THE RISK FOR DETECTION AFFECTS THE LOGISTICS SYSTEM SETUP FOR CARGO

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ABSTRACT

Purpose of this paper
This paper examines the differences in logistics system design depending on the legality of the supply chains. The legality of the goods/actors is a vital factor when taking the goods from point-of-origin to the end user. This paper uses different logistics theories to provide a likely theoretical explanation of how and in what way the legality of the supply chain affects logistics system setups.

Design/methodology/approach
This paper takes a macro-perspective on the differences between legal and illegal logistics activities depending on the legality of supply chains. The validation of this paper is based on three different structures: theoretical frame of reference, analysis of official reports and two different cases studies. This paper uses methodology triangulation and dual perspective to describe the interaction between illegal supply chains and the legal world’s preventing efforts. The key analytical feature for this paper is the risk for detection element.

Findings
Several supply chains use the transport network services and therefore it is not always possible to separate legal from illegal supply chains. The illegal supply chains have a unique constraint in comparison to the legal setup: the risk for detection. The detection risk factor is one of the greatest logistics constraints on the illegal flow of goods and it is in this constraint that the professionalism of the actors is found.

Research limitations/implications (if applicable)
The research is based on secondary sources like official statistics and interviews with security and customs personnel.

Practical implications (if applicable)
The triad logistics setup provides a good theoretical foundation to understand how the legal transport network is abused by criminal businesses. This paper illustrates that a filtration of information regarding the shipped products is the primary tool to use to successfully abuse the legal transport network.

What is original/value of paper
This paper uses well known theories from logistics research to both describe and explain the illegal supply chains.

Keywords: Illegal supply chain, Transport system, Transport network configuration, Cargo smuggling, Logistics system design
1 INTRODUCTION

This paper examines the differences in logistics system design depending on the legality of the supply chain. From a simplistic point of view, the supply chain can be either legal or illegal, but in reality, it is sometimes difficult to establish the legality. Actors on both sides of the law have different intentions—to either simplify the legality assessment process or make it difficult to assess to protect their supply chains. The legality of trade differs from place to place and time. This means that a certain product/service/sale can be legal in one geographical area and illegal in another. Therefore, the legality will affect the specific logistics setup for that supply chain. The market for illegal and undefined products are normally referred to as the black market, for products that both customers and authorities consider as illegal (drugs etc) or the gray market if the customers do not know or are able to verify if the product is legal or illegal. These products can be genuinely branded merchandise sold through unauthorized channels, counterfeited products or stolen products. The gray market is the main target for counterfeited products, and that market has become global during recent years (Myers, 1999). The gray market supply chain actor’s tries to hide the trail of the products whiles the black market supply chain actor’s only tries to hide the existence for the authorities. In both cases is the risk for detection a vital element.

The supply of the black market there normally accomplish by different types of cargo crimes. First we have counterfeiting of products or just copying a product and the closely related manufacturing of goods without regard to intellectual property rights, the so called pirated goods. Secondly we have smuggling and fraud as cargo crime types. These two types have both similarities and specific differences from counterfeiting products. The last general type of cargo crime is the theft of goods. All these types can be present, in different ways, at a certain cargo crime. It is likely that theft, frauds and other types of crimes are conducted between different criminal groups but in this paper that problem is not included. The gray market is subject to the same forces of supply and demand as legal ones (FIA, 2001). Everything that has been produced can be produced again by someone else. In terms of contraband, this simply means that everything can be a counterfeited product (IACC, 2005).

To bring the counterfeited products from the production site to the end user (the supply chain perspective), they must cross several national boundaries (in general) and ignore intellectual property legislation. The counterfeiting business evolves constantly within current trends and technologies (EC - a). A counterfeited product is no longer possible to distinguish from genuine products only by sight (IACC, 2005). The fake products are nowadays so realistic that it is often necessary to perform a chemical analysis of the product before knowing if it is a fake (EC - b). The supply to different black markets can come from cargo crime, smuggling, counterfeiting, and product piracy. These criminal activities are attractive to organized crime groups because they combine high profit margins with lower risks than alternatives like drug trafficking (IACC, 2005). Common to these illegal supply chains is that they all use logistics activities to move products from the point of origin to the point of sale using the best possible setup to avoid disturbance in their logistics flow.

Whether a company decides to produce or acquire can be seen as a risk assessment strategy based on a cost-benefit-analysis. According to Mankiw (1992), the central principle in microeconomics that all households and firms optimize is “They do the best they can given their objectives and the constraints they face”. The optimize principle and the risk assessment strategy aims to fulfil Mankiw’s (1992) statement, namely an organisational internal profit/risk cost optimum. It is normally agreed that a larger business risk will require a larger expected profit, but in reality, different people risk apprehension (Cleary et al., 2006). Normally the business risk is referred to as the likelihood combined with the economical
impact for a certain negative incident/source (Wang et al., 2000). The business risk can thereby be regarded as a cost (risk cost), and consequently be understood with the same tools and theories as all other costs (Colbert, 1991; Doff, 2008). The search for minimizing personal business risk has always been a part of doing business (Waters, 2007). Risk management is, therefore, the pursuit for the optimum balance between potential profit and risks (Doff, 2008). This means that risk management includes all activities that are normally referred to as management (Hardy, 1999). The three terms security, risk management and crime prevention are often considered similar and always work together (Manunta, 1999). This idea suggests that security and risk management are good (from an ethic point of view) because they reduce crime; thus more or better security or risk management will reduce problems with crimes. The problem here is that what a crime is defined by a law, according to the principle “no crime without a law”, while security or risk management has no philosophical attachment to the law. This means that people on both sides of the law can have better or worse security or risk management and that security and risk management are not necessary against crime. This result in that the pursuit for the internal profit/risk cost optimum can be found on both sides of the law and in this philosophical presumption is the dynamics in the relation between preventive and exploit forces found.

The risk profile of a certain business is reflected in the minimum margin of profit required for someone to realize the transaction. This paper uses the idea of the economical man to describe the differences between legal and illegal logistics system setups, but it is also important to remember that there may be reasons other than economical ones behind the decision to conduct trade in three stages of legality (legal, illegal, and undefined). In short, the theory states that every person shall be seen as a rational person who makes decisions about potential business transactions, keeping in mind the relationships between the benefits transactions may bring or the troubles and risks that may result. With this said, rational people think at the margin (Mankiw, 1997), which may include more than economic elements. Buyers of illegal products are everywhere (Johns et al., 2003). What is legal in one country may be illegal in another one. For cigarettes, is it estimated that 6-8.5% of the total consumption is supplied by smuggling (Joossens et al., 1998) This leads to the possibility that the actors in smuggling can be legal companies trying to access a market that, for them, is prohibited. According Antonopoulos (2007), discourse about the gray market is filled with the idea of a criminal underworld to separate it from the legal/normal upper-world. In reality, it is difficult to establish the underworld/upper-world image.

2 METHOD

2.1 Research question

This paper analyses the similarities and differences in the setup of logistics systems with respect to the legality of the supply chain. Thus, if the legality of the supply chain is questionable (to different extents), then there should be differences in the logistics setup depending on the detection risk. This paper uses different logistics theories to provide a likely theoretical explanation of how and in what way the legality of the supply chain affects logistics system setups.

2.2 Research approach

Using methodology triangulation (Mangan et al., 2004), this paper focuses on the differences in logistics system design depending on the legality of the supply chain. Such differences should be found in the different perspectives on the balance between constraints and risk for
disturbances. In this paper, the risk for disturbance in an illegal supply chain is the same as for a legal supply chain combined with the risk for detection. The validation of this paper is based on three different structures: the frame of reference, the analysis of official reports of illegal trade activities based on the framework, and two different cases of illegal usage of the legal logistics setup. This provides a methodology triangulation, which gives a basis to the credibility of this paper (Mangan et al., 2004). The research presented here intends to represent reality by demonstrating the difference in logistics system design, depending on the legality of the supply chain, and thereby the contribution to the logistics knowledge base (Stock, 1997). This relevance of this paper is twofold: first to demonstrate that common logistics theories are valid for cargo smuggling operations as well, thereby further validating these theories; and second, to point out how the risk for detection is the prime component to understanding the prevention of cargo smuggling.

This paper takes a macro-perspective on the differences between legal and illegal logistics activities as a result from the legality of the supply chain. On a theoretical level, the separation between legal and illegal supply chains is easy to accomplish, but in reality, the separation depends on specific information (ownership, local legislation, quantity, patents, material, receiver, shipper etc.). The difficulty with interpreting all the information and then determining the legality of the supply chain can be referred to as the detection risk. The preventive measures increase this risk, while the actors in the illegal supply chains want the detection risk as low as possible. Therefore, the detection risk is decisive for the logistics system setup in an illegal supply chain. This paper uses this difference between legal and illegal supply chain as the decisive factor that governs the differences between logistics system setups. The research in this thesis follows the tradition in logistics to use a system approach when answering research questions (Aastrup et al., 2008; Hellström, 2007; Gammelgaard, 1997; Gammelgaard, 2004). The “total systems perspective” became the foundation for the logistics discipline to include the entire material flow in the research (Gomes et al., 1988). The system approach also implies a top-down perspective on the system. The main idea with system theory is to illuminate holistic thinking; it is based on the assumption that the whole (system) is different from the sum of all components (Churchman, 1968; Von Bertalanffy, 1969; Hellström, 2007). According to Hellström (2007), one main issue in system theory is how elements interact with other elements in the system. This paper takes this approach one step further to include the legality of the supply chain into the total system. The most important component in a system are its boundaries and the context in which it is presented (Wilson, 1990). In this paper, the context is logistics and the boundaries are the legal demarcations that will contribute to the logistics system design. This means that all the models used in this paper are from logistics or supply chain management. Insights from complexity theory guides the search for a few guiding principles that together describe the behaviour of the system (Gault et al., 1996). This paper is a first attempt at finding a few guiding principles to describe the effects the legality of the trade has on the logistics setup. The complexity theory offers a system understanding that is based on subjectivity and paradoxes instead of objectivity and rationality in interaction between actors (Macbeth, 2002). This paper aims only to be descriptive regarding the differences in logistics system design, not in explaining why certain products are considered legal while others are not.

2.3 Description of the risk for detection element

The key analytical feature for this paper is the risk for detection element that affects the logistics system setup. The risk for detection can further be said to consist of two components. The first component is the risk for detection as discovery by an actor that is not are supposed to be aware of the actions/activities. The second component is the potential consequence of
detection (supply disruption, cargo confiscation, prosecution, personal sentences etc.). This paper refers the potential consequence of detection to the theory of rational choice and the economical man (cf. Ekwall, 2007; Sarnecki, 2003; Mankiw, 1997). The components on both sides of the law can be influenced, all to change the overall possibility of success, regardless if success means detecting and preventing a freight or if it means fulfilling a shipment for an illegal supply chain. The dynamic relationship between illegal and legal actors is the key feature to understand the function of the risk for detection element. The authorities try to increase their possibility of discovering and prosecuting illegal supply chain perpetrators, while the illegal supply chain perpetrators try to minimise the risk for discovery or the potential consequences from a discovery. This dynamic relationship is illustrated in figure 2.1.

![Figure 2.1: The description of the risk for detection components used in this paper](image)

The analysis of the similarities and differences in the setup of logistics systems with respect to the legality of the supply chain is based on the dynamic relationship between illegal and legal actors that are presented in figure 2.1. To understand the complexity and range of this relationship, this paper uses both description of illegal supply chain activities and two special cases of illegal supply chains or authorial preventive measures.

### 2.4 Data sources and their reliability

The information about illegal supply chains and logistics operations is derived from official reports and interviews with security personnel or personnel with similar assignments. This means that the illegal supply chain description is based on secondary data instead of the preferred primary data. Trustworthy institutes like the FBI, DEA, Europol and the European Commission collected the secondary data used. In some cases, the report is from a trade association, principally regarding counterfeited products. Primary data is used in the two case descriptions in this paper. These interviews are focused on understanding cargo smuggling.
operations. The interviews were conducted with the purpose of obtaining examples of illegal supply chains that exploit the legal transport network. The problem here is that the only examples mentioned are those that have been discovered and not those that escaped attention. This leads to the conclusion that the research presented in this paper is limited to address failed illegal supply chain activities in relationship with legal supply chain activities, with a focus on the risk for detection. Consequently, there are successful illegal supply chains that conceal their activities more effectively than the states in this paper.

3 THEORETICAL FRAMEWORK

3.1 Logistics and the market

Christopher (2005) defines the supply chain as follows: The network of organisations that are involved through upstream and downstream relationships in the different processes and activities that produce value in the form of products and services in the hands of the ultimate customer”. The goal for all involved organisations is to provide the ultimate customer with the right product at the right time and place (cf. Christopher, 1998). The market as a concept can be used as a description for all business transactions, which includes everything from the cradle to the grave (and again, with the recycling) in a product’s life. This paper uses the market as the place were the products, regardless of legality, are exchanged for money according to the theory of supply and demand. Logistics is, according to Christopher (2005), “the process of strategically managing the procurement, movement and storage of material, parts and finished inventory (and the related information flow) through the organization and its marketing channels in such a way that current and future profitability are maximized through the cost-effective fulfilment of orders.” The striving for better business deals is the practical way to maximize profitability, and according to Naylor (2004) this strive together with the general globalization trend has lead to an embedment of illegal actions within legal markets (cf. Antonopoulos, 2007). The striving for better business deals and the general globalization trend that started centuries ago has lead to an embedment of illegal actions within legal markets (Naylor, 2004). This implies that the black markets of the past have been integrated with legal transactions, and the markets today can be described as containing many shades of grey when referring to the legality of the markets as a whole (Naylor, 2004). The legal businesses are especially concerned with the problems of counterfeit branded products and theft of their own products. To increase the efficiency of detecting counterfeited products, the legal businesses use cutting-edge technologies and security actions (Sarathy, 2006).

3.2 Supply chain and logistics theories

The scope of logistics pertains to all activities from supplier to customer to provide the right product at the right time place (Christopher, 1998). To be successful, all aspects concerning operations and information need to work together. The chain of companies that co-operate to fulfill the scope of logistics is called the supply chain. The supply chain is a network of autonomous or semiautonomous business processes that produce physical goods or services for customers (Lin et al., 1998). These processes can be in different companies or in the same company. The need for the coordination of all involved processes and companies to deliver this value is basically what Supply Chain Management (SCM) aims to solve (Samaranayake, 2005).

Managing the total or smaller parts of the supply chain to get them to work as effectively as possible requires integration of information and material flow (Samaranayake, 2005). Successfully conducted SCM will achieve shorter time-to-market and allow the flexibility to
respond quicker to actual customer demand, all while keeping the costs down (Samaranayake, 2005). The purpose of the transport network is to physically move the goods within a certain supply chain to fulfil the scope of logistics. This means that the transport network only physically integrates the supply chain with the fulfilment of the supply chain’s transport demands. Therefore, several different supply chains can be present at the same time and the same place in the transport network. The logistics triad setup focuses on the relationship between consignor, consignee, and the transport fulfilment. The foundation of the logistics triad is a cooperative, three-way relationship with the movement of goods as the core (Stefansson, 2004). The logistics triad theory is illustrated in figure 3.1.

![Figure 3.1: The logistics triad (Stefansson, 2004)](image)

The usage of a Logistics Service Provider (LSP) is generally agreed to be good business behaviour. This gives the goods owner access to the LSP’s terminal network, and thereby the LSP’s economy of scale for transports, which reduces the distribution cost and increases the possible number of potential customers (Stefansson, 2004; Lumsden, 2006; Christopher, 2005). Looking at transport from a system perspective, we find that logistics is made up of several different levels. Before examining the different levels, we should comprehend the overall logistics field. A logistics system consists of links and nodes, where the nodes are geographically fixed points, such as factories and terminals, while the links are the elements connecting the nodes, i.e., the modes of conveyance. Considering the different levels of the system, we first find the flow of material. This is the cause or the reason for the existence of the whole system, the aim of which is to move material from one place to another. To be able to do this, the material flow uses a variety flow of movable resources, meaning lorries, trains, airplanes, and ships. These movable resources need infrastructures like roads, harbours, airports, and terminals (Wandel et al., 1995).

The complexity of logistics can be explained by displaying the four different flows that are always involved in logistics activities. The flows of material and resources have already been mentioned. These two flows represent the “physical” part of logistics, but the other two flows are just as necessary to make the system work, namely the monetary stream and the flow of information (Lumsden, 2006). The four flows of logistics need, as stated before, are geographical fixed constructions and infrastructure to fulfil the logistics scope. Some of the infrastructure is owned and used exclusively by one company, while others are co-owned or even owned by governments. The four flows of logistics together with the needed infrastructure can be called the five needs for logistics fulfilment.
3.3 Constraints and disturbance risk within transport system design

Different constraints and risks for disturbance within supply chain contexts affect the actual setup of each part of the transport network. This setup is designed to obtain the optimum usage of supply chain performance and to achieve both customer satisfaction and internal efficiency. The need for customer satisfaction is the demand from the supply chain on the transport network performance and layout. Internal efficiency is the way to fulfil the demand from the supply chain. This signifies that the needs from the supply chain are the most important constraint for the transport network. Historically, security and vulnerability within the global transport network were largely neglected until the terrorist attack on the World Trade Centre. The subjects of supply chain security (the superior term for all transport related security) and vulnerability are finally being given needed attention as they pertain to terrorist attacks. This vulnerability can, in many cases, be described as “unwanted effects” in the supply chain. For the illegal supply chain, detection is an unwanted effect, and therefore is the term vulnerability also valid for illegal supply chain’s logistics systems.

Juttner (2005) states that risk taking is generally perceived as an inevitable aspect of supply chain management. Taking risks is not the same as controlling and managing risk to an acceptable level. Today, risk is a factor in all business functions and processes (Cavinato, 2004). This refers to the fact that every function or process has a certain probability of not performing as planned and that there is a certain consequence attached to that probability. Risks can emerge both from within the organisation and the environment. The attempt to minimize business risk has always been a part of doing business. According to Garrett and Marshall (2003), a common risk strategy for an actor is to own only a minor part of the equipment they use. This depends mostly on the fact that the risk for ownership is transferred; this transfer of ownership can in many cases be called outsourcing. In the world of logistics and freights, many actors have specialised in different parts/functions of the global transport network. In logistics theory, this is normally described as a good way to handle the external logistics flow for a company (cf. Lumsden, 2006; Christopher, 2005; Samaranayake, 2005).

The risk management perspective of transport from consignor to consignee and the balancing of the different constraints towards the different risks for disturbance are valid for all types of trade. If the potential risk for disturbance is considered too high in a certain logistics setup or product flow, the system should alter its design to reach an acceptable level for the mix between constraints and risk for disturbance. The difference between illegal and legal supply chains can, in its simplified form, be described as a unique constraint affecting only the illegal supply chains. The unique constraint is the risk of being discovered by the authorities, thereby suffering a flow stoppage. This unique constraint should lead to a different setup of the logistics system for the illegal supply chain to fulfil its scope of logistics. Minimising the potential effects from constraints in the transport network allows the different illegal supply chains to obtain better illegal business deals. According to Naylor (2004), the aspiration for better business deals together with the general globalization trend has led to an embedment of illegal actions within the legal markets. This development should therefore be visible in the global flow of goods, but illegal logistics system setups should differ from the normal (legal) setup depending on the risk of detection.

3.4 Detection of illegal supply chain

To increase the efficiency of detecting counterfeited products, legal businesses use cutting-edge technologies and security actions (Bolon, 2005; Sarathy, 2006). The tested technologies are organic DNA, retinal scans, holographic labels, and RFID tags (Berman, 2008). Technologies used for securing the identity of the product need to be tamper-proof. The RFID
technology is not secure, but organic DNA has thus far shown good abilities on that feature (Zimmerman, 2004). These technologies aim at identifying the product as a unique entity by means of information in different shapes. The more data that needs to be consistent, the harder it is to get away with the usage of false data. It has also been suggested that customers should be educated on more easily distinguishing a fake from an original (Bolon, 2005). To do this, customers need evidence (serial numbering systems, etc.) or strong knowledge of the product. Using valuable (more expensive or rarer) materials instead of common (cheaper or easier accessible) ones may make it more difficult to counterfeit products (Hilton, 2000).

The problem with cargo crimes is complex, and depending on which type of cargo crime needs to be prevented, different methods have different impacts on the problem. The positive consequence of the “war against terrorism” is that regular cargo crimes have become harder and riskier to accomplish (Littman, 2003). For legal businesses, the AEO (Authorised Economic Operator), C-TPAT (Customs-Trade Partnership Against Terrorism), CSI (Container Security Initiative) etc. are seen as both a global supply chain headache and a business opportunity, depending mainly on the risk for thefts and counterfeiting of products for that company (Holmes, 2004). One common denominator is the use of information both to detect illegal products inside legal logistics and flows of purely illegal products. Regardless of which side of the law a businesses is on in a produce/acquire situation, the practical realization of the business needs logistics activities. The design of these activities varies with the legality of the trade.

4 EMPIRICAL FINDINGS

4.1 Descriptions of illegal supply chains

The supply of a typical black market (both authorities and customers knows that the product is illegal) can be illustrated with the illegal smuggling of cocaine to USA. The illegal drug supply chains come mainly from South America. This depends on that the raw material, coca leaf, is grown there. The smugglers use land, sea, and air routes to get past US authorities. The whole distribution of cocaine is controlled by Colombian-based organized crime, but in recent years it has started to cooperate with Mexican criminals to streamline the logistics and share the risks. The Colombians have organized their operations in a business-like manner, creating cells for special purposes like warehousing or transport (DEA webpage). According Bouchard (2007), the illegal drug markets are best understood as having high adaptation and great resilience to always supply their products to the end user. This resilience and adaptive ability is clearly found in the logistics system setup and can be understood and explained with the concept of risk for detection presented in this paper.

The supply of a typical gray market (only authorities know that the product is illegal) can be illustrated with the illegal smuggling of counterfeited products. The gray market involves the diversion of goods from legitimate supply chains (Huang et al., 2003). The only distinction is the risk for discovery from the authorities or the company whose products are copied. This diversity leads to a different design of the supply chain. The location of the production facilities is subject to the risk of discovery. Normally, counterfeited production units are placed where the risk for detection is low combined with the normal business problem as different types of costs and quality aspects. An counterfeited supply chain uses the freight routes and port activities in the same way as legal supply chain does. Among the receiver countries, Europe and the US are favourites, just as Africa is the favourite for transit activities. Confiscated products that have not been produced in Africa, like jewellery and CDs, show this, because the African market does not have the ability, in general, to buy that
type of product. Countries in Central and South America act like magnets for counterfeited products. Purchases of counterfeited goods to launder money occur in larger numbers there than anywhere else in the world (EC - b). Large stocks of illegitimate products are easily shipped from parts of South America to Central America, where they are big consumers of that type of product. Organized crime also uses Central America as the base for shipments of illegitimate goods to North America. The situation in Europe makes it the most lucrative market for counterfeited products. The types of confiscated goods at the external borders of the EU are different from other places in the world. This indicates that the dealers of counterfeited products adjust products to each market’s special condition. They look at the fashion, culture, and buying habits of individual countries (EC - b).

Both types of illegal supply chains use the international flow of containers to transport their products all over the world, regardless if the product is counterfeited or an illegal drug. Criminals try to delude customs’ watchfulness by "breaking" their way through from the area of production to the area of supply, and avoiding direct paths that are well known to the authorities.

4.2 Cases of special interest for detecting illegal trade lines

To fully understand the innovative exploitation of legal transport and logistics operations by illegal supply chain actors, it is useful take a closer look at some cases of illegal supply chains. To achieve this understanding, two interviews were conducted with key personnel. They both had long recorded experiences of the logistics business, crime prevention, and specific markets that are closely linked to the usage of illegal activities. The interview was conducted as a conversation, while all normative discussion was forbidden during the interview. This was done with the purpose to get the interviewees to state their true opinion and experience. For the same reason, all interviewees were guaranteed anonymity so that they did not fear reprimands from their employers. The interviews were all completed with a mutual survey of the notes taken during the interview to ensure that they were representative of the interview (Mishler, 1986). The first case addresses the international supply chains of art and archaeological artefacts. This case is interesting, due to the unique combination between preventive legislation (both national and international) and the difficulty in separating genuine and legal artefacts from fakes and replicas. The second case addresses the cross border preventive measures from customs’ point of view. This case demonstrates the differences between perpetrators characteristics and their strategies to handle the commonly admittedly high risk for detection in cross border freights.

Case 1: The trade of art and archaeological artefacts is a continually increasing problem. Every country in the world has some form of rules and regulations regarding the export of these types of goods, but very few or none have import rules. The primary supplier of artefacts today is China, though quite unwilling. China has stiff export regulations, but the margin of profit is too high for some dealers. The main route is from inland China to Hong Kong (even if it is the same country, there are still different regulations). There are artefacts made “legal” (fake paperwork of artefact’s origin) and shipped to the buyers’ market mainly in Europe and the US. The big problem with this type of illegal supply chain is that it is difficult (almost impossible) to prove that the artefacts are stolen, because the only real proof that exist is the hole in the ground from which they were dug up. From an international logistics view, the actors want to mix legal (correct documentation) and doubtful objects together in the same shipment to make it even harder to prove illegal activities.

Case 2: Swedish customs categorizes the smugglers (actors who bring illegal products into or out of Sweden) into two types: small private actors or large scale organized actors. The
distinction is based on the volume in each shipment. The small-scale smuggling is easier to
spot and sometimes they even lack the knowledge that they are breaking a law (in cases of
counterfeited products, not drugs). Large scale smugglers have thorough knowledge about
both logistics and customs routines. They try to be anonymous in the eyes of the law or use
goalies and front companies as importers. If it is about counterfeited products, the pure quality
of the counterfeited products is much better than those of small-scale smuggling operations.
Large-scale smuggling uses Sweden on a regular basis as a transit country for the goods.
When the goods are drugs, the transport route is “unnatural,” with longer dead time or re-
routing of the container during transport. Even re-constructed containers or ships with secret
hiding places containing drugs exist.

4.3 Case discussion

Both cases show the complexity and the difficulty of prohibiting illegal supply chains from
using the legal logistics system. The first case proves two things vital for illegal supply
chains: flow pollution and the importance of being able to track the goods from their source
(hiding or revealing the trial depending on view-point). If the authorities cannot prove that the
supply chain is illegal, it must be considered legal (cf. Sarnecki, 2003) and this reduces the
risk for discovery dramatically. This is the purpose, from the illegal actor’s point of view with
both flow pollution and non-existing (documented) origin. The problem with counterfeited or
faked archaeological artefacts is the lack of originals with which to compare the fake. This
problem makes it even more difficult to distinguish fakes from authentic artefacts. Customs
does not have the expertise needed to distinguish these fakes in every customs station, but in
the case of counterfeited industrial products they have more of this knowledge, including
which brands and which products are more likely to be counterfeited. The second case shows
a big difference between professionals and amateurs regarding illegal supply chain activities.
The professional acts as the unseen link in the shipment. They pull the strings and stay out of
sight from the authorities; in this way they avoid the risk for negative consequences from a
discovery. Therefore, it is possible to conclude that a professional illegal actor considers the
two components of the risk for detection differently than the amateur who only considers the
discovery risk. This leads to the customs scouts for uncommon freight routes/content/involved
companies. The general idea behind this is to scout for activities that in some way indicate
that someone for some reason gave the shipment special attention (avoid the risk for
discovery) in order to slip by the authorities.

5 ANALYSIS

Earlier in history there existed stationary smuggler ports and special trade routes for illegal
goods, but the economy of scale in logistics has made it more efficient and fast to conceal
illegal supply chain’s goods in legal shipments. Today, the creation and use of special
infrastructures for illegal supply chains are likelier to be found in drug traffic (cf. the freight
routes for cocaine and heroin) than for counterfeited merchandise, but the mixture of legal
products with illegal ones are a common way for abusing the international logistics system.
The general trend in all logistics is the need for speed, low cost, and re-scheduling of
shipments so that all involved actors may receive the highest possible profit (cf. Christopher,
2005). The possibility of distinguishing legal from illegal actors varies with the type of
product, documentation, means of identification, ownership etc. Therefore, illegal supply
chain transport routes with the lowest possible risk of detection (both discovery risk and
consequence impact for the actor) bring goods to the market with the highest possible
business opportunity, payment ability, and demand.
The example of the global flow of counterfeited goods clearly demonstrates that if the fake product is difficult to separate from a genuine one (low discovery risk and low impact consequence), there is a lesser need for a different logistics system setup. While the description of the global flow of illegal drugs has a higher likelihood for detection (low discovery risk but high impact consequence), these systems have a higher likelihood of being designed to reduce the risk of detection by authorities. This results in that the colourful expression: “the darker merchandise (from a legal point-of-view) the bigger possibility to find the flow in a special designed logistics system setup”.

5.1 The triad logistics setup in the illegal logistics activity context

When shipping the illegal product to the customers, to avoid discovery the illegal logistics service provider will normally use a regular flow and a legal logistics company. The abused forwarder may not be aware that the transport is part of an illegal supply chain. The choice of forwarder, by the illegal actors, is made in the same way as the legal business stakeholders, considering price, time, and reliability as well as the possibility for the shipment to reach the market undetected. For counterfeited products or other types of goods in which it is difficult to establish if they are legal, illegal logistics attempts to use the legal logistics system for its transport needs. The reasons for this are threefold:

1. Cost: the economy of scale in the legal business is desirable;
2. The proportions of the legal business is desirable for geographical distribution;
3. The transfer of the detection risk to another holder solves the unique illegal business constraint of risk for detection.

In terms of logistics theory this can be explained with the theory of triad logistics setup. An illegal acting LSP can transfer the actual movement of the goods/material/products to a carrier in the same way as a legal provider. The carrier is unaware of the abuse, but still receives payment for their services. With a background in both the empirical description regarding illegal supply chains transport routs and the two cases, the illegal logistics actor’s abuse of the legal logistics system is better described by adding the function of a logistics service intermediary to the triad theory. This is shown in figure 5.1.

![Figure 5.1: Logistics setup with a Logistics Service Intermediary (Stefansson 2004)](image)

The model in figure 3 demonstrates that a filtration of the information flow in relation to the material flow is a key issue if the legal logistics system is going to be successfully abused by
illegal business actors. The economy of scale in logistics has made it more efficient and faster to conceal illegal goods in legal shipments. The general need for speed and low cost control sets the trend in the way of doing business on both sides of the law. The highest level of logistics, the flow of material, and the difference between black and white logistics is most evident (cf. Wandel). The possibility of distinguishing illegal trade lines varies with the type of product, the documentation, and the means of identification to establish the owner of the product. Therefore, illegal logistics uses the trade route with the lowest possible risk of detection to bring goods to the market with the highest possible business opportunity, payment ability, and demand. The grey line in figure 5.2 marks the vague border of where logistics activities are undefined. The box for the LSP (in figure 5.2) contains the types of activities that a LSP performs (see figure 5.1).

For the illegal logistics actors to abuse the full potential of the legal transport network, it is necessary for them to possess a thorough knowledge of logistics and be creative in finding new ways of concealing the delivery of goods to the right buyer. A professional illegal logistics actor (cf. organized crime) takes the role of the Logistics Service Intermediary, who can use the legal Logistics Service Provider for criminal purposes.

6 CONCLUSION

This paper has illustrated that the logistical system setup differs dependent upon the legality of the trade line or supply chain that is in focus. This effect is closely linked to the risk for detection (both the risk for discovery and the negative consequence impact for discovery) which acts as a trade barrier for illegal trade lines, and is not an element in legal trade lines. Therefore, if the actors in the illegal trade line can reduce the detection risk, they will increase the possibility to use/abuse the legal global transport network for the illegal purposes. This abuse maybe detected by the different actors in legal logistics if not, the actor is still unaware of its participating in an illegal activity and continue to receive payment for the services as if the trade would be legal.
The illegal logistics system setup adjusts according to the risk of detection. This depends on that the pursuit for the internal profit/risk cost optimum. This pursuit or governing mechanism can be found on both sides of the law and it explains the dynamic relation between preventive and exploit forces in logistics and is perceptible in the differences in logistics system setup. Or more precisely in the risk for detection element which can be described as a certain risk profile for each actor, stakeholder or shipment. The risk profile of a certain business is reflected in the minimum margin of profit required for someone to realize the transaction. The theory of triad logistics setup is a useful model to describe, in practical terms, the abuse strategy from the illegal logistics actor’s side. A filtration of information regarding the shipped products is the primary tool successfully used to abuse the legal transport network. The possibility to distinguish legal from illegal products/supply chains varies with the type of product, the documentation, means of identification, ownership, location, local legislation etc. This results in that the risk for detection element is the key feature in order to understand and describe the dynamic relationship between preventive and abusive efforts executed by the different stakeholders. The full visualisation of this relationship is found in the different logistics system setup depending on the risk for detection for illegal supply chain actors by the different law enforcement agencies.

REFERENCE


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