

Chapter 90

Beyond the Horizon of Supply Chain Security Performance Measurement: An Introduction to Supply Chain Security Performance Measurement

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ABSTRACT

This chapter introduces a methodology on how to define a complex Security Index (SI) that brings the ability to measure the strength and the efficiency of the business entity's security system. It describes how to provide an approach to the security performance measurement. In order to get SI it is necessary to develop a systematization of Security Index Determination Model (SIDM). SI describes Supply Chain Security Management (SCSM) performance. SCSM implements, facilitates and maintains Security barriers, which are formed by a confluence of properly chosen and efficiently implemented security measures. The presented methodology is based on the General Model developed by Gutiérrez and Hintsá that was expanded according to research needs. The expansion was based on adding the specified barriers for

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each of the Sub-categories stated in the previously mentioned General Model. For this purpose different security initiatives such as AEO, C-TPAT and TAPA were analysed. SIDM is based on Objectivized Methodology for Technical Systems Conditions Assessment developed by Lansky.

INTRODUCTION

The aim of the authors is to present the methodology for creation and application of the “Security Index” (SI) that would evaluate Supply Chain Security Management (SCSM) performance of a business entity. SCSM performance could be defined as a robustness of a complex set of barriers, influenced by specified security measures. According to Speier, Whipple, Closs and Voss (2011) “Supply chain security process management assesses the degree to which security provisions have been integrated into processes to detect, prevent, respond and recover from a security incident that may occur anywhere within the supply chain”.

The main task of the Security barriers is to establish a complex security system protecting business entity from security risks. There are different requirements placed on the SCSM, given by Governments and Authorities on both a voluntary and mandatory basis.

The first step in the SI definition process was the creation of the model, called Security Index Determination Model (SIDM). SIDM in its core is based on Gutiérrez and Hints General Model. In order to reach the required form, General Model was expanded by the further two levels consisting of defined Security barriers and security measures. The basis for the research was the finding that the system’s robustness is assessed according to the confluence of the individual security measures, which have a direct impact on a system’s barriers creation and improvement. The robustness in this case could be understood as a system’s ability to withstand unwanted external impacts thanks to its current configuration and structure.

In order to provide sufficient overview of the Security barriers, authors conducted an analysis of the requirements given by different security programs such as AEO, Customs-Trade Partnership against Terrorism (C-TPAT) and Transported Asset Protection Association (TAPA). Numerous consultations and meetings with Authorized Economic Operator (AEO) system auditors (Martis, Stepkova, Kracman, Muller, personal communication, 2015) helped the authors to find out which elements could be essential for model expansion. According to Kleindorfer and Saad (2005) “Under a standard like C-TPAT, global supply chains are expected to be fully vetted for security, personnel and process control”.

Individual requirements stated in these programs were divided and sorted according to their character and objects involved. That helped in their classification into adequate Categories and Sub-categories of the General Model. Later on, individual requirements were categorized and transformed into individual Security barriers. The presented approach was given the name Barrier Concept based on General Model.

In general terms, the goal of the chapter is to describe the approach to SI definition, based on the confluence of the security measures and Security barriers. The described approach (the Barrier Concept based on the General Model) was subsequently systematized by the SIDM.

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