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## **SECURITY AS AN UNDERAPPRECIATED FACTOR IN OPTIMIZING THEIR SUPPLY CHAINS**

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**Abstract:** *Security of Supply Chain it is important problem to resolve. From decades managers are improving their companies one of objectives is the reduction of losses during the manufacture, transportation and distribution phases. Total Security Management occurred the solution, but not for all kind of enterprises. Transport every year more suffering – cargo crime statistics rise. TAPA is an organisation made up from professionals representing high technology companies and related service providers. TAPA FSR and ISO 28000 there are standards of security management system. To achieve these certificates, companies must meet requirements for certifications, but it is costly, managers should be convinced it's worth.*

**Key words:** *supply chain security, Total Security Management, TAPA Freight Security Requirement (FSR), ISO 28000*

The demand for safe transportation of goods has been a requirement since man first started to move commodities from one place to another for the purpose of trader. Safety is a timeless transport postulate<sup>1</sup>. This is a demand driven by the reality that the transportation of valuable cargo is exposed to numerous dangers. The massive leap forward in modes of transportation by land, sea and air, coupled with our understanding of the importance of logistics management and the development of sophisticated supporting technologies has not eliminated problems and threats or the need for proactive action to prevent threats. In fact in the modern world the need for security of supply chains has increased becoming in many respects an inevitable consequence of the massive improvements in supply chain management that have taken place over the last century or so:

It is as important as ever to analyze the problems and look for workable solutions.

Security of supply now is the one of important factors to choose the transport operator. It is simply not sufficient in this day and age to rely solely on Intuitive actions, based on knowledge gained from experience. The need for development of tools to reduce risk at every step in the delivery process is a vital component and one which continues to grow.

Over the last several decades there has been a transition from intuition to scientific methods of safety management in the transportation of goods. Management science has evolved and various concepts and methods have been developed which have laid the ground for massive improvements in security. Perhaps the most obvious example is the use of operational research to solve the huge problems of supply during World War II. Establishment of the quantitative school of management was the direct result of demand for new solutions that could bring about a quantitative change in the face of overwhelming challenges on a global scale.

What the consequences of qualitative change? Without going into details it was Quality Management including TQM and TSM (Total Security Management), Marketing - including e.g.

Value-Based Marketing, System Analysis - strategic management, Logistics. All of them gave rise to an ever-increasing and ever more precise - a holistic view of business accounting. Safety has always been one of the important elements shaping the business strategies.



The core principles of TSM.

**Fig. 1** The schema of TSM principles

**Source:** Ritter L., Barrett J. M., Wilson R., *Securing Global Transportation Networks: A Total Security Management Approach*, McGraw-Hill Professional Publishing, New York, 2006, p. 18.

Total Security Management is the business practice of developing and implementing comprehensive risk management and security practices for a firm's entire value chain." <sup>2</sup> This definition of TSM suggests that it is used in enterprises, but there are some opinions that the TSM approach, may be too complicated for companies to put into practice. "The difficulty of TSM is that it relies on a level of commitment and coordination that may be difficult to achieve." and "the overall program may be too ambitious for many corporations to realistically consider."<sup>3</sup> However authors of *Securing Global Transportation Networks* details case studies of many large companies that benefited from the implementation of aspects of the TSM approach, including FedEx, Home Depot, Hutchison Port Holdings, Maersk, Procter & Gamble, and Target, amongst others.

Security of supply chains as a problem may however be considered from several points of view:

- Service Provider,
- Owner / keeper of cargo (goods),
- Social interest.

Each of the safety aspects of the treatment but should take into account all the others, this is due to a marketing approach (and the principle of win - win). "Most companies today are networked companies, relying heavily on partnerships with other firms" <sup>4</sup> and the specific characteristics of supply chains, and transport them (external costs).

Significant in ensure safety respect is to adopt a proper methodology for the procedure. Like any job, you must also start from the problem to the proper wording. But the goal is conditioned by objective and subjective variables. Independent variables, in today's business world, become possible to shape. The macroeconomic parameters such as for large firms respectively can be modified at the level of the global economy. Dependent variables that the nature of things should be shaped by enterprises, are not (in part) been modeling since there is no awareness of their existence, or their importance is underestimated. Hugh size of some companies prevented efficient management already in the '70s of last century. <sup>5</sup>

Safety management in supply chains is an activity that must be implemented by all participants in these processes to achieve the goal. So you must reach an agreement between the companies and / or organizations, which have significantly reduced efficiency. In global organizations, transnational corporations in, it also poses similar problems.

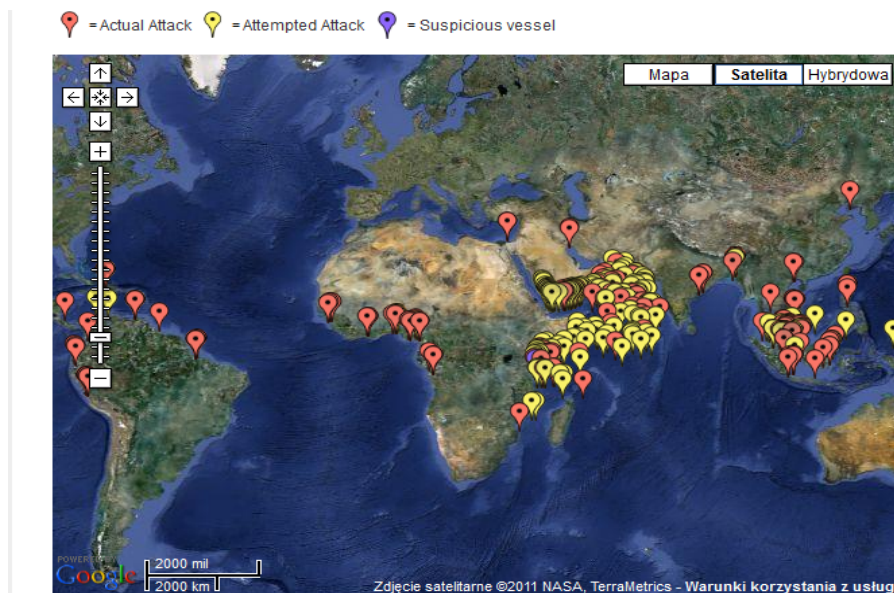
Security is a multi-faceted problem. Ensuring safety of cargo, equipment, but also the people involved in the supply requires a comprehensive approach that takes into account several aspects of the problem. The competence of the vast majority of companies in ensuring the proper functioning of the supply systems is totally inadequate, since we are dealing with the occurrence of various external

and internal threats. The etiology of risks in supply chains is quite complicated. Threats arise at all stages of supply chain - from initial production phase until the goods are handed to the customer. Threats generate suppliers, employees, colleagues, customers and third parties. They are very diverse, because their causes are diverse. The level of losses is often unknown - especially if their perpetrators are employees.

Security of supply chains is now one with particularly desirable traits. Although evidence of the prevalence of problem and all sorts of threats - and the associated - action taken to prevent threats mean that the status quo is often treated as some unavoidable circumstance. Threats in imports - theft may already be in the factory packaging if the manufacturer will include the empty packs (situation happens in the case of valuable goods) theft can also occur during the transport of finding such a theft is possible during the initial review of a product - such situations conducive to outsourcing of services, local forwarders who are seeking to reduce the cost used low-priced contractors.

The number of theft is difficult to establish, in many countries police, did not lead this kind of statistics. In 2005 the Polish International Freight Forwarders Association (PIFFA) was conducted study it realized together with Police Headquarters and Spedycje.pl webportal. Statistics are based on surveys from only 60 transport companies, but 73% of them in the past five years have been a victim of crime. Every 10 incident was not reported to the police, and was detected every 4 offender.

The risks are, as mentioned, diverse in nature, but some of them are particularly amazing today. While terrorism has become a daily part of news from the world, this activity seemed to be pirates - at least in Europe - something that irrevocably passed into history.



**Fig. 2** *IMB Piracy Map 2010*

**Source:** *ICC International Maritime Bureau (IMB).*

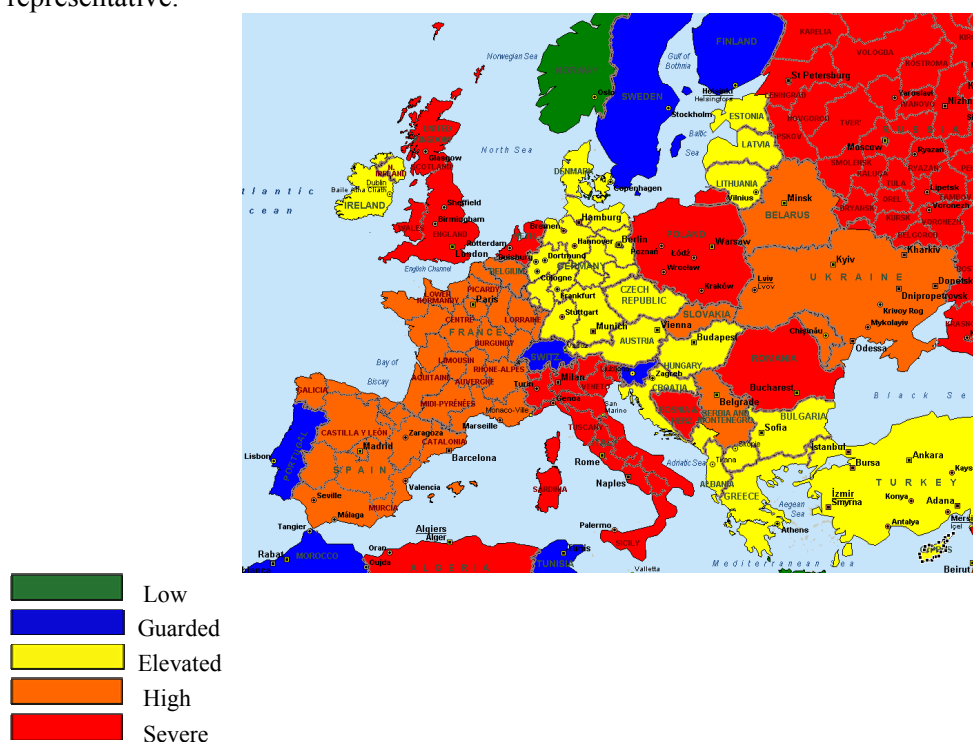
This practice occurs, and all kinds of robberies in various parts of the world, however, took on special sizes. Robbery of luxury yachts in the Caribbean Sea, it was of interest to few. However, the hijacking tankers, bulk carriers, container ships and virtually all types of ships together with their crews in time has become a nightmare shipowners from around the world. Since the early nineties of the twentieth century piracy in Somali coastal works. The civil war in Somalia led to that country for nearly two decades, there is no effective government. Worldwide incidents in 2011: total attacks: 346, total hijackings: 35, incidents reported for Somalia: total incidents: 194, total hijackings 24, total hostages: 400, total killed: 15. Currently, pirates are holding 15 ships and 277 hostages (27 Sep 2011).<sup>6</sup>

According to the recent report from February 2008, the International Road Union (IRU) and the International Transport Forum (ITF) in the period 2000-2005:

- 17% of all interviewed drivers had suffered an attack during the past 5 year

- 30% of attacked drivers have been attacked more than once
- 21% of drivers were physically assaulted during the attack
- 60 % of the attacks targeted the vehicle and its load
- 42% of the attacks took place in truck parking areas
- 19% of the attacks were at motorway service stations
- 30% of the attacked drivers did not report the incident to the police.

Countries where the highest number of surveyed attacks occurred, per million tonnes of international traffic, are: Romania (5.03/Mt), Hungary (1.31/Mt), Poland (1.21/Mt), and Russian Federation (0,97). Number of attacks mentioned in the study by country: France 140, Italy 85, Spain 70, Belgium 64, U.K. 55, Poland 39, Russia 34, Romania 31, Germany 23, Hungary 21. Because of the relatively small size of the statistical sample (2003 international drivers) the results cannot be considered representative.<sup>7</sup>



**Fig. 3** International Cargo Risk 2007 – Europe

**Source:** *Cargo Theft Report: Applying the Brackets to Road Cargo Crime in Europe, Europol, The Hague, 2009*

“The world needs secure supply chains. Counterfeiting, smuggling, theft, corruption, contamination and terrorism all present very real risks to the stability of global trade and, in turn, the well-being of the wider communities we live and work in.”<sup>8</sup> Behaviour of the leading companies manufacturing and logistics shows that seeking cost advantage, they are turning in the direction of minimizing losses in the supply chain, which until recently did not see. Necessary in such cases becomes a special audit, however, already aware that matures in organizations for several years and bringing actions are partial results. Recently appeared a number of initiatives, activities and instruments, which in the next few years should lead to a significant reevaluation of thinking of many clients and service providers in supply chains. An example of such an action is an organization founded in 1997 Technology Asset Protections Association. TAPA is in Europe since 1999. The purpose of the organization is to minimize loss of production, transport and distribution of products

Companies from industry groups advanced technologies (high-tech, high-value) - goods "increased risk of theft." Achievement is the introduction of TAPA Freight Security Requirement (FSR), the standard for safe transport. Introduced in 2000, these define acceptable safety standards for transporting high-tech products, and outline processes and specifications needed for a TAPA certification. Companies, acting according to Transportation Security Requirements (FRS), receive a certificate indicating that the carrier is a trustworthy partner and ensure the inviolability of their goods

during transport and storage. The most recent TAPA benchmark survey found that participating companies' loss ratios dropped by 40%.<sup>9</sup>

EU Parliament report of 2007 refers to the FSR of the Transported Asset Protection Association, the loss of carriers in Europe within 5 years (2000-2005) reached 8.2 billion (long scale: milliard) when taking into account all losses, including costs of replacement goods, re-sending the cargo, or also the cost of loss of reputation, etc. this amount is shown only a fraction of the actual damage. Another major problem for carriers, resulting from fear of violence, is the difficulty of employing women as drivers.

ISO 28000 is the shift towards TQM / TSM. ISO 28000 is a standard of safety management of the supply chain. Determine the standard requirements of construction management processes in organizations cooperating in the supply chain ISO 28000:2007 allows you to:

- Minimize safety risks,
- Reduction of incidents
- Prevention of adverse events that may occur at various stages of the chain.

Currently, the structure allows for the implementation of the requirements of a system based on ISO 28000 in each type of organization of production, services, storage, transport processes and where specific customer needs require appropriate security mechanisms of the system.

Methodology of ISO 28000 includes verification processes (procedures) and organizations (each organization authentication builders supply chain), identify critical points within the processes, risk analysis of individual areas in the supply chain, design processes and linkages between suppliers, the development of standards and policies including security, development of indicators and monitoring systems and reporting, identify actions and modifications in the optimization process, based on feedback from the monitoring system and finally system certification.

Application of ISO 28000 ensures business continuity, reduce business risk, increase customer satisfaction, and reduce logistics costs, storage, handling financial and IT. Standards most recently occurred are ISO 2802:2011 and ISO 28005-2011.<sup>10</sup>

Consideration of the problem implement ISO 28000 or TAPA FSR should be initiated to determine the implemented safety management system. The main objective of the management system is to reduce the TAPA losses due to theft during production, transport and distribution. Contrast, ISO 28000, is not limited to warehousing, transport companies and distribution centers. There also is focused mainly on preventing theft, but theft is a part of risk assessment. Safety Management System ISO 28000 can be implemented in any size and type of company that uses or is part of the supply chain. This system may be works from supply of raw materials, through all phases of production and semi-finished products, transportation, storage and distribution, to the point of sale, end users and contingency planning to withdraw the product. Compared with ISO 28000, a TAPA security management system meets and refers to 10 - 30% of the total requirements of ISO 28000.

Analyzing the behaviour of companies and other organizations involved in supply chain management, we can see some re-evaluation of the approach to security. However, so far only a few logistics companies in Poland have implemented ISO 28000. Standard ISO 9000 and 14000 have been implemented much more willing and faster, perhaps an impact on it had a good economic situation, continuing for a quite long time. The emergence of ISO 28000 coincided with the American financial crisis, which, inter alia, resulted in considerable reductions in spending in companies across all industries. Searching for reserves associated with reduced all costs and nevertheless in many companies, whether it is actually necessary or whether it does not, actions are taken to improve short-term financial results.

The crisis caused a phenomenon of a dual nature - economic and sociological strategies of "austerity" are considered to be reasonable and give a greater chance of survival, previously voiced by some theories that should be focused on profits and not counting expenses - that is, to implement development strategies, attracting in this way, customers are being replaced by a spiral savings. Lean management, outsourcing, it almost spells reengineering managers to ensure the success of their organizations - to wave American management concepts are adopted in many enterprises. Large corporations with American roots contribute significantly to promoting the concept - giving one example, and forcing their use on others. This situation causes a reduction in employment and reducing wages (eg by sending employees home - possibly in the case of outsourcing, hard-to-time in

employment). The result is therefore a worsening in geometric progression, the situation on the demand side of the market, which in turn leads to even more closely entrepreneurs counting the cost.

However, leaving the macroeconomic considering can be seen that in the sphere of microeconomics described phenomena impinge on the overall well-being and discourage decision-makers to take actions that are not seen as rational. This is also the introduction of ISO 28000. Why managers often are not yet convinced of the advisability of introducing such a system, and even opposed? It seems that the problem of ignorance regards possible to rationalize the cost of supply chains. In the minds of decision makers operate on the knowledge-based belief that the implementation of the new system results in certain costs in the organization. Which in the vast majority are measurable, results temporary decrease its efficiency, which is already difficult to measure in financial terms, but predictable. Expenditures are therefore known, and partly expressed in specific amounts. Effects are not always properly visible. This is because flows of many costs, such as the effects of faulty processes, do not are recorded. Seemingly, it is difficult to reduce supply chain costs incurred losses, as I confirmed conducted interviews in the enterprises. The consciousness of managers responsible for the strategic implications of business problem seems to be not worthy of undue attention. The mere height of these losses is not known. Often the knowledge about the occurrence, such as theft, or damage relates to only individual facts. After examination, it may turn that underestimated losses are important. But as long as business executives are convinced that have the essential factors which determine the financial health of their businesses under control, do not take actions to rationalize these processes. To change the decision could contribute economic calculation, but there are no data, because it does not count those costs. It is a commonplace to say that not counting the costs is not equal of them liquidation, however, the evolution of the concept of corporate governance suggests that while some issues are insignificant for the existence of companies that they do not deal with them. If we only included the cost can be passed on to customers, from the point of view, the entrepreneur has no reason to deal with the problem.

Higher security of supply chains can be achieved using simple measures - in the way of raising efficiency of processes. This is achieved through better organization of work. The last three years have caused many reappraisals TSL markets and other sectors, which often amounted to a drastic cost constraints, however, in the near future be expected to try to reduce these costs, which have not yet taken into account in the economic accounts. Introduction or outsourcing Supply Chain Security Management System may be an important factor in building a competitive advantage. The boom in transport markets, I hope, will bring significant changes in this area.

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## СИГУРНОСТТА КАТО НЕДООЦЕНЕН ФАКТОР В ОПТИМИЗИРАНЕТО НА ВЕРИГИТЕ ЗА ДОСТАВКИ

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**Ключови думи:** сигурност на веригата за доставки, цялостно управление на сигурността, ТАРА изискване за сигурност на товарите (FSR), ISO 28000.

**Резюме:** Сигурността на веригата за доставки е важен за решаване проблем. От десетилетия мениджърите подобряват своите компании, една от целите е намаляване на загубите по време на фазите на производство, транспорт и разпределение. Като решение, но не за всички видове предприятия, възникна Total Security Management (цялостно управление на сигурността). Транспортът страда всяка година все повече – статистиката за престъпността по отношение на товарите се повишава. ТАРА е организация, съставена от професионалисти, представляващи високо технологични компании и свързаните с тях доставчици на услуги. ТАРА FSR и ISO 28000 са стандарти за система за управление на сигурността. За получаването на тези сертификати, компанията трябва да отговарят на изискванията за сертифициране, но това е скъпо, мениджърите трябва да бъдат убедени, че си струва.