements with service providers they also were forced to maintain the integrity of the cargo while in transit, reducing the number of claims for cargo damages to their forwarders. Furthermore, the benefit of fewer inspections at customs have also enabled the companies to maintain the quality of the products due the lesser manipulation of the cargo. Finally, enterprises report that higher levels of customer satisfaction and customer loyalty are the main collateral benefits related to quality that traders can obtain from their AEO status.

⁷¹ Gillai et al., 2006

⁷² Rice & Spayd, 2005

8.2 Impacts of AEO on the cost of the supply chain

Regarding the cost of the supply chain, the contributions of the AEO program must be evaluated considering the short-term and long-term goals of the supply chain function. With respect to short-term goals, it is noticeable that pursuing the AEO certification increases the immediate cost of the supply chain. This increased cost is mainly due to the investments required to adequate physical security measures in manufacturing facilities, warehouses and distribution centers to meet the standards set by the initiative under the physical security and access controls criteria such as the purchase of new CCTV and alarms systems or the reinforcement of weak spots in buildings. Indeed, some authors note that physical security is commonly the instant action that firms undertake to improve overall security, which tend to be expensive for organizations and which require significant time to recover the investment⁷³. However, other researches suggest that if organizations combine the benefits related to security with advantages generated in other areas such as enhanced productivity due to leaner layouts for industrial operations, then a better ROI on physical infrastructure can be achieved⁷⁴. Additionally, the acquisition of new equipment, software and technologies to better assess risks, track shipments and improve inventory management also augment the fixed cost of companies. However, as stated by Gillai et al. (2006) over time investments for new technology adoption and optimization of logistics procedures can increase process efficiency and might save cost by reducing overages, shortages & damages by virtue of having automated processes. Evidence shows that investments in this category have allowed organizations to improve processes for inventory management by better controlling imports and exports of goods at the warehouse.

In addition, the verification process to evaluate security measures implemented by suppliers and service providers, under the business partners security criteria of the AEO, can also generate negative impacts on the supply chain budget. Most of the AEO companies report that prior to the implementation of the AEO their companies have never conducted an audit on their customs brokers, forwarders and vendors. Therefore, these initial inspections can be costly because traders need to review several criteria due to the little knowledge they possess about their business partners at the starting phase. These findings are contrary to the knowledge contained in literature which suggested that security programs could help organizations reduce inspection cost on suppliers' performance. However, as pointed out by some authors this cost may decrease over time since the biggest investments are always needed at the initial stages of security programs but tend to decrease as companies develop new capabilities and accumulate more knowledge about their vendors and 3rd party logistics (3PLs) providers⁷⁵.

Moreover, one of the main implications of the AEO in the configuration of the supply chain of organizations has been the termination of business relationships with suppliers and service providers due to their poor security profiles. Sometimes, organizations are forced to finish relationships with vendors because they cannot ensure security in customers' consignments. For example, companies that strictly apply the AEO guidelines refuse to hire customs brokers that are not AEO certified to release their shipments from customs. Likewise, companies have changed procurement processes due to the AEO implementation forcing buyers to source goods from alternative certified suppliers even if that implies losing preferential treatment from free trade agreements. Of course, the cost of the supply chain augments due to new investments required in those new supplier development programs. Thus, the configuration of the supply chain has been affected negatively provoking a rationalization of the supplier database due to the elimination of non-certified vendors. This rationalization have increased

⁷³ Rice & Spayd, 2005

⁷⁴ Autry & Bobbit, 2008

⁷⁵ Ritchie & Melnyk, 2011

the cost of raw materials and the cost of sourcing, distribution and procurement activities. Consequently, these situations have led to either increased sale prices of goods or decreased profit margins for organizations. This evidence refutes the theories in literature which suggest that by engaging in commercial relationships only with certified partners, organizations can realize cost efficiencies⁷⁶.

Turning now to the long-term goals on cost, AEO participants can reduce the overall cost of the global supply chain. Meeting the security standards of AEO has detonated important cost-savings opportunities for traders. For instance, thanks to AEO companies have eliminated fees related to mandatory security inspections and screening services on cargo during customs clearance procedures. Thus, AEO allows companies to avoid physical inspections on their shipments at the point of exportation and the point of importation which can bring important reductions in the cost of inbound and outbound logistics. Additionally, the expedited process and priority treatment granted by customs offices have enabled companies to minimize the cost for delays, temporary storage and handling charges when crossing the border. This is congruent with the arguments of the CBP and the WCO that emphasize that participation in the C-TPAT and AEO programs allow organizations to avoid inspections and save considerable amounts of money. Moreover, companies have been able to paid lower transport insurance rates to protect their cargo due to the stricter security measures implemented in their own facilities and due to the deep verifications they carried out to ensure container and conveyance integrity. Indeed, some authors note that companies with strong transport security measures experience 14% reduction in cargo thefts and loss, and 37% reduction in tampering⁷⁷. Other academics state that improved security standards makes crime and vandalism rates fall which enables companies to access to lower insurance rates for their shipments and facilities⁷⁸. Furthermore, according to the AEO participants transportation cost has been also reduced due to decreased fees on freight, fuel and handling charges paid to service providers which derived from improved processes to track and monitor shipments.

In addition, organizations have also gained positive collateral benefits thanks to the AEO. For example, companies have saved several employee working-hours that previously were required to attend claims for stolen or damaged cargo. Moreover, their organizations have invested less resources in replenishment activities due to fewer cases of criminal incidents affecting their organizations such as shipments thefts and inventory burglaries within their companies. These arguments support the theories that security programs help organizations to fight more effectively against supply chain crime⁷⁹.

In conclusion, the EU AEO program impacts the short-term goals of the supply chain function by increasing the immediate cost of the supply chain, however over time the AEO helps organizations access to direct and collateral benefits allowing them to achieve their long-term goal of reducing total cost of ownership in global trade operations.

8.3 Impacts of AEO on the speed of the supply chain

Regarding the speed of the supply chain, the AEO program has helped organizations to decrease lead times and meet tight deadlines of the supply chain function, mainly through improvements in transport and procedural security. As mentioned by the EU Commission and

⁷⁶ Autry & Bobbit, 2008

⁷⁷ Gillai et al., 2006

⁷⁸ Rice & Spayd, 2005

⁷⁹ Hintsa, 2010

the WCO, AEO companies benefit from the use of exclusive, fast, express highways and less inspections at customs which increases the speed of import/export shipments. Similar to this argument, EU Customs Authorities also point out that companies can also avoid cargo inspections at customs both in the point of origin and the point of destination due to their AEO status and Mutual Recognition agreements. This benefit allows traders to ship products directly from their warehouses and distribution centers to the international transport mode (aircraft, vessel, etc.) without undergoing through time-absorbing security inspections. These statements are congruent with the benefits regarding increases in speed which are advertised by Country Governments to encourage the business community to incorporate stricter security standards and join the SCS programs⁸⁰. Moreover, one of the main contributions of the AEO is the creation of lean supply chains. Participants of the AEO comment that after the implementation of the certification fewer companies and activities were involved in the import/export supply chain. For instance, less cargo handling processes were required to deliver their products to customers. This situation has saved considerable time impacting positively their shipment deliveries and has prevented the occurrence of missed due dates which in turn have led to increased levels of customer satisfaction. Indeed, some authors argue that preventing disruptions in the speed of the supply chain is important for customer loyalty, especially for companies with lean and just-in-time operations⁸¹. Gillai et al. (2006) state that security improvements generate reduced cycle times and shipping time. Thus, the AEO has supported organizations in the creation of agile supply chains.

8.4 Impacts of AEO on the visibility of the supply chain

Regarding the goal to improve visibility, AEO participants comment that meeting the requirements of the certification, specifically those related to procedural and business partners' security, has helped them collect valuable data and to be more aware of the processes, supply routes and business partners involved in their supply chains. For instance, trade compliance and logistics professionals argue that from the development of the map of international logistics flows of their companies, as required by the AEO under the procedural security criteria, they have collected valuable information to support future supply chain decisions like opportunities for shipments consolidation and the identification of more efficient routes for transportation and distribution of their products. This is congruent with the statements of academics who note that access to timeliness and accurate data related to shipping processes can generate important benefits for the logistics systems of companies⁸². Researchers also note that when companies gather data for transit times, they can better design transportation routes for their consignments and could prevent potential delays at each location of the supply chain⁸³. Additionally, as a result of the verification processes performed on the supplier's facilities and operations, organizations become more aware of the best practices and problems facing their suppliers which could potentially affect their businesses. Derived from such verifications companies have identified important areas that require improvement and have worked closely with their suppliers to fix them more efficiently. For instance, traders have gained more visibility on the performance of suppliers identifying potential supply risks that could jeopardize their production runs. Consequently, the supply chain function have cooperated with these providers to develop better Supplier Development Programs and improve demand and forecasting planning. Indeed, some authors point out that collaboration among supply chain

⁸⁰ Voss and Williams, 2013

⁸¹ Williams et al., 2008

⁸² Gillai et al., 2006

⁸³ Yang & Wei, 2013

parties creates a platform for process alignment and enables the creation of network for common problem solving and resource sharing⁸⁴.

8.5 Impacts of AEO on the reliability of the supply chain

Regarding the goals to increase reliability, AEO participants point out that the certification have influenced positively reliability levels in both the upstream and downstream supply chain. With respect to the upstream supply chain, participants commented that thanks to the AEO they have created stronger relationships with business partners and service providers. For instance, from the business partners verification process companies have gained confidence and feel certain that their suppliers are meeting strict security standards to avoid disruptions in supply systems and that they are able to ensure continuous supply of raw materials. Furthermore, this process has allowed companies to allocate more efforts to improve the processes of those suppliers with poor security profiles. As stated by Rice & Spayd (2005) the purpose of SCS programs is to utilize internal security resources of companies to help their business partners improve operations to create long-lasting relationships. This also corroborate the comments of academics who said that security programs can have the same impacts on the supply chain than Sustainability programs⁸⁵. Sustainability has the purpose to ensure availability of goods and supply sources to support the long-term operations of the company, similarly security programs give companies the opportunity to help their suppliers to incorporate better mechanisms to protect their business against unforeseen events and prevent criminal attacks that could finish their operations. Therefore, when one company supports their suppliers to implement stricter security measures it is ensuring supply sources for itself to maintain its long-term operations.

With regard to the downstream supply chain, evidence highlights the fact that the AEO has allowed enterprises to be recognized as a compliant and secure company among their current and potential customers. AEO certified companies report that their customers feel more confident about receiving the right products, at the right time, in the right conditions. Therefore, thanks to the security measures implemented in processes such as handling, storage and transportation of cargo companies have protected product integrity which has led to increased levels of product quality and consequently to higher levels of customer satisfaction. Evidence shows that certified companies can develop competitive advantages over competitors because they have more preference from customers due to their certifications. Indeed, researchers mention that AEO could serve as strong a marketing tool. Hence, since the implementation of the AEO organizations have experienced less complaints from customers with regard to damaged, contaminated or lost products.

8.6 Impacts of AEO on the resilience of the supply chain

Meeting the standards of the AEO can help create more resilient supply chains. Security measures and improved processes can decrease rates of criminal attempts and can prevent the occurrence of supply chain disruptions. Although some traders report that their business have experienced few incidents caused by criminal bodies, which support the comments of some authors regarding the fact that organizations do not participate in GSTI because they have never experienced any criminal attack, the AEO companies affirm that the new security

⁸⁴ Rice & Spayd, 2005

⁸⁵ Williams et al., 2008

measures contribute to reduce even more the likelihood of occurrence of disruptive events. Moreover, participants indicate that thanks to the development of the risk analysis that is required to obtain certification, their organizations have discovered many logistics threats that they had not considered before, therefore the AEO has helped them to develop better contingency and crisis plans to better mitigate supply chain risks. Thus, traders feel certain that in the case of an incident their organizations would know how to respond quickly and how to address the issue in order to achieve business resumption in short time. Similar to the views of Williams et al. (2008) AEO certified companies argue that their organizations also prefer to focus on prevention rather than correcting errors, and the AEO program has allowed their organizations to reinforce prevention processes and create more resilient supply chains.

In summary, the EU AEO program can bring important benefits to traders overall contributing to the achievement of the traditional goals of the supply chain, however the implementation of the strict security standards and frameworks can also bring some disadvantages to the global operations of organizations.

9. Conclusions

This thesis aimed at explaining the direct and collateral benefits of the AEO program for traders. In this document it was discussed the significant influence of the AEO status over the global supply chains of Import/Export firms and detailed the contributions of such certification in the achievement of the traditional goals of the trade compliance and supply chain function of organizations. Current literature establishes that companies are driven to improve the security of their inbound and outbound logistics flows due to the increasing pressures from the business environment, fierce competition and new regulations to prevent the introduction of illegal contraband and protect global supply chains from terrorist intrusion in order to facilitate global trade. Also, in this document it was noted that the increasing requirements from customers and business partners also force companies to incorporate stricter trade & security measures to ensure product integrity along the supply chain, turning supply chain security into a core element for business success.

Additionally, literature indicated that although companies are more aware of the repercussion of security breaches which include customs clearance delays, outstanding recovery investments, low performance, reduced levels of customer service and considerable decreases in revenues and profits, they still are reluctant to participate in Governmental Security-Trade Initiatives such as the EU AEO program because companies are not entirely convinced that improving security is an urgent requirement that could facilitate the execution of their supply chain strategies and because they do not see the relationship between supply chain security improvements and supply chain effectiveness.

However, this research explained that the EU AEO certification can help organizations improve logistics processes and achieve the main goals of their supply chain function due to the direct benefits laid down in the UCC but also from those collateral gains that can be realized because of the AEO-certified status. On the other hand, it was also discussed that the EU AEO program can have some negative effects on the operations of organizations.

The following list summarizes the main direct and indirect benefits as well as important disadvantages of the EU AEO program for traders:

Direct & Collateral Benefits of the EU AEO

- Faster application process for customs simplifications and authorizations under UCC
- Reductions or waivers of comprehensive guarantees such as the businesses' deferment account guarantee
- Lower importer risk score meaning less customs physical and documentary inspections on import shipments
- Priority for customs inspections for AEO shipments over non-AEO consignments
- Faster release of international shipments from customs meaning improved lead times
- Reduced requirements to file Entry Summary Declarations or Exit Summary Declarations
- Better quality of products due to protected supply chains
- Lower damages, loss and theft rates of cargo meaning enhanced inventory management
- Avoidance of security screenings fees on international shipments
- Lower insurance and transport rates in international consignments
- Lower landed cost and total cost of ownership of products due to optimization
- Faster logistics process (receipt & dispatch) of consignments improving on time deliveries
- Developed best practices in the supply chain (Warehousing, Transport, Logistics, Trade Compliance, Order Management, etcetera) enhancing companies' overall performance
- Improved customer services translating into increased customer satisfaction and loyalty
- Better visibility and risk management along the global supply chain
- Improved data analytics to support business decisions
- Recognition as trusted trader from Import/Export industry and useful marketing tool with customers serving as a competitive advantage for new business development.
- Strengthen commercial relationships with business partners, vendors and 3PLs
- Possibility to perform self-assessment and centralized clearance
- Better relationships with EU Customs & Tax Authorities meaning less audits and reviews
- Reciprocal arrangements and mutual recognition with countries outside the EU

Disadvantages of the EU AEO

- Increased immediate cost of the global supply chain (Procurement & Logistics procedures)
- Higher investments required in physical infrastructure, technology and systems
- Augmented cost of raw materials and products due to rationalization of supplier database
- Limitation of supply sources and transportation routes
- Reduced flexibility on vendor and service provider selection (non-AEO companies)
- Required change management to adopt new business processes
- Complex, lengthy and costly application process for traders
- It is complex and expensive to maintain certifications (Training, Compliance, Continuous Improvement, re-validation, periodical audits)

This research explained that by incorporating the security standards of the AEO, companies can improve the quality of their products through the creation of more effective processes to safeguard products against damages, loss, theft and contamination. In addition, organizations can reduce long-term cost of the supply chain due to the elimination of security inspections and cargo screening fees during customs clearance procedures coupled with lower insurance rates and significant reductions in their transportation, distribution and logistics cost. However, organizations could experience increased cost of the supply chain due to the investments in physical security improvements that are needed to meet the standards of the initiative coupled with the cost of a potential rationalization of their supplier database. On the other hand, organizations can increase the speed of their supply chains due to the creation of leaner processes that impact positively import & export processing and shipment delivery. Furthermore, thanks to the AEO firms can increase the visibility of their logistics flows and suppliers as well as to collect valuable data to support future decisions of the trade compliance function. Additionally, the AEO can help organizations create more reliable supply chains by strengthening the relationships with business partners, customs brokers, forwarders and service providers to ensure only high-quality operations, and secure supply and distribution resources while enhancing customer service. Finally, organizations can create more resilient supply chains due to the improved processes to mitigate risk and achieve a quick business resumption. Therefore, this research suggests that given the conditions of a more turbulent business environment and the increasing cases of global terrorism, organizations should participate in a Governmental Security-Trade Initiative to achieve their supply chain goals while protecting their businesses from supply chain crime.

The findings of this research have demonstrated the strong influence of Governmental Security-Trade Initiatives, like the EU AEO program promoted by the European Commission, in the global supply chain of traders as well as in the goals and processes of the trade compliance and supply chain function of organizations. However, there are few theoretical developments in the field of customs compliance and supply chain security in current literature. Given the rising interest of the business community, international organizations and Federal Governments to improve security and incorporate the standards of GSTI to facilitate Global Trade it is convenient that more professionals focus on studying the emerging concept of Supply Chain Security considering the constant changes in the geopolitical landscape. The academic community should focus more on investigating what activities have facilitated the better incorporation of AEO standards into companies operations, since the guidelines provided by these initiatives contain an extensive framework of best practices. Furthermore, researchers can also study how certified companies have maintained their certification and have ensured compliance with the standards of these initiatives through the time overcoming the constant updates in customs regulations. Finally, Trade Compliance and Supply Chain Practitioners can focus on understanding better how companies from the various sectors have also implemented the framework of standards of such initiatives to achieve business success. However, this thesis has served its purpose to provide valuable information to understand better the relationship between Supply Chain Security and Global Trade.

Literature list

- Autry, C. and Bobbitt, M. (2008) "Supply Chain Security Orientation: Conceptual Development and a Proposed Framework", *The International Journal of Logistics Management*, 19(1), pp. 42-64.
- Chad W., Autry, L. and Bobbitt, M. (2008) "Supply Chain Security Orientation: Conceptual Development and a Proposed Framework", *The International Journal of Logistics Management*, 19 (1), pp. 42-64.
- Ching-Chiao, Y. (2013) "The Effect of Supply Chain Security Management on Security Performance in Container Shipping Operations", *Supply Chain Management: An International Journal*, 18 (1), pp. 74 – 85.
- Christopher, M., and Lee, H. (2004) "Mitigating Supply Chain Risk Through Improved Confidence", *International Journal of Physical Distribution and Logistics Management*, 35 (4), pp. 388–396.
- Closs, D., Speier, C., Whipple, J., and Voss, M. (2008) "Supply Chain Security: A Framework for Protecting Your Supply Chain", *Logistics Management*, 47(9), pp. 45–46.
- Closs, D. and McGarrell, E. (2004) "Enhancing security throughout the supply chain", Special Report Series, IBM Center for The Business of Government. Available at: www.businessofgovernment.org (Accessed 22 December 2017).
- Craighead, C., Blackhurst, J., Rungtusanatham, M. and Handfield, R. (2007) "The Severity of Supply Chain Disruptions: Design Characteristics and Mitigation Capabilities." *Decision Sciences*, 38(1), pp. 131–156.
- Customs and Border Protection (2015) "Customs-Trade Partnership Against Terrorism". (Online) Available at: www.cbp.gov (Accessed: 15 September 2015).
- Donner, M. and Kruk, C. (2009) *Supply Chain Security Guide*. Washington: Department for International Development.
- Eggers, W. (2004) "Prospering in the secure economy", Deloitte Research Study (Online) Available at: www.deloitte.com (Accessed: 05 January 2018).
- European Commission (2018) *Authorized Economic Operator (AEO)*. Brussels: European Commission Taxation and Customs Union
- European Commission (2013) *Union Customs Code*. Brussels: European Commission Taxation and Customs Union
- Faisal, M., Banwet, D. and Shankar, R. (2006) "Supply Chain Risk Mitigation: Modeling the Enablers." *Business Process Management Journal*, 12(4), pp. 535–552.
- Furia, P., Rexrode, D., Il-Kim, Y., Lee, J., Ellis, J. and Guterbock, T. (2011) "Customs-Trade Partnership Against Terrorism: 2011 Costs and Savings Survey." *University of Virginia Center for Survey Research*, www.cbp.gov, pp. 1–39.
- Gillai, B., Bhat, G. and Sept, L. (2006) *Innovators in Supply Chain Security*. New York: The Manufacturing Institute.

- Gutierrez, X. and Hintsa, J. (2006) "Voluntary supply chain security programs: a systematic comparison", *The International Conference on Information Systems, Logistics and Supply Chain*. 1(1), pp.1-17.
- Hadjimarcou, J, Brouthers, L., McNicol J. and Michie, D. (2013) "Maquiladoras in the 21st century: Six strategies for success", *Business Horizons*, 56(1), pp. 207-217.
- Haelterman, H. (2011) "Re-thinking the cost of supply chain security", *Springer Science*, 56(1), pp. 389-405.
- Her Majesty's Revenue and Customs (2018) *Authorised Economic Operator*. London: Government Digital Service
- Hintsa, J. (2010) "A comprehensive framework for analysis and design of supply chain security standards", *Springer Science*, 3(1), pp. 1-5-125.
- Hodge, G. and Greve, C. (2007) "Public Private Partnerships: An International Performance Review", *Public Administration Review*, 67(3), pp. 545–558.
- Janowska-Bucka, E. (2008) "Customs Security in the European Union – Authorised Economic Operator (AEO)", *Journal of KONBiN*, 1(4), 454-460.
- Lee, H. and Whang, S. (2005) "Higher supply chain security with lower cost: Lessons from total quality management", *International Journal of Production Economics*, 96(1), pp. 289-300.
- Lee, H. and Wolf, M. (2003) "Supply Chain Security Without Tears." *Supply Chain Management Review*, 7(1), pp. 12–20.
- Manuj, I. and Mentzer, J. (2008) "Global supply chain risk management strategies", *International Journal of Physical Distribution and Logistics Management*, 38 (3), pp. 192-223.
- Meixell, M. and Norbis, M. (2012) "Integrating carrier selection with supplier selection decisions to improve supply chain security", *International Transactions in Operational Research*, 19(1), pp. 711-732.
- Melnyk, S., Ritchie, W. and Calantone, R. (2013) "The Case of the C-TPAT Border Security Initiative: Assessing the Adoption/Persistence Decisions When Dealing With a Novel, Institutionally Driven Administrative Innovation", *Journal of Business Logistics*, 34(4), 289- 300.
- O'Connell, J. (2009) "C-TPAT: Major Challenges", *Springer Science*, 2(1), pp. 237-147. Peleg-Gillai, B., Bhat, G. and Sept, L. (2006) "Innovators in Supply Chain Security: Better Security Drives Business Value." *Stanford University and The Manufacturing Institute*, 1(1), pp. 1–34.
- Pettit, T.J., Fiksel, J. and Croxton, K. (2010) "Ensuring Supply Chain Resilience: Development of a Conceptual Framework", *Journal of Business Logistics*, 31(1), pp. 1–21.
- PricewaterhouseCoopers LLP (2013) "Next-generation supply chains: Efficient, fast and tailored", *Global Supply Chain Survey 2013*, 1(1), pp. 1-36.
- Rice, J. and Caniato, F. (2003) "Building a Secure and Resilient Supply Network", *Supply Chain Management Review*, 7(5), pp. 22–30.

- Rice, J. and Spayd, P. (2005) "Investing in Supply Chain Security: Collateral Benefits", *IBM Center of The Business of Government*, 1 (1), pp. 1-40.
- Ritchie, W. and Melnyk, S. (2011) "The impact of emerging institutional norms on adoption timing decisions: evidence form C-TPAT – A government antiterrorism initiative", *Strategic Management Journal*, 32 (1), pp. 860-870.
- Rushton, A., Croucher, P. and Baker, P. (2010) *The Handbook of Logistics and Distribution Management*. 4th edn. London: Kogan Page Limited.
- Sarathy, R. (2006) "Security and the Global Supply Chain", *Transportation Journal*, 45(4), pp. 28–51.
- Saunders, M. and Tosey, P. (2013) "The Layers of Research Design", *RAPPORT*, 1(1), p.58-59.
- Sheu, C., Lee, L. and Niehoff, B. (2006) "A Voluntary Logistics Security Program and International Supply Chain Partnership", *Supply Chain Management: An International Journal*, 11(4), pp. 363–374.
- Tang, C. (2006) "Perspectives in Supply Chain Risk Management", *International Journal of Production Economics*, 103(2), p.451-488.
- US Government (2012) *National Strategy for Global Supply Chain Security*. Washington: The White House.
- Urciuoli, L. (2010) "Supply Chain Security – Mitigation measures and a logistics multi-layered framework", *Journal of Transport Security*, 1(1), pp. 25-45.
- Voss, M., Whipple, J., and Closs, D. (2009) "The Role of Strategic Security: Internal and External Security Measures With Security Performance Implications", *Transportation Journal*, 48(2), pp. 5–23.
- Voss, M. and Williams, Z. (2013) "Public–Private Partnerships and Supply Chain Security: CTPAT as an Indicator of Relational Security", *Journal of Business Logistics*, 34(4), pp.320–334.
- Williams, Z., Lueg, J., and LeMay, S. (2008) "Supply Chain Security: An Overview and Research Agenda", *The International Journal of Logistics Management*, 19 (2) pp. 254 – 281.
- World Customs Organization (2015) *SAFE Framework of Standards*. Brussels: World Customs Organization.
- Williams, Z., Lueg, J.E., Taylor, R.D., and Cook, R.L. (2009) "Why All the Changes? An Institutional Theory Approach to Exploring the Drivers of Supply Chain Security", *International Journal of Physical Distribution and Logistics Management*, 39(7), pp. 595–618.
- Williams, Z., Ponder, N. and Autry, C. (2009) "Supply Chain Security Culture: Measure Development and Validation", *International Journal of Logistics Management*, 20(2), pp. 243–260.

Yang, C. and Wei, H. (2013) "The effect of supply chain security management on security performance in container shipping operations", *Supply Chain Management: An International Journal*, 18(1), pp.74-85.

Yossi, S. (2001), "Supply Chain Management under the Threat of International Terrorism", *The International Journal of Logistics Management*, 12 (2), pp. 1-11.