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Master Degree Project in Logistics and Transport Management

The Origin of Goods and the Act that Undermines Global Trade: How the Proliferation of Free trade Agreements creates an Asian Noodle Bowl that Inhibits the World Trade Environment

A case study of Krusell Thailand Co. Lts.

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ABSTRACT

Historically, the diversified nature and role that regional and multilateral trade agreements have in global trade have been widely discussed. One side argues that trade agreements are building blocks for strategic alliances at both a country- and a company-specific level. A different side argues that trade agreements, especially free trade agreements, can result in failure for global multilateral trade entities, as overlapping trade agreements can result in complex import and export rules. Preferential trade agreements have seen exponential development during the last century and as a result, there has been a proliferation of free trade agreements around the world. In connection to this, countries have created free trade zones for companies to facilitate temporary import and export activities without generating duty and value-added tax costs. As a result, companies from developed countries have offshored manufacturing activities to developing countries. However, the profusion of free trade agreements has indirectly created discrimination against certain countries' trade picture and import and export activities. At an industry level, it affects companies' manufacturing and supply chain operations due to higher tariff rates when importing or exporting products in comparison to companies located in countries with preferential trade agreements.

Therefore, the purpose of this thesis is to investigate how companies whose manufacturing is located in disfavored countries can develop their manufacturing and supply chain activities so that their manufactured goods can be included in a preferential trade agreement, even though the companies and the country are not. A case study is presented on how the company Krusell Thailand can import semi-finished plastic cases from suppliers in China to a free trade zone warehouse in Thailand, where it will undergo value-added processes. By means of these value-added processes, the origin of the plastic cases can be changed from Chinese to Thai so they are eligible for the preferential tariff rates that Thailand and the EU have agreed upon. As a result of the changed origin, the duty costs will be reduced when plastic cases are exported to the EU, as compared to exports from China.

The analysis illustrates that the proposed value-added processes at the free trade zone warehouse are sufficient to change the plastic cases' country of origin. Moreover, the analysis shows that the proposal creates financial benefits at a specific break-even point where the quantity of plastic cases in an export shipment exceeds a certain volume. As a result, the reduction of duty mitigates the increased transport costs associated with the proposal. However, due to the proliferation of free trade agreements, the trade picture between Southeast Asia and the European Union is volatile. Thus, the proposal might prove to be more or less beneficial in the near future.

Keywords; *ACFTA, ASEAN, China, Cost-Benefit Analysis, Cost-Volume Analysis, Free Trade Agreements, Free Trade Zones, Logistics, Manufacturing Strategies, Regional Value Content, Rules of Origin, Supply Chain Management, Thailand*

ACKNOWLEDGEMENT

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ACRONYMS

3PL	third-party logistics
ACFTA	ASEAN–China Free Trade Area
AEC	ASEAN Economic Community
AFTA	ASEAN Free Trade Area
APEC	Asia-Pacific Economic Cooperation
ASEAN	Association of Southeast Asian Nations
CEPT	Common Effective Preferential Tariff
CIF	cost, insurance, and freight
CPT	carriage paid to
CU	customs union
DFZ	duty free zone
EC	European Commission
EDI	electronic data interface
EPZ	export processing zone
EU	European Union
FDI	foreign direct investment
FOB	free on board
FTA	free trade agreement
FTZ	free trade zone, foreign trade zone
GATT	General Agreement on Tariffs and Trade
GSP	Generalized Scheme of Preferences
ICT	information and communications technology
LPI	Logistics Performance Index
MERCOSUR	Mercado Común del Sur, Common Market of the South
MLR	minimum loan rate
MOQ	minimum order quantity
NAFTA	North American Free Trade Agreement
OECD	Organization for Economic Co-operation and Development
PTA	preferential trade agreements
ROO	rules of origin
RTA	regional trade agreement
RVC	regional value content
SCM	supply chain management
SEK	Swedish krona
SKU	stock keeping unit
THB	Thai baht
UPS	United Parcel Service
WOW	Walk on Water
WTO	World Trade Organization

1 INTRODUCTION

The chapter presents an outline of the background and describes the research problem. It elaborates on how the proliferation of free trade agreements affects industries and global trade. It continues with the purpose and proceeds with the research delimitation to define the scope of the research. Last, the thesis structure is presented.

1.1 BACKGROUND

During the last century, the development of trade agreements has grown exponentially (Hufbauer & Schott, 2007). Historically, the diversified nature and role that regional and multilateral trade agreements have in global trade have been widely discussed. One side argues that trade agreements are building blocks for strategic alliances at both a country- and a company-specific level. Moreover, smaller countries, in terms of both geographical size and economic strength, have often seen trade agreements as a way of gaining access to markets that larger countries are connected to; that is, they facilitate trade between developing and developed countries (Whalley, 1998). However, a different side argues that trade agreements, especially free trade agreements (FTAs), can lead to failure of global multilateral trade entities due to overlapping trade agreements that result in complex import and export rules (Asian Development Bank, 2013). Preferential trade agreements, such as FTAs, have taken advantage of the slow pace at which the World Trade Organization (WTO) operates when establishing and regulating trade agreements. This environment has enabled FTAs to rapidly multiply in the same way as cells in a human body (Matsushita, 2010). This global proliferation of FTAs has been dubbed the "noodle bowl" effect due to its characteristic overlapping trade agreements between countries (Kawai & Wignaraja, 2009).

During the last two decades, economic growth in the Asia-Pacific region has been a catalyst for the development of manufacturing, logistics, and supply chain activities. Trade agreements between several Asian countries and the EU have facilitated import and export activities due to the reduction of tariff rates (ASEAN Secretariat, 2008; European Commission, 2014b). This can be seen with the EU's Generalized Scheme of Preferences (GSP), which allows developing countries to export commodities to the EU with little or no duty at all (European Commission, 2014b). The Southeast Asian region has undergone a transformation during the last decade due to the development of FTAs between several countries with the goal of creating an economic union by early 2015 (ASEAN Secretariat, 2008). On a country-specific level, developing countries have taken advantage of the offshoring trend facilitated by FTAs and have established free trade zones (FTZs) as a tool to encourage foreign direct investments (FDIs) into the domestic economy. FTZs are areas where domestic and foreign companies can locate their production facilities for manufacture, assembly, or processing of goods. Goods that are imported to a FTZ are not "imported" to the country itself and are therefore excluded from duty and taxes as long as they are re-exported in the future. Moreover, governments have reduced regulations on import and export activities and company-specific taxes for companies using FTZs (Jayanthakumaran, 2006).

This has led to a growth in the number of multinational companies that have moved manufacturing and logistics operations to Asia, where they manufacture goods and export them to developed countries. Between 2000 and 2005, U.S. imports from China increased by 144 percent and imports from India roughly 76 percent (Sohal & Rahman, 2013). Jayanthakumaran (2006) and Rushton and Walker (2007) argue that the offshoring trend can especially be seen in labor- and manufacturing-intensive industries that can reap the financial benefit of reduced labor and manufacturing costs.

However, due to the noodle bowl effect, offshoring manufacturing activities to Southeast Asia have both pros and cons. For instance, countries that are excluded from FTAs face discrimination because they are blocked from the preferential trade incentives that such agreements would bring. For manufacturing companies located in excluded countries, this inadvertently leads to higher import and export costs due to complex rules of origin when determining the origin of a product. As a result, excluded countries that export goods are affected by higher tariff rates than countries included in FTAs (Matsushita, 2010; Baldwin & Jaimovich, 2012).

This raises the question as to whether there is any way that companies can mitigate this unfavorable development by adopting new strategies for their manufacturing and supply chain activities. For example, if a company is located in a disfavored country, does that mean that the manufactured goods must be disfavored too?

1.2 PROBLEM DEFINITION

Multinational company executives have generally had a nearly unanimous view about wanting to reduce tariff rates. One solution is the implementation of free trade areas, such as that of the European Community (EC). In Southeast Asia, the Association of Southeast Asian Nations (ASEAN), the ASEAN–China Free Trade Area (ACFTA), and the Asia-Pacific Economic Cooperation (APEC) have been established to bring down trade barriers and facilitate trade between their corresponding member states (Papadopoulos, 1987; Günter & Zhu, 2009; Das, et al., 2013; Sohal & Rahman, 2013). Hufbauer and Schott (2007) argue that there has been exponential growth in the development of trade agreements in the world. For example, in the 20th century, 374 trade agreements were established. However, roughly 200 trade agreements were created in the last decade alone, resulting in an inconsistency in the development of trade agreements that the WTO aims to create. Matsushita (2010) argues that FTAs can accomplish trade liberalization in areas where the WTO can't reach. This can be seen in direct investments and competition activities. However, the explosion of FTAs undermines the system that the WTO maintains and creates an imbalance in the competitive conditions that exist between countries. As a result, some countries and connected industries benefit from reduced trade barriers at the expense of others.

Industries in countries excluded from FTAs are inadvertently affected by tariff rates based on non-privileged agreements. This can be seen in, for instance, China–EU trade as compared to Thailand–EU trade. However, the trade picture that China and Thailand have with the EU might change over the next year. As of January 2014, the EU has developed a new GSP scheme that will abolish the existing scheme for both China and Thailand in early 2015 (European Commission, 2013a; MacLennan, et al., 2014). This could have a severe effect on Thailand's import and export activities due to the increase of tariff rates. However, Thailand is currently conducting trade talks with the EU in the hopes of creating a FTA. Moreover, the implementation of the ASEAN Economic Community (AEC), set for 2015, could also be a force to be reckoned with regarding possible trade relations with the EU (ASEAN Secretariat, 2008; ASEAN Secretariat & GIZ, 2013).

As mentioned in the background, due to the development of FTAs and FTZs, manufacturing-intensive industries have been offshoring their production to developing countries in Asia to reduce costs and increase profit (Jayanthakumaran, 2006; Rushton & Walker, 2007). However, the increase in FTAs has inadvertently created issues for companies deciding to offshore manufacturing. For instance, when companies are choosing the location to offshore to, they need to take into consideration risk factors that exist on a supranational level. More specifically, when companies offshore manufacturing activities to an Asian country that is excluded from FTAs, the primary export market for the manufactured goods can be affected by higher tariff rates than those applied to neighboring countries that are members of a FTA. Therefore, both the neighboring countries and their connected industries have a competitive advantage over the excluded country and its connected industries (Dean & Wignaraja, 2007; Matsushita, 2010).

The author argues that there is a gap in existing research regarding how companies can circumvent the issues that the noodle bowl effect brings to the global trade picture. Moreover, it will be argued that the research gap can be filled by merging two concepts and applying them to the complex rules of origin that exist in FTAs. These concepts are an industry/company application of FTZs and the appropriate manufacturing strategies related to it.

First, there is a lack of research concerning how FTZs can be used as a tool by companies to mitigate the discriminatory effect that the profusion of FTAs brings. FTZ research has traditionally focused on socioeconomic matters, where the host country and its connected welfare and economic development took the spotlight. The literature is slim at best regarding how FTZs can benefit a company's logistics and manufacturing activities, for instance, by reducing manufacturing costs, duty costs, transport costs, and lead times. Existing literature on the matter is often very general, without any deeper analysis of the possibilities for a real-life business application. For example, Papadopoulos (1987) presents the general benefits that a company can experience from using a FTZ, such as improved cash flows due to the goods' duty-free status when stored in a FTZ warehouse. Moreover, the literature

review found only one thesis that focused on the company-specific application of FTZs (specifically regarding the concept of bonded warehouses and their associated financial gains)[1].

Second, when turning the focus to supply chain management (SCM), it can be seen that this concept has become vital to creating an efficient supply chain in terms of, for instance, reducing lead times and costs. SCM has come to be a common practice across industries as it can create relationships that extend individual supply chains between connected businesses and create a unified flow of physical goods and information (Banomyong & Supatn, 2011). Supply chains are often defined as logistics networks that consists of actors such as suppliers, manufacturing centers, warehouses, and distributions centers (Simchi-Levi, et al., 2009). These networks of organizations are involved in both upstream and downstream linkages and consist of two or more legally separated organizations linked by material, information, and financial flows (Statler & Kilger, 2008). Gupta and Benjaafar (2004) explain that SCM can be used for manufacturing strategies that can alter how goods are manufactured. They elaborate on the fact that manufacturing stages can extend both domestically and internationally in a supply chain. However, the problem is that the above-mentioned SCM literature fail to consider external tangible and intangible aspects on both an international and domestic level, as seen with the proliferation of FTAs or the business application of FTZs. For example, the literature lacks to take into consideration how the rules concerning the origin of goods can affect manufacturing and duty costs when manufacturing stages are extended internationally. As a result, the origin of the finished goods might be ambiguous when combining parts with different origins. Therefore, the author would argue that these tangible and intangible aspects are missing from the SCM management literature.

Individually, neither the application of FTZs nor SCM-related manufacturing strategies offer a solution to the Asian noodle bowl effect. Individually, both concepts can only mitigate a fraction of the issues related to the effect. However, connecting the concepts to each other may provide a base that can fill the research gap and present an applicable business solution. Therefore, the research will explore a concept that merges a FTZ business application and an SCM-connected manufacturing strategy to create a solution to the complex rules of origin that affect the global trade picture. It is hoped this concept can mitigate the discriminatory effect of FTAs on excluded countries and industries when they export manufactured goods. The intended result is that a company could still be disfavored by a FTA but its manufactured products would not be, thus reducing duty and perhaps even other export-related costs.

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[1] See Häggström (2013).

1.3 RESEARCH PURPOSE

This Master´s thesis has two purposes. First, a descriptive sub-purpose that aims to contribute knowledge about how the Asian noodle bowl effect and how it creates issues in the global trade environment and its impact on an intergovernmental as well as industry-specific level.

Second, on an industry-specific level, a single-case study concerning the presented theory aims to explore how a company can benefit from the rules of origin (ROO) and circumvent the undermining effect of FTAs that the Asian noodle bowl creates. The purpose investigate how companies whose manufacturing is located in disfavored countries can develop their manufacturing and supply chain activities so that their manufactured goods can be included in a preferential trade agreement, even though the companies and the country are not.

For these purposes, a case study is presented on how the company Krusell Thailand can import semi-finished plastic cases from suppliers in China to a FTZ warehouse in Thailand. At the FTZ warehouse, the plastic cases will undergo value-added processes to change the plastic cases' country of origin from Chinese to Thai so they are eligible for the preferential tariff rates that Thailand and the EU have agreed upon. As a result of the changed origin, the duty costs will be lower when the finished plastic cases are exported to the EU than they would be if exported from China.

1.4 RESEARCH QUESTIONS

For the presented purposes above, five research questions have been created:

1. How does the Asian noodle bowl effect creates issues on an intergovernmental as well as industry-specific level?
2. Is there a way for manufacturing companies to circumvent the Asian noodle bowl effect by adopting new manufacturing strategies?
3. How do the costs and benefits of the proposed concept compare to the current exports from China to Sweden?
4. Will the reduction of duty costs be enough to mitigate direct and indirect costs that the proposed concept incurs at a given manufactured volume?
5. Due to the volatile and complex trade picture that the Asian noodle bowl effect creates, what can be estimated to be the life-span of the proposed concept?

1.5 RESEARCH DELIMITATIONS

The research will explore the rules and regulations needed for the plastic cases to be eligible for a change of origin. For instance, the research will elaborate on the material extent to which Krusell Thailand needs to semi-manufacture the cases or what kind of value-added processes need to be conducted at the FTZ warehouse to qualify as change of origin. The research will also present the costs and benefits of the proposal concerning duty costs, transport costs, implementation of a new manufacturing strategy, and lead time. This will then be compared to the current China–Sweden transport route. Indirect costs, if found, will also be presented in the research. Moreover, the author will calculate the regional value content (RVC) that is needed for a change of origin and follow the ACFTA ROO to present a real working concept.

The research presented is limited to goods manufactured by subcontractors in China on behalf of Krusell Thailand. The scope of the proposed concept includes the subcontractors in China, Krusell Thailand, and the bonded warehouse that is managed by Krusell Sweden. Therefore, end customers and their connected supply chain, i.e. businesses that purchase products from Krusell are not included in this research.

The terms "goods" and "products" are used synonymously throughout the thesis. The two companies Krusell International AB & Krusell Thailand Co. Ltd are referred to as Krusell Sweden and Krusell Thailand, respectively. The name Krusell refers to both companies.

1.6 STRUCTURE

PART ONE

Chapter 1	The chapter presents an outline of the background and describes the research problem. It elaborates on how the proliferation of free trade agreements affects industries and global trade. It continues with the purpose and proceeds with the research delimitation to define the scope of the research. Last, the thesis structure is presented.
Chapter 2	The chapter presents the development of regional and intraregional free trade agreements and the implications it has on multilateral trading systems. It continues with the underlying reasons why countries develop free trade zones. Moreover, manufacturing strategies are presented in connection to cost–benefit analysis theories. Last, the chapter presents the rules of origin.
Chapter 3	The chapter presents how the research was conducted and the reasoning and strategy behind it. The methodologies used are described in an academic context with examples of how they were applied to the research. The chapter ends with a discussion about data collection and the underlying thoughts about how and why certain data were collected and the related challenges.

PART TWO

Chapter 4	The chapter presents the historical and contemporary development of Asian trade agreements and their role in the Asia-Pacific economy. The chapter continues with an illustration of logistics development in Thailand.
Chapter 5	The chapter presents the case study of Krusell's supply chain and manufacturing activities. It continues with a presentation of the current manufacturing and supply chain concept and the author's proposed concept. Last, the rules of origin and their application are presented.

PART THREE

Chapter 6	The chapter presents the analysis regarding local content calculation and continues with the financial feasibility of the proposed concept. It elaborates on its costs and benefits compared to the currently used concept. Last, a discussion regarding the longevity of the proposed concept is presented.
Chapter 7	The chapter presents concluding remarks on the proposed concept and the research questions and continues with a discussion regarding future research areas to further investigate the topic.

2 THEORETICAL FRAMEWORK

The chapter presents the development of regional and intraregional free trade agreements and the implications it has on multilateral trading systems. It continues with the underlying reasons why countries develop free trade zones. Moreover, manufacturing strategies are presented in connection to cost–benefit analysis theories. Last, the chapter presents the rules of origin.

2.1 THE UNDERLYING REASON FOR THE DEVELOPMENT OF FTAS

The views on trade agreements are of a diversified nature. On the one hand, trade agreements are viewed as building blocks for strategic alliances. On the other hand, smaller countries often regard trade agreements with larger countries as a way of gaining access to their markets (Whalley, 1998). Free trade agreements (FTAs) have become a prominent tool in the world trading system. As of 1990, 27 FTAs had been reported to the General Agreement on Tariffs and Trade (GATT), and by 2008, the number had increased to 421 (Matsushita, 2010). As of January 2014, the WTO had received 583 notifications of regional trade agreements (RTAs). Of these notifications, 377 were in force; 90 percent of them were FTAs and partial scope agreements, whereas customs unions (CU) accounted for 10 percent (WTO, 2014). CUs and FTAs are often collectively called preferential trade agreements (PTAs). The number of agreed PTAs has grown massively over the last decade. Between 2000 and 2007, 185 PTAs were established, just under half of all agreements concluded during the entire 20th century[2] (Hufbauer & Schott, 2007).

2.1.1 THE INHIBITIVE EFFECTS OF THE PROLIFERATION OF FTAS

Regionalism is sweeping through the world trade system like an epidemic, whereas trade negotiations at the WTO are advancing at a glacial rate (Baldwin & Jaimovich, 2012). As a result, more than 90 percent of WTO members are participants in FTAs. One of the reasons for the high participation is the proliferation of FTAs (Matsushita, 2010). This unconditional relationship is often regarded as evidence that the increasing regionalism in the world threatens the multilateral trading system that the WTO is aiming to develop and sustain (Baldwin & Jaimovich, 2012). FTAs are often seen as an easy substitution for slow-paced multilateral trade agreements. Nations with close geographical proximity often have similar traits. The establishment of FTAs might bridge regional borders between countries with common elements in culture, religion, language, history, and economic system. This can be seen in the EU member states that share both a geographical closeness with each other and are furthermore characterized by similar traits such as historical background and linguistic closeness (Matsushita, 2010).

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[2] 374 PTAs.

However, there is a view that FTAs, principally multiple overlapping ones, risk working against the WTO (Dean & Wignaraja, 2007). Matsushita (2010) argues that FTAs have become the bane of several failed trade negotiations at the WTO. Similar issues can be seen with the spread of RTAs, which have been one of the most important trade policy developments in the world in the last ten years. As with FTAs, the progress of RTAs has been spurred by the slow progress of the WTO Doha Round of trade talks and the economic integration processes in both Europe and North America (Hufbauer & Schott, 2007; Choi, 2010; Asian Development Bank, 2013). In connection to this, the share of world trade within FTAs has increased tremendously. As of 2008, the four FTAs – the EU, North American Free Trade Agreement (NAFTA), Mercado Común del Sur (MERCOSUR), and ASEAN – accounted for approximately 57 percent of the total export and 63 percent of the total import in the world (WTO, 2009; Matsushita, 2010). As seen with NAFTA, some countries have tried to use both regional and multilateral trade agreements to develop domestic policy reforms[3] (Whalley, 1998).

If a FTA is successful, the trade in that area is regionalized, and the zone of free trade is expanded. This development may promote economic development in the region by increasing economic efficiency. This becomes an incentive for businesses outside the region regarding trade and investment (Jayanthakumaran, 2006; Matsushita, 2010). Furthermore, it can accomplish trade liberalization in areas in which the WTO is not successful, such as direct investments and competition (Matsushita, 2010). Another line of thinking is that FTAs create a domino effect as the development of one FTA between member parties can disfavor excluded parties. Since a FTA is a preferential trading system for member parties, it is essentially discriminatory toward outside parties (Matsushita, 2010; Baldwin & Jaimovich, 2012). As a result, this can induce excluded parties to sign new FTAs that were previously shunned as a means to counteract the discrimination that a neighboring country might have created with its associated FTA. However, this leads to the development of overlapping trade agreements and the proliferation of FTAs (Kawai & Wignaraja, 2009; Baldwin & Jaimovich, 2012). Moreover, the abundance of FTAs creates a systemic problem for the WTO. Since FTAs exist parallel to the multilateral trading system that the WTO sustains, the discrimination they create leads to an imbalance in the competitive conditions in the global trading market. This in turn effects unfairness and inequity in trading relations (Matsushita, 2010).

2.1.2 THE PROLIFERATION EFFECTS IN ASIA

East Asia has been a latecomer in the move towards FTAs. Multilateralism through the WTO framework and open regionalism centered on the APEC have been the foundation of the East Asian region's approach to regional and international trade for several decades. However, over the past ten

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[3] For example, Mexico in NAFTA. Please see Whalley (1998) for additional reading regarding the subject.

years, many East Asian governments have spurred the development of FTA proliferation by multiple bilateral and multilateral agreements. Two notable examples are Japan, which has implemented several economic partnership agreements with Singapore and Mexico, and Malaysia, which has signed agreements with Chile, the Philippines, Thailand, Brunei, and Indonesia (Dean & Wignaraja, 2007). These examples have developed in connection to the regional and international free trade developments of ASEAN and ACFTA (Park, 2007; Günter & Zhu, 2009).

The development of FTAs in East Asia has triggered a lively debate over their impact. On the one hand, some see the agreements as the harmful effect of the Asian noodle bowl – that is, overlapping trade agreements between member states. On the other hand, some view FTAs as a means to gain net beneficial effects due to regional and multilateral liberalizations (Kawai & Wignaraja, 2009). For instance, the Republic of Korea and the United States have a total of 47 FTAs, 23 of which are in force. On a country-specific level in Southeast Asia, an increasing number of overlapping bilateral trade agreements between ASEAN member states and the ASEAN+1[4] has led to the Asian noodle bowl effect. The overlapping bilateral trade agreements contribute to administrative complexity regarding the ROO (Asian Development Bank, 2013). While cumulative ROO are very important for a region affected by multi-country value-added processes, they are unnecessarily complex. Moving towards economic integration and negotiating on a common external tariff scheme might be needed to mitigate the complexity of the existing ROO. Moreover, the Asian noodle bowl effect may subside when the most-favored-nation tariff rate between ASEAN members is reduced under the WTO tariff reduction scheme (Chirathivat & Srisangnam, 2013). Another way of mitigating the Asian noodle bowl effect is the multilateralization of preferences, that is, the granting of non-discriminatory preferences to nonmembers, eliminating any margin of preferences between them (Asian Development Bank, 2013).

2.2 PRIOR RESEARCH ON FTZS

Since the 1970s, many developing countries have introduced FTZs into their economies as a financial strategy. This has enabled them to attract foreign investors, who bring capital to the country, stimulating both domestic employment and growth (Miyagiwa, 1993; David, 2013). Although the concepts of FTZs, export processing zones (EPZs), and duty-free zones (DFZs) have existed for many decades, one could argue that in the literature, their application to logistics and SCM have been lacking. Specifically, the published literature regarding the overall field of FTZs has been linked to social development and welfare issues on a country-specific level, rather than to logistics and SCM on a company-specific level. Only one thesis has been found that researched the concept of bonded

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[4] Agreements between ASEAN and countries/dialogue partners.

warehouses.[5] A literature review illustrates that during the 1980s and 1990s, the literature focused on how FTZs have affected host countries' welfare due to diminishing returns on imports that affected the countries as a whole (Hamilton & Svensson, 1982; Hamilton & Svensson, 1983; Young & Miyagiwa, 1987; Din, 1994; Facchini & Willman, 1999). Two reasons that might have triggered the focus on socioeconomic research during the 1980s could have been the contemporary outsourcing wave and the oil crisis in 1974, which resulted in a decrease in economic growth for Organization for Economic Co-operation and Development (OECD) countries from 4 to 2 percent (Normann, 2001). Moreover, the 1990s' literature regarding the matter is characterized by the geographical application of FTZs – for example, rural versus urban locations – and how export processing zones could become a catalyst for domestic companies' export of commodities outside the host country and the creation of international strategies (Papadopoulos, 1987; Miyagiwa, 1993; Johansson & Nilsson, 1997). Literature from the 21st century takes a different standpoint, focusing on a political agenda concerning economics and inter- and intra-regional trade and their connection to FTAs (Magee, 2008; Wang, 2013; David, 2013). As a result, the literature still continues to neglect the logistics and SCM aspect of the concept.

However, there is possibly an interrelationship between FTZs and the trend of offshoring and outsourcing manufacturing. Rushton and Walker (2007) argue that global trade, sourcing to areas with low-cost manufacturing, and the focus on inventory reduction have been the global market drivers for the offshoring and outsourcing trend. Thelen, et al. (2010) argue that the underlying drivers for offshoring services have their root in the pursuit of cost reductions, 24-hour services, and a global reach from international labor pools that exists in many countries. This has resulted in increased offshoring in industries where work can be digitalized.

Manufacturing processes have become an activity that is often offshored. Manufacturing offshoring is the transfer of production, supply, and research and development activities from the original domestic location to a foreign one. Offshoring manufacturing processes are driven by several activities such as the search for cost reductions or access to new resources or skills. Manufacturing companies with production in high-wage countries often offshore manufacturing to developing countries to take advantage of lower labor costs (da Silveira, 2014; Sohal & Rahman, 2013). Gupta and Benjaafar (2004) state that manufacturing can be differentiated and manufactured in modules that extend both vertically and horizontally in a supply chain. For example, a product can be semi-finished in one location and receive value addition in another location. One could argue that the development of offshoring and outsourcing manufacturing activities has indirectly influenced the development of FTZs in order for countries to create an incentive for FDI. Moreover, it could be argued the development of FTZs has been an influencing factor in the outsourcing and offshoring of

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[5] See Häggström (2013) for more information.

manufacturing activities. Therefore, it could be argued that FTZs and offshoring and outsourcing manufacturing activities has a symbiotic relationship.

2.2.1 THE APPLICATION OF FTZS

The Shannon FTZ in Ireland was established in 1959 and is commonly recognized as the first in the world. Within the literature, FTZs have several names, such as export processing zones, industrial free zones, special economic zones, technology and science parks, financial service zones, free ports, duty-free zones, and bonded warehouses. These names all refer to similar concepts but have slight variations in their financial and operational gains (Jayanthakumaran, 2006). For example, EPZs and duty-free zones (DFZs) are used synonymously in the literature. DFZs and EPZs are areas where domestic and foreign companies can locate their production facilities for manufacture, assembly, or processing of goods (Din, 1994).

The traditional view as to why countries decided to develop FTZs is to attract FDIs that in turn enable them to reap benefits such as employment, increase in exported goods, and the absorption of new technology (Hamada, 1974; Din, 1994; David, 2013). In regards to learning new technology, FTZs give a country the know-how to master production, marketing, and distribution – an advantage when exporting goods (Johansson & Nilsson, 1997). Furthermore, it paves the way for industrialization and stimulates domestic sectors through connections with the rest of the country's economy (Din, 1994). Within FTZs, export-oriented manufacturing activities can be operated with incentivizing government-controlled programs that can reduce taxation, streamline regulations, lower customs barriers, and limit interference from the state. In return for the incentives, companies in these areas are expected to operate without negatively interfering or affecting the domestic economy. Moreover, the host country often provides advanced infrastructure, such as ports and railway access, communications services, and subsidized utilities (Jayanthakumaran, 2006). Foreign trade zones are often used synonymously with FTZs and denote areas of a country that have acquired a customs status with the purpose of promoting FDI and export activities. These areas are often defined as geographical places that reside "outside" the host country, where goods can be transferred without duty costs (David, 2013). FTZs allow firms to establish themselves in a country with geographical areas isolated from the domestic economy. In other words, a portion of the country is coupled with a foreign market, leaving other parts of the country with regulations regarding tariffs and control of imports and exports (Hamada, 1974; Jayanthakumaran, 2006). The basic principle of a FTZ is that goods can be transported to the area and

be transformed by assembly and re-packaging. If the goods are re-exported outside the host country, there is no requirement to pay duty in the host country. However, if the goods are sold and transferred to a domestic customer, duty costs will arise after the goods have left the FTZ (David, 2013).

Papadopoulos (1987) argues that traditionally, three main advantages have attracted businesses to FTZs: The first advantage concerns financial gains, such as improving the company's cash flow. This is gained from the duty-free status that most zones offer. For instance, lower insurance premiums due to a lower net value of goods, the ability to use manufactured goods in the zone as collateral for loans, and export-related incentives are measures that improve a company's cash flow. The second advantage is the availability of an inexpensive work force and/or nearby natural resources that can be used in the manufacturing process. This is particularly relevant if the company moves it's manufacturing from a developed to a developing country and if the manufacturing is either resource- or labor-intensive. The third advantage is operational convenience; for example, companies that import goods are able to store them temporarily while deciding what to do with them. This is quite similar to the application of a bonded warehouse.

2.3 MANUFACTURING STRATEGIES

Manufacturing companies often try to ensure a balanced level of service for products that are both "built to order" and "built to stock." This is a widespread challenge that affects several industries ranging from consumer products to concrete cutting tools and plastic molding (Rajagopalan, 2002). The choice between built to order and built to stock is an intricate matter. Being able to offer both quick manufacturing times and a variety of products is often challenging. Traditionally, in industries where fast response times are vital, the scope and focus of manufacturing processes have lay within a limited product portfolio, stocked ahead of demand and shipped when ordered. However, producing against stock can become costly when the number of products offered increases. Therefore, as the product portfolio increases, industries often adapt their manufacturing processes and instead focus on a build-to-order strategy. This strategy helps to eliminate finished inventories and exposure to financial risk, but there is an increased customer lead time (Gupta & Benjaafar, 2004). Industries must determine which products are going to be made to stock and create an appropriate inventory strategy for them. For products that are made to order, they need to have a developed supply chain that reduces customer lead times. However, if these manufacturing strategies use common production resources, this can result in reduced system performance (Kaminsky & Kaya, 2009).

Table 1: Comparison of manufacturing strategies

Strategy	Applied	Advantages	Disadvantages
Build to order (BTO)	When the product portfolio increases	Eliminates finished inventories and exposure to financial risk	Increases customer lead times

Build to stock (BTS)	When customers demand fast response times	Decreased customer lead times	Increases inventory costs when the product portfolio increases
Delayed differentiation (DD)	When a company wants a hybrid BTO and BTS strategy	Decreased customer lead times in comparison to BTS	Costs of redesigning product and manufacturing processes

Source: Adapted from Gupta and Benjaafar (2004), author's own table

Recently, an alternative strategy regarding both build to stock and build to order has gained popularity. This is regarding as "delayed differentiation" and is a hybrid strategy where a common product platform is built to stock. When demand is realized, the built-to-stock products undergoes differentiation and is assigned product-specific features and components (Gupta & Benjaafar, 2004). In other words, the delayed differentiation redesigns the manufacturing processes so that the point of differentiation, i.e. the manufacturing stage, after which the product is differentiated from the common platform is delayed as much as possible (Lee & Tang, 1997). Thus, the hybrid strategy undergoes two stages. The first one is build to stock, where single undifferentiated products are manufactured, followed by build to order, where product differentiation takes place in response to customer demands (Gupta & Benjaafar, 2004). Delayed differentiation has several benefits. A manufacturing company can maintain stock of semi-finished goods, which reduces order fulfillment delays and lead times when compared to a pure build-to-order strategy (Gupta & Benjaafar, 2004; Abbey, et al., 2013). It reduces the risks associated with holding finished goods in inventory that might not see any demand. Furthermore, it also reduces unit holding costs, since less value is associated with the stocked inventory. However, delayed differentiation also incurs costs. The hybrid build-to-stock/build-to-order strategy entails product and process redesigns for the new manufacturing processes. This can also lead to less efficient processing if common processes lead to greater yield losses or the use of less specialized manufacturing equipment (Gupta & Benjaafar, 2004).

A concept similar to the delayed differentiation strategy is "concurrent and parallel processing." This involves modifying manufacturing processes so that manufacturing steps previously required to be performed in sequence can be completed at the same time. Decoupling activities are needed to keep manufacturing processes parallel to each other. If many of the components that make up a product can be decoupled during manufacturing, they can be manufactured in parallel. An added advantage of decoupling manufacturing processes is that it may be possible to create individual inventory strategies for the decoupled components manufactured (Simchi-Levi, et al., 2009).
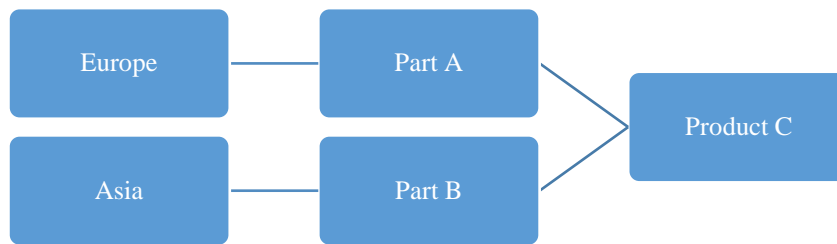
As seen in Figure 1 above, concurrent and parallel processing can decouple manufacturing activities so that they can be semi-manufactured as modules in different geographical areas at the same time. Thereafter, the modules can be joined and processed into a finished product (Simchi-Levi, et al., 2009).

2.4 COST ANALYSIS THEORY

The coming sub-chapters present theory regarding cost-volume and cost-benefit analysis and its business application when deciding the feasibility of projects.

2.4.1 COST–VOLUME ANALYSIS

Turning to manufacturing processes, cost–volume analysis is often used and focuses on the relationship between costs, revenue, and volume of manufactured output. The goal of a cost–volume analysis is to estimate the income that a company can earn under different manufacturing conditions. By using a cost–volume analysis, a company can find the break-even point, where the total revenue or benefit from a project is equal to total costs. The greater the deviation is from the break-even point, the greater the benefits or cost will be (Chan, 1990; Stevenson, 2007). Therefore, the break-even point enables companies to determine the volume pf products or services that must be sold, in order to cover the costs that rises from that particular activity (Lesure, 1983; Correa, 1984). The break-even point is one of the most common analysis equations and defines costs as (1) variable costs that increase or decrease given changes in the level of production, (2) fixed costs that remain constant even if the level of production changes, and (3) direct costs that can be traced to particular processes (Tarantino, 2002; Stevenson, 2007).[6] Cost–volume analysis can be used to understand the financial implications of costing and inform decisions regarding improving product and manufacturing process activities (Kee, 2007).

2.4.2 COST–BENEFIT ANALYSIS

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[6] See Stevenson (2007) and Kee (2007) for calculation examples.

A cost–benefit analysis (CBA) is a model that sets out all the costs and benefits connected to a project in financial terms to illustrate whether the project provides a financial net gain (Williams, 2008). It illustrates whether the favorable results of an alternative are sufficient to justify the costs of choosing that alternative (Linn, 2011; Van Weele, 2010). CBA is often applied to governmental decision making by weighing social costs and benefits, such as infrastructure developments. Historically, its application to governmental decisions can be seen as early as the 1930s, when it was used in the United States to create a solution for water provision (Brent, 2007; Quah & Mishan, 2007; Williams, 2008). However, the scope of the analysis is very wide and can relate to any public decision regarding the use of resources (Brent, 2007).

When conducting a CBA, it is essential to include incremental costs and benefits that will not be incurred if the project is not implemented. It is also of great importance to exclude sunk costs, that is, costs and benefits that will occur even if the project is not implemented (Williams, 2008). Brent (2007:4) argues that to do a CBA, four interrelated questions need to be answered;

1. Which costs and which benefits are to be included?
2. How are the costs and benefits to be evaluated?
3. At what interest rate are future benefits and costs to be discounted to obtain the present value (the equivalent value that one is receiving or giving up today when the decision is being made)?
4. What are the relevant constraints?

For example, a project exists of two variables. First, the action that changes the productive capacities or the distribution of resources. Second, the status quo of the world, i.e. the unaltered state of capacity or resources. To evaluate a project, both variables need to be compared with each other. One could see the variables as individual projects from which a company must choose from (Adler, 1999). Therefore, a simplistic view of the CBA concerns economic efficiency; in other words, the main aim is to maximize the difference between benefits and costs. If the benefits outweigh the costs, the project is feasible and should be approved (Brent, 2007).

2.5 RULES OF ORIGIN

FTAs and bilateral and multilateral trade agreements define rules and regulations regarding countries' international trade. As a result, industries are directly affected by the agreements when conducting import- and export-related activities. This is because trade agreements define the tariff rates that are applicable to products. In connection to trade agreements, a product's country of origin determines the rate of duty to be paid when goods are transferred outside the domestic market. ROO are established as international agreements between countries and can vary depending on the country and its connected trade agreements. ROO are specifically designed so that industries are prevented from

"easily" developing manufacturing and supply chains to gain a favorable origin of manufactured goods in terms of establishing simple assembly and packaging activities (Wakamatsu, 2004). For instance, packaging activities can be defined as minimal operations and activities, both when packaging is used to protect goods during transport and also when it is a part of the retail product sold to end consumers (ASEAN, 2004; ASEAN, 2009).

2.5.1 DEFINING REGIONAL CONTENT

The origin of a product can be defined in two ways: either wholly obtained in a country or not (ASEAN, 2004). Wholly obtained refers to goods that are wholly obtained or produced within a FTA member state. This is most relevant to commodity items and waste and scrap material. For a product to qualify as a wholly obtained good, it must not contain any material that originates from a member state outside the FTA (ASEAN, 2009). Not wholly obtained goods refers to products that are semi-manufactured in one country and later exported to a new country to undergo a "substantial transformation" (Wakamatsu, 2004; ASEAN, 2004). There are three main methods to determine the origin of goods that are not wholly obtained or produced in a country, namely RVC, change in tariff classification, and specific manufacturing or processing operations (ASEAN, 2009). The RVC is the minimum percentage of value that must originate from a FTA member state, or the maximum percentage of value of non-originating parts and materials that are used in the manufacturing processes. In regards to the ROO for ASEAN member states in connection to the CEPT scheme, the minimum percentage of value needed for a product to be eligible for a change of origin is set at 40 percent. This means that the imported goods must undergo a substantial transformation that incurs a value increase of at least 40 percent in the final manufacturing country. As the minimum RVC is 40 percent, the total value of materials, parts, or produce that originate outside the ACFTA is limited to 60 percent of the "free on board" (FOB) value of the product. The same can be seen in the ROO between ASEAN and China (ASEAN, 2004; Wakamatsu, 2004; Meissner, 2014). Parts and raw materials that are procured from ASEAN member states and China are included in the local procurement rate and are referred to as ASEAN cumulative content. The calculation of RVC differs between member states due to regulations stating that each party can decide their calculation method. However, this choice is limited to either a direct or an indirect method. For the ACFTA, the RVC is calculated by the following (Wakamatsu, 2004; ASEAN, 2004):

Equation 1: ACFTA RVC calculation

$$\frac{\text{Value of non ACFTA materials} + \text{Value of materials of undetermined origin}}{\text{FOB price}} \times 100 \ < 60\%^{7}$$

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[7] In regards to the 60 percent value limit of non-ACFTA materials.

The value of materials of non-ACFTA or undetermined origin should be calculated by their cost, insurance, and freight (CIF) value at the time of their import. It can also be calculated by using the price paid for the materials of undetermined origin in the region where the working or processing of the material took place (Wakamatsu, 2004; ASEAN, 2004).

In addition to the 40 percent limit, there is also the rule of accumulation. The rules allow different stages of production carried out within FTA member states to be aggregated. In ASEAN FTAs, the accumulation rule allows the full value of materials used in different stages of production to be accumulated. The accumulation is therefore added to the RVC of a finished good if the material used originates under the FTA (ASEAN, 2004; ASEAN, 2009). The second method of calculating the RVC is a change in tariff classification. Goods can be defined as FTA-originating if there is a change in the HS codes[8] of the non-originating materials used to produce the good, which must be different from the HS code of the good itself. The change in tariff classification can be at the two-digit chapter level (change in chapter), four-digit heading level (change in tariff heading), or six-digit subheading level (change in tariff sub-heading) (ASEAN, 2009). Regarding the third method, a product is considered FTA-originating if it's affected by manufacturing processes that the FTA member states have specified. This is only required for non-originating materials (ASEAN, 2004).

2.5.2 RULES OF ORIGIN AND THE DEFINITION OF PACKAGING

The rules regarding the definition of packaging material in the ACFTA's ROO are ambiguous. The rules state that packaging should be excluded from the finished product when calculating regional content. However, there are exceptions by which packaging can be included as a part that forms the whole of the product. In regards to the ROO between ASEAN and China, there are regulations on the subject of the treatment of packaging. In Annex 3: Rules of Origin for the ASEAN–China Free Trade Area (2004), rule 9a states that products should be treated separately from their packing. However, rule 9b states that packing shall be considered forming a whole with the product in certain circumstances. This could be regarding rule 7c (footnote), where encapsulation that is called "packaging" by the electronics industry is not defined as minimal operations and processes (ASEAN, 2004; Meissner, 2014).

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[8] A standardized system of product names and numbers that are used to classify traded products. It defines the tariff rates of each classified product.

3 METHODOLOGY

The chapter presents how the research was conducted and the reasoning and strategy behind it. The methodologies used are described in an academic context with examples of how they were applied to the research. The chapter ends with a discussion about data collection and the underlying thoughts about how and why certain data were collected and the related challenges.

3.1 RESEARCH STRATEGY

Research is a fundamental activity that can be found within both a business and academic environment. However, the field is saturated with numerous methodologies used as tools and guidelines when structuring research outcomes. For example, the exposition of the choice between qualitative and quantitative methodologies in a research context is something that is often presented in methodology handbooks (Åsberg, 2001). However, even though research activities are a common denominator in business and academic environments, there is no consensus in published literature regarding the "best" way to define, structure, and conduct research. As there are almost unlimited research areas that can be explored, aiming to define the "best" method for a diverse palette of research areas is impossible (Collis & Hussey, 2009).

It is an absolute necessity to develop the structural integrity of the research by using appropriate research methods. For instance, positivism and interpretivism in academic research are used to varying degrees (especially in different social sciences). However, the distinction between them is common to most academic fields. Positivists seek knowledge by systematically observing and experimenting to discover social laws that correspond to the natural laws uncovered by research in natural science. Moreover, positivists seek to hypothesize and evaluate underlying inferences about a specific social phenomena with the aim that the data are generalizable beyond the specific scope of the research. Interpretivist does not seek an objective truth or to unravel patterns but rather assumes that all truth are shaped by the researchers´ perception (Roth & Mehta, 2002).

Therefore, whether the research is based on a qualitative, quantitative, or a combination of both expressions affects the results and outcome of the research. This is also true when choosing the appropriate philosophical assumptions, ontology and epistemology, that are connected to these concepts (Wolming, 1998; Åsberg, 2001; Collis & Hussey, 2009).

3.2 ONTOLOGICAL ASSUMPTIONS

Ontological assumptions are based on the relationship of the researcher and the nature of reality (Åsberg, 2001; Collis & Hussey, 2009). Hudson and Ozanne (1988) argues that all research in social science makes ontological assumptions of the relationship between reality and social beings. They argue that this can be viewed within a positivistic or interpretivistic context. The positivistic viewpoint

argues that only one reality can exist and that it is objective and external to the researcher and his research question. Both the social and physical worlds exist independently of the researcher's perception of them and are defined as unchanging structures. This means that a single objective reality exists independently of what individuals perceive as reality (Hudson & Ozanne, 1988). Due to this objectiveness, data collected are not altered or affected by the researcher when conducting an exploration (Collis & Hussey, 2009). Therefore, theoretically a researcher could remove an object from its natural context and study it in a laboratory setting, and the results would be the same as if the research had been done in the object's natural context (Hudson & Ozanne, 1988). However, Collis and Hussey (2009:56) argue that "it is impossible to separate people from the social context in which they exist" and that "people cannot be understood without examining the perceptions they have of their own activities."

The interpretivistic viewpoint believes that "social reality is subjective because it is socially constructed" (Collis & Hussey, 2009:59). Therefore, since construction of reality is formed of a person's own sense of reality, it will multiply and create multiple realities due to the constant alteration of the mind, affected by internal and external influences. Moreover, Hudson and Ozanne (1988:509) argue that "all human knowledge is developed, transmitted and maintained in social situations." Therefore, the author would argue that the knowledge gained from conducting research in the interpretivistic viewpoint would be different depending on the context in which the data are measured and obtained.

The author would argue that a positivistic ontological view is ill-suited to clarify the research area. The view of a single objective and external reality is an intangible vision rather than a physical concept. This is especially salient when conducting research in a country such as Thailand that is connected with both administrative and political activities that presents "piquancy" to the research. For instance, if the research had been based on a theoretical company uncoupled from the harsh environment of the real world, then the author would have argued that a positivistic approach would have been well-suited.

3.2.1 EPISTEMOLOGICAL ASSUMPTIONS

The epistemological assumption concerns what a researcher can accept and define as knowledge. This involves an exploration of the relationship between the researcher and the research (Collis & Hussey, 2009). Browaeys (2004) argues that without epistemology, there is no possibility for scientific reflection, which is what enables a researcher to critically reflect upon principles, hypotheses, and results of explored sciences to determine their value. Becker (1996) states that the aim of epistemology is to illustrate social reality and how society works, but the degree of understanding differs. For

instance, some social scientists are interested in general descriptions, whereas others are more interested in understanding a specific matter. There is, however, a lot of overlap.

Positivists believe that data can only be defined as knowledge if they are observable and measureable. They try to maintain an objective and independent relationship with the research; the researcher uncouples himself from what he is researching to gain an independent and objective standpoint. Interpretivists attempts to minimize the uncoupling of the researcher and what is researched. This means that they interact with what they are researching and that the researcher's convictions are what defines knowledge. Therefore, the main difference between a positivistic and interpretivistic standpoint is that the former tends to be used when producing quantitative data, whereas the latter is used in a qualitative manner (Collis & Hussey, 2009).

Table 2: Typology of assumptions on a continuum of paradigms

Positivism						Interpretivism
Ontological assumption	Reality as a concrete structure	Reality as a concrete process	Reality as a contextual field of information	Reality as a realm of symbolic discourse	Reality as a social construction	Reality as a projection of human imagination
Epistemological assumption	To construct a positivist science	To construct systems, processes, change	To map contexts	To understand patterns of symbolic discourse	To understand how social reality is created	To obtain phenomenological insight, revelation
Research methods	Experiments, surveys	Historical analysis	Interpretive contextual analysis	Symbolic analysis	Hermeneutics	Exploration of pure subjectivity

Source: Morgan and Smircich (1980:492), cited in Collis and Hussey (2009:61)

3.3 QUALITATIVE OR QUANTITATIVE RESEARCH

Qualitative research aims to develop a rich, interpretive, and verbal description of a chosen area. It is often used as a tool for researchers who intend to explore and understand a certain population or a phenomenon. The exploration aims to uncover data that is hard to be retrieved from a quantitative study (Gaytan, 2008). Regarding quantitative and qualitative research paradigms, the former is often considered to be the more scientific approach concerning social science. The focus often lies within the operationalization of meaning of particular concepts and variables (Tewksbury, 2009). Qualitative data are often associated with the interpretivistic assumptions and linked to research that has high validity. However, they can only be understood within a specific context, and a researcher is forced to contextualize data, or formulate internal and external activities that affects the researched context (Collis & Hussey, 2009). Sibanda (2009) describes quantitative research as the focus on numerical data and being able to generalize it across groups of people.

3.3.1 THE CRITICISM OF DIVIDING QUALITATIVE & QUANTITATIVE RESEARCH

For more than a century, advocates of qualitative and quantitative research have engaged in a dispute aiming to promote their view as the correct one, and purists have emerged from both sides. Qualitative purists believe that observers are separate from the subject of observation. Quantitative purists maintain a standpoint that social science enquires into objective data without any time or context generalizations (Johnson & Onwuegbuzie, 2004). Qualitative and quantitative research are often illustrated as two paradigms that researchers use to study the social world. These paradigms act as stepping stones to which epistemological assumptions, theoretical approaches, and methodologies are attached (Brannen, 2005). Åsberg (2001) argues that the exposition of the so-called choice between quantitative and qualitative research stems from a pseudo question. He states that there are no quantitative or qualitative methods; what exists is a vast literature about the concepts, such as important choices and standpoints, but no research method can neither be quantitative or qualitative. This is due to the fact that the research expressions refer to the characteristics of the phenomenon that a researcher is seeking knowledge about. Brannen (2005) argues that the quantitative and qualitative research paradigms hold different epistemological assumptions and belong to different research cultures. However, she continues to argue that there are more overlaps than differences between the research paradigms. Perhaps, due to the divided opinions, mixed-methods research is becoming increasingly articulated and is recognized as the third research paradigm along with qualitative and quantitative research (Johnson, et al., 2007). For instance, Jick (1979) argues that there is a distinct tradition in social science for researchers to apply multiple research methods. Collis and Hussey (2009) follow this notion and have, together with Jick (1979), dubbed the concept "triangulation," or mixing qualitative and quantitative methods to strengthen the validity of the research.

The opinions of Åsberg (2001) and Brannen (2005) regarding the research paradigms must be noted. In this thesis, the author can't define the research as either quantitative or qualitative since it is a mixture of both paradigms. As Brannen (2005) has stated, the paradigms are more overlapping than different. The same can be seen in the author's research regarding quantitative data, such as financial figures and costs connected to the proposed concept, which overlap with qualitative data derived from the case study and interviews.

3.4 PRIMARY DATA COLLECTION

Primary data are data obtained from an original source[9]. To access valuable sources of primary data, the author has decided to use a case study with interviews. Analyzing qualitative data gives both positivists and interpretivists challenges. For example, it's often hard in the academic literature to distinguish how an author has summarized countless sources to arrive at his findings (Collis & Hussey, 2009). The gathering of primary data will be presented in the chapters below.

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[9] Sources generated from own experiments, interviews, surveys, and case study.

3.5 DESIGNING A CASE STUDY

A case study is a research method used to explore a phenomenon in its natural setting. It uses a variety of approaches to obtain in-depth knowledge so that the researcher can both explore a certain phenomenon but also understand it within a particular context (Collis & Hussey, 2009). According to Yin (1994), there are three conditions that determine the research strategy that should be applied in a thesis: the type of research question used, the extent of control that a researcher has over events connected to the research, and the scope and focus on contemporary events in comparison to historical ones (Yin, 1994). The author would argue, based on the conditions above, that the research questions are based on a "how and why" context. The research does not need to control for behavioral events and has its scope and focus on contemporary measures. This is in line with what Yin (1994) presents as relevant situations when using case studies as a research method. For example, case studies are preferred when examining contemporary events. In the empirical framework chapter, the case study is the base for both primary and secondary data that present how Krusell Thailand conducts their manufacturing and supply chain activities based on a contemporary context.

3.5.1 THE RATIONALE FOR SINGLE-CASE STUDY DESIGNS

When designing case studies, there is a principal distinction between the applications of either a single-case study or multiple-case study. Therefore, prior to any data collection, there is a need to decide which case study design will benefit the research the most. The single-case study is an appropriate tool when gathering data under several circumstances. It is worth noting that a single-case study is analogous to a single experiment. One rationale for the single-case study is when it represents the "critical" case when applied to a studied phenomenon and its connected theories (Yin, 1994). Therefore, the rationale for using a single-case study is to extend the theory presented regarding the proliferation of FTAs and the undermining act it has on ROO. The theory gives a clear set of propositions as well as the contemporary circumstances within which the propositions are believed to be accurate. For instance, it can be seen in the development of ACFTA, ASEAN, and APEC that the theory presented is based on a supranational level. However, the analysis is not based on the supranational level; it is applied so that the researcher can present data on how the theory from the supranational level affects companies on an industry-specific level. On an industry-specific level, the single-case study concerning the presented theory aims to explore how a company can benefit from the ROO and circumvent the undermining effect of FTAs that the Asian noodle bowl creates.

3.5.2 THE CHOICE BETWEEN A HOLISTIC OR EMBEDDED SINGLE-CASE STUDY

Yin (1994) argues that a case study can include more than one unit of analysis. This occurs when researchers focus on one or several sub-units. As mentioned above, the unit of analysis in the single-case study is based on how a company can benefit from the ROO and circumvent the undermining

effect of FTAs and the problems of the Asian noodle bowl. But the scope of the single-case study touches upon several sub-units. For instance, Krusell Thailand and Krusell Sweden and their responsibilities (manufacturing and bonded warehousing) are two sub-units. Moreover, the current transport chains –from China to Sweden and Thailand to Sweden – are two sub-units that are pieces of the whole single-case study. Therefore, the author would argue that the applied single-case study is based on an "embedded" design.

Table 3: Basic types of designs for case studies[10]

	Single-case designs	Multiple-case designs
Holistic (single unit of analysis)	TYPE 1	TYPE 3
Embedded (multiple units of analysis)	TYPE 2	TYPE 4

Source: Yin (1994:39)

3.5.3 THE BENEFITS AND IMPLICATIONS OF A SINGLE-CASE STUDY

There are several reasons why a case study would benefit the research. The first reason is that the author was offered a trainee position abroad at Krusell Thailand. Merging work-related activities with a thesis was found as a natural grounds for both the author and his employer. Collis and Hussey (2009:82) define this as an "opportunist case study" "where there opportunity to examine a phenomenon arises because the researcher has access to a particular business, person or other case."

The author would argue that an opportunist case study both has its strengths and weaknesses. For instance, the approach gives the possibility of presenting the research from a practical point of view, rather than depicting a theoretical model that is uncoupled from the physical world. The author could have presented a theoretical company and conducted the research within a "secure environment." However, that research would have been uncoupled from the real world and sheltered from country-specific activities, such as political and administrative actions, that might unintentionally hinder or slow down certain aspects of the research. The author faced several challenges in obtaining accurate data from Thai institutions concerning the RVC calculation. Often, they gave different answers to the same questions, and the author was told that there is a reluctance to share such information. The reason why is unclear. The mindset at the contacted institutions often followed a popular figure of speech in Thailand, that is, a "same same but different" approach to in-depth matters that require specific and accurate knowledge. Therefore, a case study benefits the research by adding environmental variables that might be hard to notice or understand without using the method.

However, the implication of incorporating a case study with employment is that it often creates an informational overload. It is often difficult to understand current events if knowledge of the past and

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[10] For information regarding the multiple-case designs, see Yin (1994).

the future is missing (Collis & Hussey, 2009; Fellman & Popp, 2013). Trying to puzzle together bits and pieces of information from several sources that extend both vertically and horizontally in the organization often creates challenges when interpreting the data. Therefore, it's often hard and time consuming to gain a holistic view and understanding of an organization. A similar challenge regards observations. Since the author is working within the organization on a daily basis, there is a risk of a mechanical work method slowly developing that might result in some information being passed by and subconsciously neglected. Cultural differences are also noted as an implication. The author's upbringing is characterized by a Scandinavian cultural heritage concerning the social and work-related context. This often manifested in a social ambiguity that affected the cooperation with, for example, co-workers and interviewees. Language, especially English, is often a barrier and a cultural border regarding data collection. For example, one manager that the author met said that "the English language is often a border when trying to receive answers; a problem might be described as small when spoken in English whereas in Thai it could manifest itself as big." Even though an interviewee might be able to speak English as a second language, the information that would be gained from the person's native language might differ slightly compared to its presentation in English.

3.5.4 INTERVIEWS

Most primary data were gathered from the case study. Interviews are included in the case study as a part of the primary data collection. The purpose of using interviews is to explore the empirical framework and to gather data shared by experts from various fields in logistics. Data about the Asia-Pacific trade, Thailand's logistics development, and ROO can all be gathered from secondary sources. However, the interviews can complement the secondary data and explore other aspects of the researched topic. For instance, this can manifest in the exploration of intangible aspects such as "gray zones" that might exist regarding rules and regulations in Thailand, but also concerning official clerks' personal interpretations of the country's legal framework and its regulations.

The interviews were primarily used to collect data for the empirical framework. When gathering primary data, the author used two interview techniques: semi-structured interviews and unstructured interviews. The author argues that interviews complement the research and fill possible informational gaps that academic literature can't fill. Moreover, interviews add pieces of information that observations connected to the case study might have missed.

Table 4: Interview techniques

Structured interviews	Aims to have questions that are likely to be closed. Each of the questions has a set of predetermined answers.
Semi-structured interviews	Has pre-determined questions, but the interviewer can add additional questions to obtain more detailed information from the interviewee.

Unstructured interviews	Does not have any pre-determined questions. More likely to contain open-ended questions that enable the interviewee to answer in more depth.

Source: Adapted from Collis and Hussey (2009), author's own table

First, semi-structured interviews were used when interviewing the freight forwarding companies stationed in Thailand. These interviews were conducted face-to-face and gave the interviewee the ability to present intangible aspects regarding the ROO and the regional content calculation. It was during the semi-structured interviews that the ambiguous rules regarding packaging and packaging processes and whether they should be taken into account when calculating regional content emerged. Moreover, semi-structured interviews were used when interviewing managers at Krusell Thailand and Krusell Sweden. This opened up for opportunities to elaborate on questions and deeper analytical thoughts. For instance, it helped to uncover costs and benefits connected to the proposed concept. Second, unstructured interviews were used as a part of the daily observations during the case study, primarily when interviewing coworkers. The author would argue that the approach facilitated a natural environment for the interviewee, which in turn provided useful data for the research. Unstructured interviews were used to gather empirical data about the current supply chain and manufacturing processes in Thailand and China. Interviews were conducted face-to-face and lasted 20–40 minutes. All interviews were sent to the interviewees to see if there were any mistakes. The interviewees' contact information is presented in Appendix B1.

Table 5: Applied interview techniques

Semi-structured interviews	Used to gather information about ROO and the rules about packaging material.
Unstructured interviews	Used to gather empirical data regarding Krusell Thailand's supply chain and manufacturing processes.

Source: author's own table

3.5.4.1 THE IMPLICATIONS OF USING INTERVIEWS

The author would argue that both the interviewee and the interviewer are subjective and are affected by social constructions and norms. Social contexts and reality are constantly multiplying and are born in the individual's mind, resulting in the creation of multiple realities (Hudson & Ozanne, 1988). The author would argue that subjectiveness can arise when conducting interviews where the interviewer asks questions that the interviewee might see as sensitive. Sensitive information can be defined differently since it's born in a person's mind. For example, data gained from an interview might differ depending on the location where it is conducted. On the one hand, if an interview is conducted at the interviewee's workplace, he might be reluctant to criticize or speak constructively about specific topics due to potential reprimands, whereas an environment uncoupled from the workplace might generate additional "off the record" information. Language is often a problem when conducting

interviews. The author has limited proficiency in Thai. The issue was mitigated by conducting interviews with interviewees fluent in English. Another problem regards comparing data. If several different interview methods are used for the same research questions, it creates challenges when interpreting the data. A semi-structured interview might present a succinct answer, whereas an unstructured interview might present an elaborate answer to the same question.

Collis and Hussey (2009) argue that one way of contributing to increased response rate and honesty is by anonymity and confidentiality as they encourage greater freedom of expression. However, the author would argue that confidentiality is not needed since the questions asked were not designed in a way that would have put the interviewee in a position where confidential information would be shared.

3.6 SECONDARY DATA

Secondary data has numerous definitions in the literature. Smith (2008) presents secondary data as a tool for re-analysis of data for the purpose of answering research questions with better statistical techniques, or by using old data to answer new research questions. Collis and Hussey (2009) argue that secondary data is data gained from literature, databases, and internal company records. This can include a wide spectrum of different types of data generated from, for instance, systematic reviews, documentary analyses, or large datasets. However, it is worth noting that secondary data should be an empirical activity carried out on data that have already been gathered and compiled (Smith, 2008).

3.6.1 GATHERING SECONDARY DATA

The majority of the secondary data were gathered by using the University of Gothenburg's databases. In regards to the sub-chapters regarding FTAs and FTZs in the theoretical framework, the author narrowed down the scope of academic literature by using keywords such as FTAs, FTZs, ROO, RTAs, and WTO as a guide for gathering relevant data. The same can be seen concerning the theory about manufacturing strategies and cost-benefit analysis. Theories about ROO have been retrieved from the Annex 3: Rules of Origin for the ASEAN–China Free Trade Area (2004). Data were also gathered from the University of Gothenburg's databases regarding the development of FTAs in Asia. The scope was narrowed by using the keywords ACFTA, APEC, and ASEAN. Data regarding Thailand's logistics development was primarily gathered from Office of the National Economic and Social Development Board.[11]

Secondary data connected to the empirical framework were gathered from internal documents at Krusell Thailand and Krusell Sweden. These were provided to the author to gain insights into the daily supply chain operations. Websites were used to complement the primary data gained from the case

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[11] See NESDB (2007) and NESDB (2010).

study and interviews and to fill any informational gaps that might have existed in the primary data and secondary data.

3.7 RESEARCH QUALITY

There are essentially two methods that can be used to solve a research problem: the inductive or deductive approach. The inductive approach uses data from a single event to draw general conclusions that are often uncoupled from theory. It seeks patterns in unexplored social phenomena. Deductive research often uses existing theory as the framework for the researched problem. It tests hypotheses and relationships between one or several phenomena (Sallnäs, 2007). However, the author would argue that inductive and deductive approaches overlap in the same way as qualitative and quantitative studies do. A deductive approach has been used to couple existing theory with the proposed concept, whereas the inductive approach has researched an unexplored research area. The difference lies in that the research conducted draws precise conclusions rather than general ones.

The author would argue that research should be generalizable, that is, that conclusions can be drawn on a population based on a sample (Collis & Hussey, 2009). However, this feat is hard to achieve. A common concern is that case studies have little scientific generalizability. Yin (1994) points out the frequently asked question of how a researcher can generalize from one single case. He further argues that the use of a single-case study unfortunately thwarts the researcher's hopes of gaining a high generalizability. Case studies, like single experiments, are generalizable to theoretical propositions but are not to populations or universes. Therefore, the case study does not represent a sample, and therefore, the goal is to generalize theories.

According to Yin (1994), there are four tests that are commonly used to understand the quality of any empirical social research:

1. **Construct validity:** establishes correct operational measures for studied areas.
2. **Internal validity:** establishes a causal relationship where certain conditions are shown to lead to other conditions.
3. **External validity:** aims to establish the domain in which a research data can be generalizable.
4. **Reliability:** presents the likelihood that operations of study, such as the data collection, can be repeated with the same results.

Table 6: Case-study tactics for four design tests

Tests	Case-study tactic	Phase of research in which tactic occurs
Construct validity	-Use of multiple sources of evidence.	Data collection
	-Establish chain of evidence	Data collection
	-Have key informants review draft case study report	Composition
Internal validity[12]	-Do pattern matching	Data analysis
	-Do explanation building	Data analysis
	-Do time-series analysis	Data analysis
External validity	-Use replication logic in multiple-case studies	Research design
Reliability	-Use case study protocol	Data collection
	-Develop case study data base	Data collection

Source: Yin (1994:33)

3.7.1 VALIDITY

Validity describes the quality of a measurement. Validity in a qualitative study means the extent to which data gathered are plausible, credible, and trustworthy. This also relates to how the data can be defended when challenged (Muhammad, et al., 2008). There are many different techniques to validate the quality of a measurement. For instance, Wolming (1998) exemplifies validity by stating that the length of an item can be measured either by a ruler or by advanced laser techniques. Collis and Hussey (2009) state that that the concept aims to explore whether the data collected represent a true picture of the studied phenomena. However, the common denominator is that none of them are perfect at presenting a valid depiction of the real world. Measurements are always indications of what a researcher wants to measure, and due to this, there are always some errors (Wolming, 1998).

3.7.1.1 CONSTRUCT VALIDITY

In regards to case study research, construct validity is problematic. The issue is that case study investigators often fail to present a sufficiently operational set of measures and that subjective data collection skews the results. To meet the test of construct validity, a researcher must be sure to cover two steps (Yin, 1994:34):

> (1) Select the specific types of changes that are to be studied (in relation to the original objectives of the study).

> (2) Demonstrate that the selected measures of these changes do indeed reflect the specific types of change that have been selected.

The specific type of change studied is presented in the introduction and regards how a change in the country of origin for imported Chinese plastic cases can circumvent the high duty tariffs between China and the EU. For the research to have high construct validity, the author has also followed the

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[12] This is not used for descriptive and exploratory studies and is therefore not presented in the methodology.

three tactics as depicted in Table 6 above. In regard to the data collection, multiple sources were used throughout the thesis; this is especially noted in the theoretical framework. The underlying reason is to substantiate information through various types of sources as a means to reduce subjectivity from the gathered data, such as gathering different primary and secondary data. Jick (1979) and Collis and Hussey (2009) state that a triangulation method – using multiple sources with different research methods at during different times – can be used to investigate a phenomenon. If the data gained from the different methods are identical, it can reduce bias. Moreover, the author presented the researched data to key connected informants, who reviewed drafts of the case study, to ensure accuracy and objectivity.

3.7.1.2 EXTERNAL VALIDITY

The external validity test elaborates on the problem of knowing whether research is generalizable beyond the borders of the case study. From a researcher's standpoint, it is hard to know the generalizability of this research since the application of the ROO in the Southeast Asian regions and in Thailand are connected to global trade relations, such as the development of trade agreements with ASEAN, APEC, and ACFTA, especially since the ACFTA is a contemporary trade agreement and is a quite recent approach to economic development in the Asia-Pacific region. Therefore, the future development of FTAs in Southeast Asia might bring rules and regulations that will foil this research. For instance, an unlikely event would be if China established a FTA with the EU. This would in turn reduce the external validity of the research conducted. However, since China recently lost its GSP with the EU, the pursuit of a FTA seems to be a non-priority at this time (at least from the EU's point of view) (European Commission, 2014b; MacLennan, et al., 2014).

The author would further argue that the ongoing development of ASEAN and the goal of creating AEC by 2015 will change the landscape that the research in this thesis has touched upon. Another thing worth mentioning is that the results gained will differ depending on the type of company that is evaluated, its connected products, and its geographical and political environment. Therefore, to gauge the level of external validity, the theories must be tested through a replication of the findings generated from the research. The author would argue that this could be done through a longitudinal study that extends to after 2015, when the AEC has been implemented.

3.7.2 RELIABILITY

For research to have a high grade of reliability, repeating studies should yield the same results (Collis & Hussey, 2009). The objective is therefore to be sure that later research conducted using the exact same procedures will generate the same findings as the original study (Yin, 1994). Wolming (1998) argues that researchers should not focus on having high reliability. High reliability does not

automatically translate into high validity. Poorly-conducted research can yield similar results in repeated studies but have low validity.

Yin (1994) states that to increase research quality and mitigate the issues of low reliability, a researcher should develop protocols and document all procedures used in the case study. The creation of protocols with a description of each step is done so that others are able to repeat the study. For example, during the research, documentation from meetings and information gained from observation in the daily work environment at the case company were noted in order to strengthen the reliability. The author argues that the reliability of this thesis is high due to the research design. For instance, the calculation of RVC and the requirement of minimum 40 percent regional content will yield the same results (if the same variables are used). The author argues that a repetition of this study would yield the same results both in Thailand and in the ASEAN member states due to harmonized rules and regulations. However, in a future context the reliability of this thesis might change due to the implementation of the AEC planned for 2015 in connection to the loss of GSP for China and Thailand.

The chapter presents the historical and contemporary development of Asian trade agreements and their role in the Asia-Pacific economy. The chapter continues with an illustration of logistics development in Thailand.

4.1 ECONOMIC INTEGRATION AND THE EAST ASIAN FTA INITIATIVES

The opening up of China during the 1980s and the global expansion of information and communication technologies (ICT) have been a catalyst that facilitated production abroad, resulting in companies increasing their FDIs. China's integration in the world economy has led to major changes. During the 1980s and 1990s, Chinese exporters gained considerable market shares in the production and export of labor-intensive products. During the mid-1990s, the country specialized its production in knowledge- and technology-intensive goods (Geest, 2004; Yeo, 2009). During the same time, the Asian regions were negatively affected by the burst of an asset bubble in Japan, which was the region's traditional engine of growth. In connection to this, the Asian financial crisis stressed the need for national economies to work together concerning trade and investments. This made it imperative to start looking to China for opportunities provided by the country's fast-paced development (Park, 2007; Choi, 2010). This in turn resulted in a growing number of multinational companies that established manufacturing and logistics operations in the Asia-Pacific region. Many of the manufacturing companies in the Asia-Pacific region adopted a business concept to export manufactured products and components to developed economies (Sohal & Rahman, 2013).

4.1.1 THE INITIATIVE OF THE ASEAN AND APEC

The ASEAN was established in 1967 by five member countries: Thailand, Indonesia, Malaysia, Singapore, and Philippines. During the 1980s to late 1990,s Brunei, Vietnam, Laos, Myanmar, and Cambodia joined (Hufbauer & Schott, 2007; Günter & Zhu, 2009). In the beginning, the main purpose of the ASEAN was to end guerilla wars between the member states as a way to enhance the security of the Southeast Asian region (Hufbauer & Schott, 2007). Presently, ASEAN's main goal is to promote intraregional trade using bilateral agreements that reduce tariffs between member states. For example, in 1992, the Framework Agreement on Enhancing Economic Cooperation, including the scheme of the Common Effective Preferential Tariff (CEPT) within the ASEAN Free Trade Area (AFTA), was established. This contributed to the elimination of tariff and non-tariff barriers among the member states. The decentralization that FTAs have brought to East Asia has primarily been led by ASEAN and in particular by the establishment of AFTA in 2004. This is an agreement that eliminates all import duty on products defined in the normal track for the ASEAN-6[13] member parties. In 2004, more than 99 percent of all products in the CEPT inclusion list of ASEAN-6 received a duty reduction

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[13] Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand.

in the 0–5 percent tariff range. Furthermore, 60 percent of the products defined in the CEPT inclusion list had received an elimination of import duties by the end of 2006, which increased to 80 percent during 2008. In 2010, the ASEAN development continued its elimination of tariffs, resulting in 99 percent of the total tariff lines being eliminated (Günter & Zhu, 2009; Hayakawa, et al., 2013).

The ASEAN member states in Southeast Asia have become integral parts of the region's economic development. For instance, Singapore, Korea, Taiwan, and Hong Kong are newly industrialized economies, and Thailand has developed from an agricultural to a dynamic manufacturing economy with sustained growth and industrialization (Park, 2007). For decades, FTAs have thrived in the Asian regions. As of last year, there were more than 30 RTAs, 14 of which were intraregional that tied together member states in East Asia. Over the past two decades, activities such as manufacturing, logistics, and supply chain activities in the Asia-Pacific region have witnessed a massive growth. During the 21st century, manufacturing activities developed, including not only advancements in technologies but also in the sourcing of locations and resources (human and materials). This has been a catalyst for development in countries such as China, India, Malaysia, and Singapore (Sohal & Rahman, 2013). As a result, the Southeast Asian economies have flourished and have seen rapid economic growth driven by international trade and FDIs. Southeast Asia's export as a share of the world's total export rose from 14 percent in 1980 to 27 percent in 2006; imports increased from 15 percent to 24 percent (Dean & Wignaraja, 2007).

For the last thirty years, the cooperation between the EU and ASEAN has had its ups and downs. The first dialogues between the parties took place during the early 1970s and 1980s with the goal of creating trade relations and evaluating areas of cooperation, such as joint ventures and mobilizing capital for financing ASEAN projects. This manifested in a framework agreement during the 1980s with focus on economic cooperation and development, such as preferential duty on exports (Günter & Zhu, 2009). In 2007, the European Commission (EC) started FTA negotiations with ASEAN, and it was decided at the EU–ASEAN economic ministers' meeting in Brunei that the parties should enter into negotiations for a FTA (European Commission, 2014a). However, due to the development of the AEC, the EU–ASEAN FTA development has been postponed until the implementation of the AEC in 2015 (Pratruangkrai, 2014). In connection to the development of ASEAN, the Asia-Pacific Economic Cooperation (APEC) is complementary. Both have been working to promote regional economic activity in Asia. As of 2013, APEC is the wider organization, with 21 member states[14] compared to ASEAN's 10 member states. APEC and ASEAN share similar goals on liberalizing trade, investments, and economic activities, but they tackle the areas differently (Das, et al., 2013). For example, APEC has been successful in encouraging China to pursue trade and FDI liberalizations outside the WTO

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[14]APEC includes countries from the Americas (U.S., Canada, Mexico, Chile, and Peru), Russia, Australia, New Zealand, China (including Hong Kong and Taiwan), Japan, South Korea, Brunei, Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam, and Papua New Guinea.

(Dean & Wignaraja, 2007). The difference between ASEAN and APEC is that ASEAN is a trade association whereas APEC is an economic community. For example, ASEAN has worked to reduce duty between member states, whereas APEC has tried to become an Asian version of the EU. APEC can create suggestions for rules and regulations, but it is ASEAN that decides them (Meissner, 2014). The biggest difference is that the former does not require its members to enter into legally binding obligations when discussing liberalization activities. This is its biggest weakness, as it acts as a free economic and trade forum that encourages its members to participate but without commitment to any promoted activity (Das, et al., 2013).

4.1.2 THE INITIATIVE OF THE ACFTA

The trade relations between ASEAN and China have had a diverse nature during the last decade. At the ASEAN–China summit in November 2001, China proposed establishing a FTA with the ASEAN member states (Lakatos & Walmsley, 2012). The following year, ASEAN and China signed a framework agreement[15] that formed the legal basis to commit to the introduction of the ACFTA by 2010 (ASEAN Secretariat & GIZ, 2013). This was a direct response to the global and regional developments that both ASEAN and China have had. During 1965–1980, the annual GDP growth in China was 6.4 percent. This increased to 9.4 percent during 1980–1991 (Zhang & Hock, 1996). This rate doubled the ASEAN average and exceeded the growth rate of every ASEAN member state. ASEAN's share in China's foreign merchandise trade increased from 5.8 percent in 1991 to 8.3 percent in 2000 (Tongzon, 2005).

In 2005, a pivotal free trade agreement on trade-in goods between the ASEAN member states and China was established. This agreement marked the beginning of the ACFTA (Greenwald, 2006). In 2007, the ASEAN only had one trade agreement with China, and it covered 13 percent of the ASEAN's total external two-way trade and approximately 7 percent of its FDI stocks (Hufbauer & Schott, 2007). At that time, the trade effects of ACFTA were expected to increase trade between member states but at the same time divert trade from non-member countries (Park, et al., 2009). ACFTA serves as a reminder of China's growing influence in East Asia, and there are implications of such an agreement. Both sides would benefit from net trade gains, and trade creation would offset the impact of trade diversion. However, the ASEAN community would still be affected by a slight trade diversion, whereas the impact on China would not be as obvious (Chirathivat, 2002). An example of the trade diversion is that ASEAN manufacturers are expected to be challenged by higher competition from Chinese exporting companies on both a domestic and international level regarding textiles, electronics, and agricultural produce (Tongzon, 2005; Lakatos & Walmsley, 2012).

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[15] The Framework Agreement on Comprehensive Economic Cooperation.

The ACFTA came into effect in 2010 and covers a free trade area with the highest population[16] in the world, with an economic size and trade area in volume that can be compared to the size of the NAFTA and the EU (Greenwald, 2006; Park, et al., 2009; Sheng & Tang, 2012). In 2010, the average tariffs for ASEAN-origin exports to China were lowered from 9.8 to 0.1 percent. Exports from China to the ASEAN-6 followed a similar trend, with a tariff reduction from 12.8 to 0.6 percent. As of 2012, trade between the ASEAN and China reached USD 318.6 billion, representing 12.9 percent of the total trade. (Sheng & Tang, 2012; ASEAN Secretariat & GIZ, 2013). The ACFTA covers three agreements: free flow of goods, services, and investments. The first one provides tariff reductions and elimination between the member states. The second agreement aims to liberalize and eliminate discriminatory measures in sectors that provide services. The third agreement aims to promote and develop investment flows between member states and ensure fair and equal opportunity for investors (ASEAN Secretariat & GIZ, 2013). However, as of 2015, the ACFTA agreement will be abolished in preparation for the AEC (Thai Customs, 2014).

4.1.3 THE INITIATIVE OF THE AEC

At the Summit in Kuala Lumpur in 1997, the ASEAN leaders decided to transform ASEAN into a region with equitable economic development as a tool to reduce poverty and socioeconomic disadvantages. This was further discussed during the Bali Summit in 2003, where the leaders declared that the ASEAN Economic Community (AEC) should be the goal for economic integration (ASEAN Secretariat, 2008). In 2007, the ASEAN member states adopted the AEC Blueprint to serve as a master plan for the development of the AEC. The AEC Blueprint is a binding document for member states that has a clear action plan, targets, and timelines that must be followed to be eligible for the AEC. As of 2015, ASEAN is set to develop an AEC, which aims to create a single market and production base, free flows of goods and services, and a competitive economic region that is fully integrated into the global economy.[17] According to the official AEC scorecard published in 2012, ASEAN has achieved 68.2 percent of its targets for the 2008 to 2011 period. This has resulted in economic and trade growth between the member states and an ASEAN GDP of USD 2.1 trillion in 2011 (ASEAN Secretariat, 2008; ASEAN Secretariat, 2012; Das, et al., 2013). One noticeable effect of the development of the AEC concerns manufacturing and supply chains. The trend of shifting to the cheapest production base in the domestic region or trans-border will diminish with the implementation of the AEC. For example, several member states have already implemented the minimum wage rules that are needed for entry into the AEC. For Thailand, this resulted in a new labor rule that has set minimum wage of THB 300 per day. This has indirectly forced industries to search for cheaper labor alternatives in other countries (Meissner, 2013; Meissner, 2014).

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[16] 1.9 billion people.

[17] For more information, see ASEAN Secretariat (2008) and ASEAN Secretariat and GIZ (2013).

4.2 THE LOGISTICS DEVELOPMENT IN THAILAND

In 2007, the logistics infrastructure of ASEAN member states illustrated that only Thailand, Singapore, and Malaysia had been rated with a good port, airport, railway, and road infrastructure. The remaining member states had either poor or fair ratings [18] (Runckel & Associates Inc, 2007). Geographically, Thailand is a center point that connects to all ASEAN main land destinations with a distance less than 900 km (Meissner, 2013). Thailand had a Logistics Performance Index (LPI) score ranging between 3.18 and 3.43 during 2007 to 2014 and as of 2014 is ranked 35th in the world (The World Bank, 2014). When comparing the country to the ASEAN member states, the country has the second largest economic size and the fourth largest per-capita GDP. However, in 2011, Thailand's economic growth was the lowest among member states (Meissner, 2013).

As of January 2014, the EU has developed a new GSP scheme. A key announcement was the abolishment of the GSP benefits for several countries, such as China and Thailand. This is a direct action from the EU due to the World Bank's classification of the countries as middle to high income level countries. The removal of the GSP for China will result in a limited effect, since it will only impact a limited number of products, but a considerable impact is expected on Thailand. However, both Thailand and China can still benefit from GSP preferences during 2014 due to a one-year transition period (European Commission, 2013a; MacLennan, et al., 2014). The impact of the removal of the GSP on the Thai and Chinese trade picture might be mitigated. For instance, as of late 2013, Thailand has concluded the second round of negotiations for a FTA with the EU (European Commission, 2013b). Moreover, the implementation of AEC that is set to be established in 2015 could also be a force to be reckoned with regarding trade relations with the EU (ASEAN Secretariat, 2008; ASEAN Secretariat & GIZ, 2013).

4.2.1 LOGISTICS PROJECTS IN THAILAND

Thailand have recently developed several logistics strategies to develop its logistics competitiveness. In 2007, the government established a logistics project called "Thailand's Logistics Development Strategy" with the goal of facilitating trade by increasing cost efficiency, customer responsiveness, reliability, and security and creating added value for logistics and supporting industries in the country. One of the key performance indicators was the goal of lowering Thailand's total logistics cost[19] as a proportion of GDP from 19 percent in 2005 to 16 percent by 2011 (NESDB, 2007).

Total logistics costs as a proportion of the GDP between 2001 and 2011 decreased from 19.6 to 14.5 percent. A slight increase in GDP was seen during the global financial crisis during 2007 and 2008.

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[18] For more information regarding the rating, see Runckel and Associates Inc (2007).

[19] Transportation costs + inventory holding costs + administration costs.

However, the increase diminished the year after, and logistics costs continued their declining path. The increase in total logistics costs was due to the global financial crisis that drove the Thai economy into recession and negatively affected production levels in various sectors. This in turn resulted in reduced volumes of transported goods and inventory levels in the country. During the same period, the minimum loan rate (MLR) was reduced in order to manage the levels of liquidity on the market. At an industry level, domestic businesses attempted to improve production efficiency, warehousing, and inventory management and created logistics cost-saving measures in response to declining consumer demand and to be able to survive the recession (NESDB, 2010; Paijitprapapon, 2013).

In 2010, one third of the country's total logistics costs were connected to the industrial sector, where the inventory carrying cost (55 percent) and transportation costs (35 percent) were the largest logistics costs, whereas warehousing costs[20] only counted for 1 percent. From 2010 to 2013, Thailand's logistics projects generated logistical cost reductions of USD 26.7 million (Paijitprapapon, 2013). Moreover, the government has established a "Manufacturing Logistics Development Master Plan" with the goal of decreasing industrial logistics costs as a proportion of GDP by 15 percent. Moreover, the project aims to create cost, time, and quality efficiencies by 10 percent[21] (Paijitprapapon, 2013).

Consequently, as of late 2013, Thailand's Logistics Development Strategy appears to have been successful as its goal of reducing total logistics costs to 16 percent of GDP was met and even surpassed by 1.5 percent in 2011 (NESDB, 2010; Paijitprapapon, 2013).

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[20] In regards to operational costs.

[21] See Paijitprapapon (2013).

5 EMPIRICAL FRAMEWORK

The chapter presents the case study of Krusell's supply chain and manufacturing activities. It continues with a presentation of the current manufacturing and supply chain concept and the author's proposed concept. Last, the rules of origin and their application are presented.

5.1 INTRODUCTION TO THE CASE STUDY

The coming sub-chapters illustrate the case study of Krusell Thailand. It illustrates the current manufacturing and supply chain activities conducted in China and Thailand. The data collection is based on interviews with freight forwarders, FTZ operator, and internal documents from Krusell Thailand.

5.2 KRUSELL COMPANY GROUP

Krusell Sweden was founded in 1991 and is a Swedish company with headquarters in Mölndal, Sweden. The company is a part of a business group that includes five companies that manufacture and globally distribute accessories for mobile electronic equipment. The product portfolio includes products such as cases for digital cameras, mobile phones, laptops, MP3 players, screen protectors, and GPS (Krusell International AB, 2014). During the last five years, Krusell has produced over 3 million mobile phone cases annually and employed over 500 employees worldwide. There are roughly 20 employees stationed at the headquarters in Mölndal, Sweden, and the majority of the employees are in Thailand working under the Krusell Thailand branch (Wikström, 2014; Samart, 2014). As of 2011, the company has agreements with 7,000 retailers worldwide and is a subcontractor for Sony, Samsung, Sanyo, Honda, Toyota, and LG (Krusell International AB, 2014).
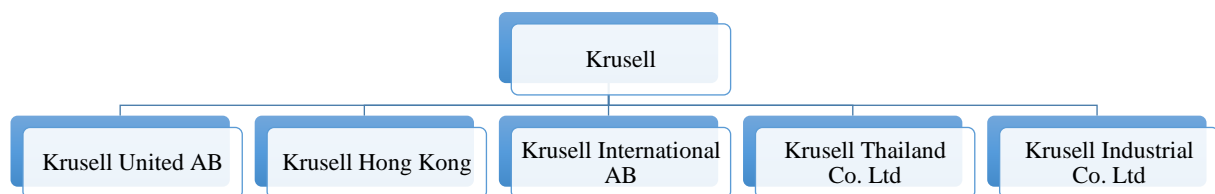
Figure 2: Krusell company group

Source: Krusell International AB (2014), Beck (2014), Samart (2014), author's own figure

5.2.1 BRANDS AND PRODUCT PORTFOLIO

To expand the company's product portfolio, Krusell Sweden has acquired two companies: Motörheadphönes and Walk on Water (WoW) (Jerkhage, 2014a). The former company was launched in 2012 by Krusell Sweden and the rock band Motörhead, and it is involved in both manufacturing and global distribution of audio products, such as headphones (Claesson, 2013b). In 2013, WoW was acquired; the company sells products such as laptop bags, laptop skins, and wallets (Claesson, 2013a;

Jerkhage, 2014a). During the same year, Krusell Sweden ventured into an accessory program with Nokia called "Works with Nokia". The accessory program informs customers that Krusell Sweden's products are fully compatible with Nokia's products (Claesson, 2013c; Wikström, 2014).

5.2.2 MANUFACTURING IN CHINA

As of 2014, Krusell Thailand cooperates with 13 suppliers in China. The majority of them are located in mainland China, and one is located in Hong Kong. The suppliers manufacture goods on behalf of Krusell Thailand by using a build-to-order manufacturing strategy (Samart, 2014). As of late 2013, there are a total of 167 individual products in 31 product categories manufactured in China.[22] After manufacturing, products are exported to the bonded warehouse in Sweden and to the Asia warehouse in Thailand. The former serves customers located in the EU, and the latter serves customers in the APEC (Beck, 2014; Jerkhage, 2014b).

5.2.3 MANUFACTURING IN THAILAND

Krusell Thailand is in charge of the manufacturing plant in Thailand, which is located in Ayutthaya province. The manufacturing strategy that Krusell Thailand uses is to manufacture all products made to order. The company manufactures goods for two regions: The first is the Asia stock that serves the APEC with goods. These goods are stored in a warehouse in Thailand. The second region is the EU, and finished goods are sent to Krusell Sweden's bonded warehouse in Sweden.[23] Both warehouses aim to serve their corresponding markets with products (Samart, 2014). Krusell Sweden's ambition is to always offer ongoing products to their customers from stock. As a way to reduce lead time, they focus their purchase order strategy by always having goods in stock instead of ordering goods from Krusell Thailand when receiving a customer order. This strategy has slowly been changing. Roughly 75 percent of the purchase orders sent to Thailand already have customers attached to them. However, there are some products that are exclusively built to order, such as products with the prefix "Classic" and OEM products (Jerkhage, 2014a). If the goods are not in stock, the total lead time (including manufacturing) is approximately two to four weeks from when a purchase order is sent from Krusell Sweden to Krusell Thailand until a product is finished and received (Wikström, 2014; Samart, 2014).

5.2.4 EXPORT SHIPMENTS TO SWEDEN

The majority of the goods manufactured in Thailand are shipped by air by the logistics company United Parcel Service (UPS). Minimal shares of the finished goods are shipped in sea containers to specific customers. However, this is only for customers demanding that particular mode of transport (Jerkhage, 2014a; Jerkhage, 2013). Air shipments from Thailand to Sweden have a transit time of two

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[22] See Appendix A1, A2, and A4.

[23] In collaboration with Aditro Logistics.

days. In regards to sea shipments, the transit time from Thailand to Sweden is five weeks, and it takes an additional day of processing at the Swedish port for the goods to be delivered to the bonded warehouse. For air shipments from China to Sweden, the lead time is approximately five days (Wikström, 2014; Jerkhage, 2014a; Samart, 2014).

Table 7: Lead time for products exported to Sweden

Exporting country	Importing country	Production time	Number of exports	Transit-time
Thailand	Sweden	2 – 4 weeks	3 times per week (Mon, Wed, Fri,)	2 days
China	Sweden	2 – 4 weeks	1 time per month	5 days
China	Thailand	2 – 4 weeks	2 – 3 times per month	1 day

Source: Jerkhage (2014a), Wikström (2014), Samart (2014), Triple I Interfreight (2014), author's own table

5.2.5 TRANSPORT COSTS

Table 8 below illustrates that air shipments from China to Sweden are more expensive than air shipments from Thailand to Sweden, roughly THB 50 more per kg. Individually, the transport costs from China to Thailand and Thailand to Sweden are lower than the China to Sweden transport route. Transports from China to Thailand are roughly 53 percent cheaper, and transports from Thailand to Sweden are roughly 31 percent cheaper than China to Sweden transports. However, concerning shipments from China to Thailand to Sweden, the transport costs match and exceed those for the current China to Sweden transport route. In comparison to the costs from China to Sweden, shipments from China to Thailand to Sweden increase the total transport cost by THB 23.78 per kg. This is a 14.85 percent increase in transport costs (Cargo-Partner Logistics, 2013; Weiss Rohlig, 2014; Triple I Interfreight, 2014).

Table 8: Transport costs for exporting goods to Sweden in THB (SEK)[24]

	China–Sweden	China–Thailand	Thailand–Sweden
Airfreight rate (including surcharges)	110.22 (22.04)	74 (14.8)	110 (22)
Hong Kong local charges	36.76 (7.35)	Included in airfreight rate	-
Sweden local charges	13.25 (2.65)	-	Included in airfreight rate
Total transport cost (THB/kg)	**160.22**	**74**	**110**
Total transport cost (SEK/kg)	**32.04**	**14.8**	**22**

Source: Cargo-Partner Logistics (2013), Weiss Rohlig (2014), Triple I Interfreight (2014), author's own table

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[24] The transport costs for shipments from China to Thailand and China to Sweden are based on 500–1000 kg shipments. Thailand to Sweden transport costs are based on 1000+ kg shipments.

5.2.5.1 DUTY COSTS WHEN EXPORTING TO SWEDEN AND THE EU

When subcontractors in China export goods to Krusell Sweden, the highest tariff rate that affects the goods is 9.7 percent. This tariff rate affects 67 products, or 39.5 percent of the manufactured goods from China. The reason for the high tariff rate is because some of the manufactured products are not included in the GSP scheme that the EU and Thailand have. The tariff rate for exporting goods from China to Thailand is 0 percent for all 167 manufactured products due to the preferential tariff rates of the ACFTA (Thai FTA, 2014; Jerkhage, 2014b).

Table 9: Tariff rates of 167 manufactured products in China

Tariff rates	China to EU	China to Thailand	Thailand to EU
Highest	9.7% (66 products)	0% (167 products)	3.3% (67 products)
Lowest	2% (10 products)	0% (167 products)	0% (100 products)

Source: Swedish Customs (2014), Jerkhage (2014b), Thai FTA (2014), author's own table

If the manufactured products in China had a Thai country of origin instead, the maximum tariff rate for exports to the EU would only be 3.3 percent. As a result, 100 products, or 60.5 percent of total manufactured products from China, would be duty exempted when exported to the EU (Jerkhage, 2014b; Swedish Customs, 2014).

5.3 INTRODUCTION TO THE PROPOSED CONCEPT

The upcoming sub-chapters illustrate the current concept that is used by Krusell Thailand regarding manufacturing and transportation processes from China to Sweden. It continues with an introduction of the proposed concept that the author has researched. This serves as a basis for the CBA analysis to find the break-even point by using a cost–volume analysis. The mentioned analysis will compare the current and proposed concepts to analyze possible financial gains.

In regards to the RVC calculation, the author has chosen one product that will illustrate the application of the ROO and the process of changing a product's country of origin. The reference product that the RVC will be applied on is a plastic case for Sony Xperia Z2. In the coming chapters, the reference product will be referred to as "plastic case." Pictures of the plastic case can be seen in Appendix B2–B4.

5.3.1 CURRENT CONCEPT: PLASTIC CASES FROM CHINA TO SWEDEN

Currently, plastic cases are manufactured by suppliers in China on behalf of Krusell Thailand. The suppliers uses a build-to-order manufacturing strategy, and the minimum order quantity (MOQ) is 5,000 units per manufacturing phase. The plastic cases are wholly manufactured; this includes the product itself (the plastic case) and the retail packaging. However, the packaging material is not

manufactured by the same suppliers that manufacture the plastic cases. Instead, there are four packaging suppliers in China that transport the packaging to the plastic case manufacturers. There are also four packaging suppliers in Thailand, but they mainly serve the manufacturing plant in Ayutthaya with packaging. The decentralized structure of the packaging suppliers has affected packaging write-offs. For example, in 2012 the write-offs for packaging material (including damage, theft, and unused packaging) was THB 652,150 (Beck, 2014).

```
┌──────────────────┐     ┌──────────────────┐     ┌──────────────────┐
│ Packaging supplier│─────│ Plastic case supplier│    │  Krusell Thailand │
│      China       │     │      China       │     └──────────────────┘
└──────────────────┘     └──────────────────┘     ┌──────────────────┐
                                                   │   Krusell Sweden  │
                                                   └──────────────────┘
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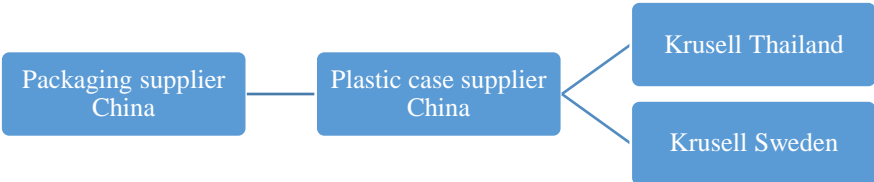
Figure 3: Sequential manufacturing and distribution

Source: Beck (2014), Jerkhage (2014b), Samart (2014), author's own figure

Shipments from China to Krusell Sweden occur one time per month with a five-day transit time. The average shipment weight is greater than 500 kg per shipment. This results in transport costs of THB 160.22 per kg. The finished plastic cases with retail packaging are defined under the HS code 3926909790[25] and are affected by 6.5 percent duty when exported from China to the EU (Samart, 2014; Swedish Customs, 2014).

5.3.2 PROPOSED CONCEPT: CHANGING THE ORIGIN OF THE PLASTIC CASES

Krusell Thailand wishes to import plastic cases in bulk (without packaging material) from plastic case suppliers in China to a FTZ warehouse in Thailand.[26] The delivery terms for import will be EXW: Krusell Thailand needs to arrange pickup of the shipment, pay the in-transit freight, and clear the goods through customs by completing all necessary import documentation. The plastic cases are defined as semi-finished when imported from China as they lack packaging, which is a part of the product when it is sold at a retailer (Beck, 2014). The MOQ is 5,000 units per manufacturing phase, and without packaging, the plastic cases weigh 13 g per unit. Each plastic case is stored inside a plastic bag to protect from scratches during transport. The inner dimensions of the export box that the plastic cases are transported in are 23.1 x 41.6 x 41.[27] The plastic case dimensions are 7.5 x 14 x 1. The export box weighs 460 g. Roughly 321 cases can be placed in an export box for a total weight of 4.6 kg. However, the dimensional weight per box is 7.88 kg, and the freight costs are calculated on this weight (Beck, 2014; Samart, 2014).

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[25] This is the European HS code. Minor changes can be seen when comparing it to the Thailand counterpart. However, the difference is not affecting the tariff rate or product definition.

[26] Costs connected to the FTZ warehouse can be seen in Appendix A3 and in the analysis.

[27] In centimeters.

Shipments from China to Thailand occur three times per month. Average shipment weight for exports to Thailand is roughly 500–1000 kg per shipment with a one-day transit time. In turn, this results in transport cost of THB 74 per kg. Shipments from Thailand to Sweden occur three times per week from the manufacturing plant in Ayutthaya. From the manufacturing plant, the average shipment weight to Sweden is over 1000 kg. As a result, total transport cost for shipments from Thailand to Sweden is THB 110 per kg (Jerkhage, 2014a; Samart, 2014; Weiss Rohlig, 2014; Tangwongtrakul, 2014).

The finished plastic cases without retail packaging are defined under the HS code 3926909790, as seen in the current concept. Shipments from China to Thailand are duty exempted due to ACFTA. However, even without the ACFTA, the plastic cases would still be duty exempted from China to Thailand since they are imported into a FTZ warehouse. As long as they are re-exported from Thailand, the plastic cases will not be affected by any duty or VAT charges in Thailand. The plastic cases can also be duty exempted when exported from Thailand to Sweden under the GSP scheme. However, the plastic cases needs to gain a Thai origin to benefit under the GSP scheme (Swedish Customs, 2014; Beck, 2014; Samart, 2014).

5.3.2.1 BILL OF MATERIAL AND PROPOSED MANUFACTURING STRATEGY

There are two parts that need to be combined for the plastic cases to become wholly finished products: the plastic case and the retail packaging. The raw material for the first part, the plastic that is used to manufacture the plastic cases, originates from China. The second part of the product is the retail packaging, which originates and is sourced from a domestic supplier in Thailand. The retail packaging contains three parts: a blister (plastic) tray and top, an outer box of printed paper, and a retail "hook" including stickers and barcodes (Beck, 2014; Samart, 2014). Illustrated in Figure 4 below is the bill of material of all part that together create the finished plastic case (Beck, 2014).
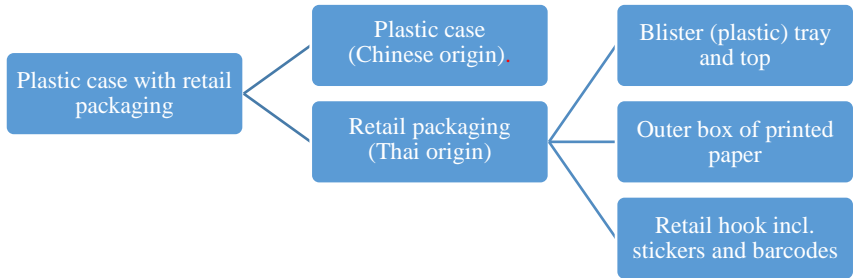
Figure 4: The bill of material of the plastic case

Source: Beck (2014), Jerkhage (2014b), Samart (2014), author's own figure

The proposed concept will alter the current manufacturing strategy for the plastic case suppliers. Currently, the suppliers manufacture plastic cases by using a build-to-order strategy. However, since the plastic cases will be imported semi-finished (excluding packaging), the manufacturing strategy will be altered to a delayed differentiation and concurrent and parallel processing strategy. Therefore,

the plastic cases and the retail packaging will then be manufactured in separate "modules" by the plastic case suppliers and Krusell Thailand. The strategy will move the differentiation stage from the plastic case suppliers in China to the FTZ warehouse. Moreover, the manufacturing of the plastic cases and the packaging are not dependent on each other, so sequential manufacturing is not needed. As a result, the plastic cases and packaging can be manufactured in parallel to each other in China and Thailand.
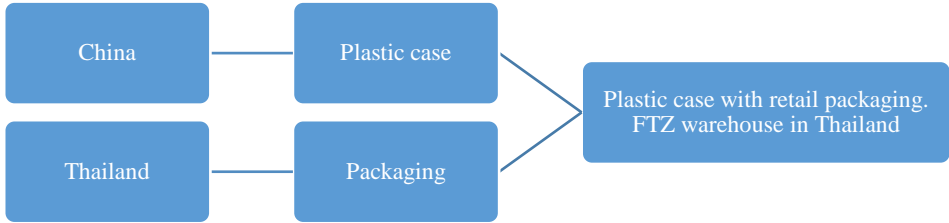
Figure 5: Parallel manufacturing and distribution

Source: Adapted from Simchi-Levi, et al. (2009), author's own figure

There is a possibility that the packaging can be manufactured by Krusell Thailand. In turn, this would remove the need for the eight packaging suppliers located in China and Thailand. Moreover, it is estimated that by moving the manufacturing in-house, the manufacturing cost per unit of packaging would be reduced from THB 12.55 to THB 9.41. This is partly due to the removal of the inland transportation costs when transporting packaging to plastic case manufacturers in China. Moreover, the packaging will also be designed to be universal (Beck, 2014). Therefore, the packaging will be the undifferentiated part of the finished plastic case, whereas the plastic case itself will differentiate the finished product.

5.4 COST-VOLUME AND COST-BENEFIT VARIABLES

As mentioned in this chapter, there are costs connected to the proposed concept. These are; duty costs, transport costs, FTZ warehouse costs, and packaging costs. Moreover, this also includes transit- and lead-time. The reason why these costs have been chosen for the cost-benefit and cost-volume analysis is in regards to sunk-costs. Williams (2008) argues that sunk-costs should not be included in an analysis, i.e. costs that will occur even if the project is not implemented.

First, duty costs is not a sunk-cost since the proposed concept aim to acquire a GSP eligibility for the finished plastic cases, i.e. grant the products a duty exemption when exported to Sweden. This will not occur if the proposal is not implemented and is not gained from the current exports from China to Sweden. Second, as previously mentioned, the proposal´s transport cost will be higher and lead- and transit-time will be on par compared to the current exports from China to Sweden. The discrepancy in transport cost and transit- and lead-time will only occur if the proposal is implemented.

Third, the same results can be seen in the FTZ warehouse costs since the costs will only occur if the proposed concept is implemented. Last, in-house manufacturing of packaging and the reduction of the production cost will only occur if the finished plastic cases are granted a duty exemption when exported to Sweden. However, investment costs for machinery and manpower that are needed for the in-house manufacturing are sunk-costs. This is because the machinery is already purchased and the manpower already exists, i.e. these costs occur even if the proposal is not implemented.

Table 10: Examination of sunk-costs

Costs connected to the proposed concept	Is it a sunk-cost?
Duty costs	No
Transport cost	No
Packaging cost	No
Lead- and transit-time	No
FTZ warehouse cost	No
Machinery and labor investments	Yes

Source: author´s own table

5.5 REGIONAL VALUE CONTENT VARIABLES

As mentioned in the theoretical framework, the regional content value needed for a change of origin is set at 40 percent. However, there is a risk that the packaging will be classified as minimal operations and processes. In that case, the packaging would be excluded from the RVC calculation and the plastic cases would not be eligible for a Thai country of origin as there would only be one part of the wholly-finished product left to do a calculation on, namely the semi-finished plastic cases with a Chinese origin. As a result, the Thai regional content would be 0 percent. However, there is a way to bypass rule 7c in Annex 3[28] regarding minimal operations and processes that can result in packaging material and processes being eligible for the RVC calculation. If the only process is to put the plastic case in the retail packaging, then the rules would exclude it from the calculations. However, one needs to separate each activity connected to putting the plastic case in the retail packaging to see each process's added value. If done correctly, then the packaging can be a part of the RVC calculations (Sluys, 2014; Meissner, 2014).

What has been found is that the plastic cases, which start with the four-digit HS code 3926, are not defined under the 40 percent regional content requirement. Instead, it has been set at a 50 percent regional content limit, in which the value of all non-originated materials cannot exceed 50 percent of the ex-work price of the product. The variables that will be taken in consideration when calculating the regional content are as follows: (1) Thai originating materials used in the manufacturing processes in Thailand; (2) non-originating materials used in the manufacturing in Thailand; (3) amounts of non-material cost per unit, such as labor costs, manufacturing costs, rent costs, and warehousing costs; (4)

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[28] Rules of Origin for the ASEAN–China Free Trade Area (2004).

profit per unit that Krusell Thailand earns per plastic case; (5) ex-factory price, or the price of the plastic case itself that Krusell Sweden purchases from Krusell Thailand; and (6) costs of inland transportation in Thailand (Jiraboonpong, 2014; Rojanavisas, 2014; Loichollamas, 2014).

5.5.1 ORIGINATING AND NON-ORIGINATING MATERIALS COST PER UNIT

As illustrated in the sub-chapters above, the Thai originating materials used in the manufacturing of the wholly-finished plastic case are the retail packaging. The packaging parts – blister (plastic) tray and top, outer box, and retail hook including stickers and barcodes – account for THB 12.55 of the total manufacturing cost of one plastic case. Non-originating materials are the plastic cases themselves. If the plastic cases without retail packaging are imported from China in bulk, the cost per plastic case will be EXW THB 31.38. The transport cost per plastic case will then be approximately THB 4.71. Consequently, the cost, insurance, and freight (CIF) price for one plastic case is THB 36.09. The total cost for one plastic case with retail packaging is THB 48.64 (Beck, 2014).
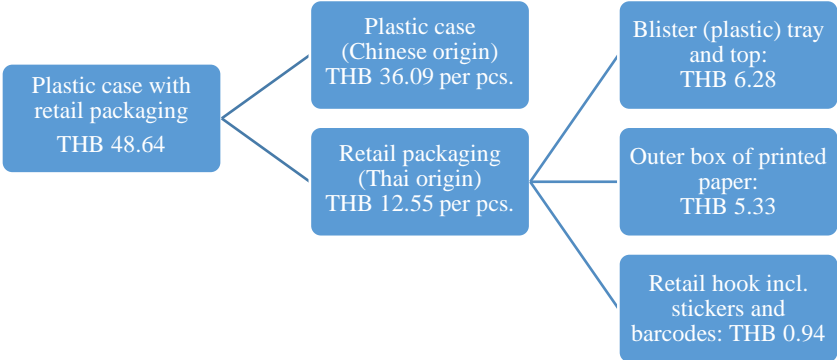
Figure 6: Originating and non-originating materials

Source: Beck (2014), Samart (2014), author's own figure

The material cost of the Thai-originating retail packaging is roughly 35 percent of the material cost of the non-originating plastic case and 26 percent of the total cost of one finished plastic case. The carriage paid to (CPT) sales price – that is, the cost of purchasing one plastic case including freight from Thailand to Sweden (door to door) – is THB 94 per plastic case when sold to Krusell Sweden (Tangwongtrakul, 2014; Beck, 2014).

5.5.2 PROFIT AND EXPORT COSTS

The inland transportation cost from the FTZ warehouse to the airport in Bangkok is THB 0.63 per case. In turn, the ex-factory price, or the price that Krusell Sweden pays for one plastic case (excluding freight and insurance), is THB 88.18. The profit is calculated by using the ex-factory price and subtracting of originating and non-originating material costs and non-material costs per unit. Therefore, the profit is THB 14.75 per plastic case (Jiraboonpong, 2014; Rojanavisas, 2014; Loichollamas, 2014).

5.5.3 NON-MATERIAL COSTS PER UNIT

The amounts of non-material cost per unit concerns the value-added processes that incur costs per plastic case at the FTZ warehouse. To circumvent the regulation regarding minimum operations and processes regarding the retail packaging, the author argues that four value-added processes connected to packaging processes can be conducted in the FTZ warehouse to create a substantial transformation. As seen in Table 11 below, the process of placing plastic cases into retail packaging can be divided into four separate processes that each incurs an increase in the non-material cost per unit.

First, the plastic cases will undergo incoming inspection, quality control, and reliability testing to find any damaged or unusable units. Second, prepackaging processes, such as cleaning and preparing the plastic cases for the packaging process, can be applied to increase the non-material cost per unit. Third, the packaging process will place the plastic cases in retail packaging, and fourth, the export processes will prepare the plastic cases for export to Krusell Sweden. This includes finalizing export boxes, creating air waybills, and preparing consolidation with manufactured goods from the manufacturing plant in Ayutthaya.

Table 11: Value-added processes at the FTZ warehouse

(1) Inspection processes	Incoming inspection and reliability testing of the plastic cases.
(2) Prepackaging processes	Cleaning the plastic cases and coating with substances so the plastic cases will be less prone to smudges and dirt.
(3) Packaging processes	Place the plastic cases in retail packaging: blister packaging and outer box.
(4) Export processes	Prepare the finished plastic cases for export to Sweden.

Source: author's own table and suggestion

Therefore, the non-material costs arise from the use of the FTZ warehouse. First, labor costs are calculated at an estimated THB 20.08 per plastic case. These labor costs are associated with teaching externally hired workers/porters to do the value-added processes in Table 11. This figure was given in interviews with Jiraboonpong (2014), Rojanavisas (2014), and Loichollamas (2014) at Best Global Logistics and is an acceptable estimation of labor costs when calculating local content.

Second, the FTZ warehouse costs are THB 4.91 per plastic case. This includes labor costs for inspection, prepackaging, packaging, and export processes related to physical value adding. In addition to the labor costs, the FTZ warehouse costs include storage services, document handling for cargo to and from the cargo center warehouse, space rental charge for value-added activities, throughput service charges, manpower services, and transport services.[29] Therefore, the total non-material cost is a total of THB 24.79 per plastic case. This is calculated by the total daily rent cost for the FTZ warehouse divided by 5,000 imported plastic cases.

Table 12: Regional value content variables in THB

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[29] See Appendix A3 for the cost structure of renting a FTZ warehouse.

Originated materials per unit					
Blister	6,28				
Outer box	5,33				
Retail hook	0,94				
Total	**12,55**				
Non-originated materials	Country of origin	Tariff no	EXW price	Freight	CIF price
Plastic case	China	392690	31,38	4,71	36,09
Non-material costs per unit					
Labor	20,08 *(Per unit and day)*				
Free zone cost	4,91 *(Per unit and day)*				
Total	**24,79**				
Profit per unit	**14,75**				
Export costs per unit					
Ex-factory price	88,18 *(Price for one wholly-manufactured plastic case)*				
Cost of transportation	0,63 *(Shipper door to Bangkok airport)*				
FOB price	88,81 *(Price that Krusell Sweden pays including freight in Thailand)*				
CPT price	94 *(Price that Krusell Sweden pays including freight in Thailand and Sweden)*				
Local content requirement	**≥50%**				

Source: Beck (2014), Samart (2014), Jiraboonpong (2014), Rojanavisas (2014), Loichollamas (2014), Tangwongtrakul (2014), author's own table

6 ANALYSIS OF THE EMPIRICAL STUDY

The chapter presents the analysis regarding local content calculation and continues with the financial feasibility of the proposed concept. It elaborates on its costs and benefits compared to the currently used concept. Last, a discussion regarding the longevity of the proposed concept is presented.

6.1 INTRODUCTION TO THE LOCAL CONTENT ANALYSIS

The coming sub-chapter will analyze the regional value content variables that are needed for the finished plastic cases to change it´s of origin. To avoid currency exchange issues, the calculation will be in THB currency and will be based on 5,000 plastic cases per shipment.

6.1.1 LOCAL CONTENT CALCULATION

To calculate the Thai local content for the plastic cases, the Thai-originating packaging material and the cost per unit of the value-added processes at the FTZ warehouse, including gained profit, need to be divided by the ex-factory price that Krusell Sweden pays for the plastic cases. As illustrated in the empirical framework, the costs for the Thai-originating materials are THB 6.28 for the blister (plastic) tray and top, THB 5.33 for the outer box of printed paper, and THB 0.94 for the retail hook including barcodes and stickers. The total cost for the Thai-originating material is THB 12.55. Non-material costs, such as labor costs and value-added processes conducted at the FTZ warehouse, totals to THB 20.08 and THB 4.91. Finally, the profit is THB 14.75 per plastic case and the ex-factory price is THB 88.18[30].

Equation 2: Local content calculation

$$\text{originated materials } (6,28 + 5,33 + 0,94) + \text{ non material cost } (20,08 + 4,91) + \text{ profit } (88,18 - 36,09 - 12,55 - 24,79) / \text{ Ex factory price } (88,81 - 0,63) = \mathbf{59}\%$$

Equation 3: Imported content calculation

$$\text{non originated materials } (31,38 + 4,71)/\text{Ex factory price } (88,81 - 0,63) = \mathbf{41}\%$$

The local content calculation illustrates that the plastic cases have a Thai local content of 59 percent. As a result, the local content is 9 percentage points over the local content requirement of 50 percent. The import content (non-originating material) is calculated at 41 percent. This is calculated by the CIF value of the non-originating plastic case divided by the ex-factory price that Krusell Sweden pays for one plastic case.

It should be noted that by removing the estimated labor cost of THB 20.08 per plastic case and only take into consideration the labor cost portion that is included in the FTZ warehouse cost, the local content will be the same. For instance, the estimation can be removed for in the future the employees

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[30] FOB price minus inland freight cost from FTZ warehouse to airport.

at the FTZ warehouse will have learned to efficiently add the value added processes. Therefore the estimated labor cost of redesigning products and manufacturing processes that the delayed differentiation strategy brings will be reduced after the initial learning curve.

The break-even point where the local content is equal to the imported content is when the imported content has a CIF value of THB 44.09. Therefore, the local content would not be sufficient if the non-originating materials i.e. the plastic cases CIF value is greater than THB 44.09.

Equation 4: Break-even point for local content

$$\text{originated materials } (6{,}28 + 5{,}33 + 0{,}94) + \text{ non material cost } (20{,}08 + 4{,}91) + \text{ profit } (88{,}18 - \mathbf{44{,}09} - 12{,}55 - 24{,}79)/\text{Ex factory price } (88{,}81 - 0{,}63) = \mathbf{50}\%$$

Equation 5: Break-even point for imported content

$$\text{non originated materials } (\mathbf{44{.}09})/\text{Ex factory price } (88.81 - 0.63) = \mathbf{50}\%$$

As mentioned in the empirical framework, Krusell Thailand can manufacture the retail packaging in-house with a cost reduction from THB 12.55 to THB 9.41 per unit. The author argues that if the cost of originated materials decreases, the local content may decrease. For example, a THB 3.14 cost reduction for the packaging will result in a local content of 55.5 percent, or a decrease of 3.5 percentage points if all other variables are unaltered. This could happen at an initial stage due to the costs of redesigning products and manufacturing processes that the delayed differentiation strategy incurs. However, if the profit increases by the same amount as the cost reduction, then the local content will be unaffected (59 percent).

Equation 6: Local content calculation with manufacturing packaging in-house

$$\text{originated materials } (\mathbf{9{,}41}) + \text{ non material cost } (20{,}08 + 4{,}91) + \text{ profit } (88{,}18 - 36{,}09 - \mathbf{9{,}41} - 24{,}79)/\text{Ex factory price } (88{,}81 - 0{,}63) = \mathbf{59}\%$$

However, the biggest increases in the local content can be gained by reducing the value of the imported content. As presented in the empirical framework, the estimated import freight cost is THB 4.71 per plastic case. However, the author would argue that the estimation can be reduced and replaced with an actual freight value. When calculating the freight cost per imported plastic case, it results in a freight cost of THB 1.87 i.e. a 60 percent decrease when compared to the estimated freight costs. Therefore, the CIF price for one imported plastic case will be THB 33.17 i.e. an 8 percent decrease compared to the original CIF price. When calculating the Thai local content with the new CIF price, it can be seen that the profit increases due to the reduced freight costs. As a result, the local content increases by 3 percentage points.

> **Equation 7: Freight cost per unit**
>
> Units per shipment (5,000)/Units per box (321) = Boxes per shipment (16)
>
> Boxes per shipment (16) × dimensional weight (7,88) × freight cost per kilo (74) = Freight cost per shipment (9,329.92)
>
> Freight cost per shipment (9,329.92)/Units per shipment (5,000) = Freight cost per unit ($\mathbf{1,87}$)
>
> **Equation 8: Local content calculation with actual import freight cost**
>
> originated materials (6,28 + 5,33 + 0,94) + non material cost (20,08 + 4,91) + profit (88,18 − 31,38 − $\mathbf{1,87}$ − 12,55 − 24,79)/ Ex factory price (88,81 − 0,63) = $\mathbf{62}$%

To conclude the local content calculations, the author will argue that the Thai local content is high enough in all presented scenarios in order for the plastic cases to be eligible for a change of origin.

6.2 INTRODUCTION TO COST-VOLUME AND COST-BENEFIT ANALYSIS

The following sub-chapters apply the theories of cost-benefit and cost-volume analysis from the theoretical framework and illustrate the financial costs and benefits of the proposed concept and compare it to the current exports from China to Sweden. In regards to cost-volume analysis. The coming sub-chapters will analyze the minimum volume of plastic cases that are needed to mitigate the costs that the proposed concept generates. The same costs are used in the calculations for the cost-benefit analysis.

6.2.1 TRANSPORT AND DUTY COSTS

The Swedish import duty on shipments from China is higher than the import duty on shipments from Thailand. Since the plastic cases have gained a Thai country of origin, the units will become duty exempted when exported to Sweden, thus reducing the original import duty by 6.5 percentage points. However, the 14.85 percent increase in transport costs in the proposed concept inadvertently reduces the benefits of a Thai country of origin and the reduction of import duty. For the proposed transport route to be financially feasible concerning transport costs, the sales value of a shipment needs to be high enough for the reduction of import duty to balance out the increased transport costs. A shipment with a weight of 500–1000 kg requires that the goods have an EXW sales value of THB 205,660. It is at this value that a shipment reaches the break-even point at which the proposed transport route has a comparable total transport cost (including duty) with the exports from China to Sweden.

Table 13: Total shipment cost including duty (break-even point) in THB (SEK)

	China–Sweden	China–Thailand–Sweden	Difference
Total transport cost	160,220 (32,040)	184,000 (36,800)	+ 23,780 (+4,756)
Value of goods (break-even point)	205,660 (41,132)	205,660 (41,132)	0 (0)
Customs charge (duty)	23,782.2 (4,756.44) (6.5%)	0 (0) (0%)	−23,782.2 (−4,756.44)
Total shipment cost in THB	**184,002.2**	**184,000**	**−2.2**
Total shipment cost in SEK	**36,800.44**	**36,800**	**−0.44**

Source: Cargo-Partner Logistics (2013), Weiss Rohlig (2014), Triple I Interfreight (2014), Swedish Customs (2014), Thai FTA (2014), author's own table including customs charge calculation

For Krusell Thailand to reach the break-even point, the company will need to export a minimum of 2,260 wholly finished plastic cases to Krusell Sweden. However, even if the break-even point is reached, there is a problem with the low weight of the plastic cases. A shipment size of 2,260 units will fit in eight export boxes with a gross weight of 63.04 kg[31]. As mentioned previously, the minimum manufacturing quantity is 5,000 units, and at this quantity, the shipment will fit in 16 boxes with a gross weight of 126.08 kg. As a result, neither of the shipments are heavy or large enough to reach the air freight rate of THB 74 per kg that is offered for shipments that weigh over 500 kg. If the shipment is not consolidated with other products, it will incur increased freight costs when imported to Thailand. Therefore, the shipment needs to be consolidated in China to increase the shipment size and to benefit from a reduced air freight rate.

As seen in Table 14 below, when importing 5,000 units of plastic cases, the EXW sales value of the shipment when the plastic cases are wholly finished is THB 455,000. The value is high enough for the tariff rates on shipments from Thailand to Sweden to mitigate and exceed the 14.85 percent increase in transport costs. In financial terms, compared to the current China to Sweden concept, the proposed concept generates monthly savings of THB 16,209.3 and the annual savings around of THB 194,511.6.

Table 14: Transport cost savings in THB (SEK)

	China–Sweden	China–Thailand–Sweden	Difference
Total transport costs	160,220 (32,040)	184,000 (36,800)	+23,780 (+4,756)
Value of goods	455,000 (91,000)	455,000 (91,000)	0 (0)
Customs charge (duty)	39,989.3 (7,997.86) (6.5%)	0 (0) (0%)	−39,989.3 (−7,997.86)
Total shipment cost in THB	**200,209.3**	**184,000**	**−16,209.3**
Total shipment cost in SEK	**40,041.86**	**36,800**	**−3,241.86**
Potential savings	**Monthly savings**	**Annual Savings**	
	16,209.3 (3,241.86)	194,511.6 (38,902.32)	

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[31] Calculated by dimensional weight (7.88 kg) since it is higher than the actual box weight (4.6 kg).

6.2.1.1 CONSOLIDATING GOODS

As mentioned in the sub-chapter above, the issue for the plastic cases is the weight and size of the shipments. To qualify for the air freight rates presented in the empirical framework, the gross weight of a 5,000-unit shipment needs to exceed 500 kg for export from China to Thailand and 1000 kg for transport to Sweden. Therefore, the imported plastic cases need to be consolidated. The consolidation needs to be done both in China and Thailand for the goods to reach the minimum shipment size and weight. The plastic cases in China can be consolidated with any of the three shipments exported to Thailand each month. Consolidation processes in Thailand can be done with the goods from the manufacturing plant in Ayutthaya. Goods from Thailand to Sweden are shipped three times per week (Monday, Wednesday, and Friday). Therefore, the plastic cases needs to be wholly finished and ready for export on the same days that goods are exported from the manufacturing plant. If not, the transit time will increase in connection to a possible need for storage. Since the transit time from China to Thailand is one day, the import of the semi-finished plastic cases should be done a day before the shipments from Thailand are sent to Sweden. However, this depends on the volume of the plastic cases and the time it takes to finalize them at the FTZ warehouse.

Consolidating the plastic cases into shipments that are over 1000 kg will mitigate the issue of low weight and result in the monthly and annual savings potential presented in the sub-chapter above. However, if the consolidation only increased the shipment weight to 999 kg, the air freight cost from Thailand to Sweden would increase by 3.6 percent, or THB 4 per kg. This will reduce the annual savings potential by roughly 25 percent. As a result, the break-even point increases by 30 percent, from THB 207,250 to THB 270,000. Therefore, consolidating the plastic cases with a shipment that is equal to or less than 999 kg will reduce the monthly savings by THB 4,000 with an annual reduction of THB 48,000.

Table 15: The financial effects of consolidating goods in THB (SEK)

Shipment weight	TH–SE air freight rate	% increase	Break-even point	% increase	Monthly savings potential	Annual savings potential
Consolidation (1000+ kg)	110 (22)	-	207,250 (41,450)	-	16,209.3 (3,241.86)	194,511.6 (38,902.32)
Consolidation (500–999 kg)	114 (22.8)	+3.6	270,000 (54,000)	+30	12,209.3 (2,441.86)	146,511.6 (29,302.32)

6.2.2 LABOR COSTS AT THE FTZ WAREHOUSE

A subject worth discussing is FTZ warehouse labor costs. The labor cost for a supervisor is THB 1,000 per day, or THB 200 per hour. For loaders/porters, the daily rate is THB 400, or THB 100 per hour. The analysis show that the daily labor rate is cheaper than the hourly rate if processing and adding value to the plastic cases takes longer than four hours per day. There are many ways to calculate labor costs. For example, one estimation is that six workers/porters at the FTZ warehouse could finalize 2,260 plastic cases per day. Thus, each worker could finalize 47 plastic cases per hour. A second way to calculate the labor cost would be to use a reference point. For example, a worker at the manufacturing plant in Ayutthaya can package two plastic cases per minute, or 120 per hour. As a result, six workers/porters would be able to finalize the plastic cases in under three hours (2.77 hours).

In the two examples above, the difference in labor costs is quite noticeable. If calculating the workload with 47 plastic cases per hour, the daily labor cost would be THB 3,400 for six workers/porters and one supervisor. However, calculating with 120 plastic cases per hour would result in the hourly rate being cheaper than the daily rate. Since the finalizing of the plastic cases would only take about 3 hours, the hourly cost per day would be 76 percent cheaper. As a result, the total cost would be THB 800. Moreover, the supervisor cost of THB 1000 can be mitigated by sending a supervisor from Krusell Thailand to instruct the workers/porters instead of hiring one from the FTZ operator. However, the latter example of 120 plastic cases per hour gives an embellished picture of reality. First, the labor cost is highly affected by the volume of goods and the complexity of adding value. Second, the reference point of finalizing 120 plastic cases per hour is for packaging only. When taking into account inspection processes, prepackaging processes, packaging processes, and export processes, the rate at which the plastic cases can be finalized will diminish. Therefore, the first labor cost calculation gives the more accurate estimation.

More workers/porters will be needed if Krusell Thailand imports 5,000 plastic cases to gain the savings potential presented in the sub-chapter above. To reach the rate of 47 plastic cases per hour, there needs to be 14 workers/porters working at the FTZ warehouse. This workforce would be large enough to finalize 5,000 plastic cases in one day. The daily labor rate for the workers/porters will be THB 5,600 in addition to the optional cost of THB 1,000 for hiring an external supervisor.

Table 16: FTZ warehouse cost for adding value to 5,000 units in THB (SEK)

Storage services	
Normal cargo/express cargo	88,26 (17,65) per day (optional)

Document handling for cargo to/from cargo center warehouse	
Normal cargo/express cargo/value-added activity cargo	100,00 (20) per HAWB

Space rental charge for value-added activities	
Daily rate	12,000 (2,400) per day
Monthly rate	126,000 (25,200) per month

Throughput Service Charges	
Break down service	50,43 (10.09)
Build up service	50,43 (10.09)
Forklift capacity 2.5 tons and 7 tons	500,00 (100) per hour (optional)
Handlift	200,00 (40) per hour (optional)

Manpower Services	
Supervisor: daily labor rate	1 x 1,000 (200) per day = 1,000 (200) (optional)
Loader/porter: daily labor rate	14 x 400 (80) per day = 5,600 (1,120)
Overtime charge	150,00 (30) per hour (optional)

Transport Services	
Van/truck @ 100–200 kg	100,00 (20) per one way trip
Total cost daily:	**18,300 (3,660)**
Total cost monthly:	**131,900 (26,380)**

Source: AOT Free Zone (2014), author's own table

6.2.2.1 THE COST OF RENTING A FTZ WAREHOUSE

Table 16 above presents the FTZ warehouse costs for adding value to 5,000 units. Breaking down the costs includes 14 loaders/porters, forwarding services at the FTZ, warehouse equipment rental costs, and document and storage services costs. Excluding the optional costs presented in Table 16 above, the monthly costs for the FTZ warehouse would be THB 131,900 or THB 18,300 daily. The optional costs can increase the total costs by THB 700 per hour for renting a forklift and a handlift. Overtime charges are THB 150 per hour and storage services are THB 88.26 per day for the 5,000 units.

A question that needs to be answered is whether the FTZ warehouse should be rented on a monthly basis or per day. For both renting options, an equal amount of services is offered. If rented on monthly basis, there is a risk that the FTZ warehouse will be underutilized during the majority of the month. If the plastic cases are the only products that will undergo value-added processes at the FTZ warehouse, then the risk of underutilization is high. If rented on a monthly basis, there would be a need to conduct complementary services to spread out the fixed costs to several processes. One proposal is that return shipments sent to Krusell Thailand from customers (goods that have been damaged or need to be changed) can be stored at the FTZ warehouse temporarily until the issues have been resolved. Moreover, another proposal is to store finalized goods from Chinese suppliers that are going to

customers in the Asia-Pacific region. As a result, the goods will be duty and VAT exempted in Thailand since they will have only been temporarily imported to the country.

6.2.3 TRANSIT AND LEAD TIME

The analysis illustrates that the proposed transport route from Thailand to Sweden is faster than the China to Sweden counterpart (at least theoretically). The transit time for Thailand to Sweden (excluding value-added processes) is two days faster than from China to Sweden. However, the actual transit time from Thailand to Sweden will be on par with the transit time from China to Sweden. As presented in the sub-chapter above, at least one day will be needed to add value to the imported plastic cases at the FTZ warehouse. Moreover, the transit time in Thailand will be between one to two days, depending on when and if the plastic cases can be consolidated with other manufactured goods. Therefore, the proposed transport route has an initial transit time of three days plus at least one to two days of processing at the FTZ warehouse in Thailand, for a total of four to five days. Moreover, it should be noted that the proposed concept will not affect the manufacturing lead time. This is because the manufacturing of plastic cases and retail packaging can be manufactured in parallel to each other. Therefore, the lead time regarding manufacturing will be on par with the proposed concept.

Table 17: Transit time for air shipments to Sweden

Exporting country	Importing country	Transit time (days)
China	Sweden	5
China	Thailand	1 (+1 to 2 days of processing and consolidation in Thailand)
Thailand	Sweden	2

Source: Samart (2014), Triple I Interfreight (2014), Jerkhage (2014a), author's own table

6.2.4 CENTRALIZING THE MANAGING OF PACKAGING INVENTORIES

In 2012, packaging write-offs were THB 652,150 as a result of the current decentralized management of packaging suppliers in both China and Thailand. The current value of the non-moving packaging stock is THB 260,860. Therefore, the current write-off risk amount is 40 percent of the 2012 write-offs. The author's estimation is that the write-offs for 2014 will be on a similar level as the 2012 write offs, or THB 626,064.

The delayed differentiation and concurrent and parallel processing strategy, i.e. centralizing and manufacturing packaging in-house will result in reduced write-offs. New packages can be designed to be universal to create product uniformity. Moreover, removing the four packaging suppliers in China and the four in Thailand will create reduce the overall complexity of handling eight packaging suppliers. Therefore, it is estimated that a centralization and manufacturing of packaging in-house will reduce write-offs by 50 percent, or THB 326,075.

If the manufacturing of packaging is moved in-house, the manufacturing cost of each package will be reduced from THB 12.55 to 9.41, a 25 percent reduction. Therefore, finalizing 5,000 plastic cases at the FTZ warehouse will result in monthly cost reductions of THB 15,700 on packaging. Annually, this would result in cost savings of THB 188,400.

6.3 SUMMARY OF TOTAL COST SAVINGS

To summarize, the total cost savings generated by the proposed concept will depend on the amount of plastic cases imported. As presented in the sub-chapters above, 2,260 plastic cases are needed to reach the break-even point. However, the actual volume that will be imported to the FTZ warehouse will be on par with the MOQ from the Chinese suppliers, or more than 5,000 plastic cases. Shipment costs are 14.85 percent higher in the proposed concept. As a result, importing 5,000 plastic cases each month to the FTZ warehouse will increase the transport cost to THB 285,360 higher than the original concept. However, the reduction of duty costs for the proposed concept will be THB 479,871.6, thus mitigating the increased transport cost. If the packaging is manufactured in-house, then the annual packaging cost will be reduced with THB 188,400. Moreover, by removing the eight packaging suppliers located in China and Thailand, the packaging write-offs are estimated to be reduced by 50 percent, or THB 326,075. The total cost for the FTZ warehouse will be THB 219,610.32 for rental on a per day basis, with 14 workers/porters able to finalize 5,000 plastic cases each day.

Table 18: Cost savings for monthly shipments in THB (SEK)

Costs	Proposed concept	Original concept	Difference
Shipment costs	2,208,000 (441,600)	1,922,640 (384,528)	+285,360 (+57,072)
Duty costs	Duty exempted	479,871.6 (95,974.32)	−479,871.6 (−95,974.32)
Write-offs	326,075 (65,215)	652,150 (130,430)	−326,075 (−65,215)
Packaging costs	564,600 (112,920)	753,000 (150,600)	−188,400 (−37,680)
FTZ warehouse costs	219,610.32 (43,922.064)	Not applicable	+219,610.32 (+43,922.064)
Total cost	**3,318,285.32 (663,657.064)**	**3,807,661.6 (761,532.32)**	**−489,376.28 (−97,875.256)**

Source: Cargo-Partner Logistics (2013), Weiss Rohlig (2014), Triple I Interfreight (2014), Swedish Customs (2014), Thai FTA (2014), Beck (2014), Samart (2014), author's own table including calculation

As seen in Table 18 above, the proposed concept will generate cost savings of approximately half a million THB. However, the author will argue that importing and adding value to 5,000 plastic cases each month is not a realistic scenario. Instead, a feasible scenario based on product demand would be to import 5,000 plastic cases every second month (six times per year) with a total of 30,000 units annually. As a result, all costs except the write-offs will be cut by half, as can be seen in Table 19 below.

Table 19: Cost savings for six shipments per year in THB (SEK)

Costs	Proposed concept	Original concept	Difference
Shipment costs	1,104,000 (220,800)	961,320 (192,264)	+142,680 (+28,536)
Duty costs	Duty exempted	239,935.8 (47,987.16)	−239,935.8 (−47,987.16)
Write-offs	326,075 (65,215)	652,150 (130,430)	−326,075 (−65,215)
Packaging costs	282,300 (56,460)	376,500 (75,300)	−94,200 (−18,840)
FTZ warehouse costs	109,805.16 (21,961.032)	Not applicable	+109,805.16 (+21,961.032)
Total cost	**1,822,180.16 (364,436.032)**	**2,229,905.8 (445,981.16)**	**−407,725.64 (−81,545.128)**

Source: Cargo-Partner Logistics (2013), Weiss Rohlig (2014), Triple I Interfreight (2014), Swedish Customs (2014), Thai FTA (2014), Beck (2014), Samart (2014), author's own table including calculation

Importing 5,000 plastic cases to the FTZ warehouse six times per year will generate an annual cost savings of around THB 400,000. This is a 17 percent decrease from the monthly shipment example. Moreover, the financial gains generated from the reduced duty costs covers about 95 percent of all costs (shipment costs and FTZ warehouse costs). For the duty reduction to wholly cover all costs connected to the proposed concept, roughly 5,354 (354 more) plastic cases need to be imported. Therefore, the proposed concept has two break-even points. First, the break-even point where the reduction of duty covers the increased transport cost for the proposed concept (2,260 plastic cases). Second, the break-even point where the reduction of duty covers all costs connected to the proposed concept (5,354 plastic cases). The latter break-even point is a 7 percent increase from the MOQ.

Table 20: Break-even points for six shipments per year in THB (SEK)

Imported units	Duty reduction	Transport cost increase	Profit	FTZ warehouse cost	Profit
2,260	142,693.2 (28,538.64)	142,680 (28,536)	+13.2 (+2.64)	109,805.16 (21 961.032)	-109,791.96 (-21,958.39)
5,354	252,499.26 (50,499.85)	142,680 (28,536)	+109,819.16 (21,963.85)	109,805.16 (21,961.032)	+14 (+2.8)

Source: Cargo-Partner Logistics (2013), Weiss Rohlig (2014), Triple I Interfreight (2014), Swedish Customs (2014), Thai FTA (2014), Samart (2014), AOT Free Zone (2014), author's own table including calculation

To conclude, the proposed concept generates two types of costs. First, is in regards to transport cost. Second, is generated from the renting and value added processing at the FTZ warehouse. However, it creates benefits such as; reduced duty costs to Sweden, reduced estimated write-offs and a reduction in the manufacturing costs of packaging if it is moved in-house. Therefore, the benefits outweighs the costs and the analysis illustrates that the proposed concept is financially feasible.

6.4 THE ASIAN NOODLE BOWL & THE LIFE-SPAN OF THE PROPOSED CONCEPT

As previously mentioned, the proposed concept adopts a delayed differentiation and concurrent and parallel processing strategy that connects the plastic case suppliers in China with the FTZ warehouse in Thailand. A question that rises is if the proposed concept is implemented, for how long will it be applicable and financially feasible for Krusell Thailand?

Since the Asian noodle bowl effect creates complex ROOs, it is worth conducting an analysis regarding the life span of the proposed concept to see how present and future external influences can create benefits or disadvantages on an intergovernmental as well as industry-specific level.

One thing that can hinder the life span of the project is the effect of the abolishment of the GSP on China and Thailand. As previously discussed, the loss of the GSP for China will only affect the country's trade picture on a small scale. However, the impact that will affect Thailand will be of a much larger magnitude. After 2015, the trade picture of China and Thailand could be altered so that the proposed concept might be inapplicable. The loss of the GSP will increase the tariff rates between Thailand and the EU. As a result, the current beneficial discrepancy regarding tariff rates on China and Thailand when exporting goods to the EU may well be removed. However, the author sees two future scenarios that could increase the longevity of the research and its applicability. These will be presented below.

6.4.1 THE IMPLEMENTATION OF A FTA BETWEEN THAILAND AND THE EU

As previously mentioned, the second summit regarding the negotiation on a FTA between Thailand and the EU has already been conducted, and there is a chance that the parties might come to an agreement in the coming years. Moreover, trade talks regarding a FTA between China and the EU have not been fruitful. As long as the creation of a FTA between China and the EU is incomplete, it will positively affect the longevity of the proposed concept because the discrepancy regarding tariff rates on China and Thailand will be sustained. If a FTA between Thailand and the EU is established, this could create an even greater incentive for implementing the proposed concept because the implementation of a FTA can match and even exceed the current reduction of tariff rates under the GSP.

6.4.2 THE IMPLEMENTATION OF A FTA BETWEEN AEC AND THE EU

A similar scenario could improve Thailand's trade picture after the abolishment of the GSP in 2015: if the AEC and the EU conducted trade talks regarding the creation of a FTA or the establishment of bilateral trade agreement organized by the WTO. In the future, the establishment of a trade agreement could mitigate the increased tariff rates. However, it remains to be seen if the implementation of the AEC will be successful. Trade talks with the EU will only work if the member states of the AEC meet

the requirements stated in the AEC blueprint. If they fail to comply, the goal of creating an economic union will be hindered, and as a result, Thailand's tariff rates will increase, thus decreasing the longevity of the proposed concept.

Even if Thailand or the AEC establishes a FTA with the EU, there is a risk that the act further induces the proliferation of FTAs in the world and the development of overlapping and complex rules regarding country of origin and tariff rates. On one hand, the benefit of reduced tariff rates might be sustained. On the other hand, the complex interpretation of the ROO might affect the application of the proposed concept. For example, this will be especially noticeable if the AEC does not come to an agreement regarding one ROO and instead permits the member states to develop their own.

As mentioned in the theoretical framework, Chirathivat and Srisangnam (2013) argues that a reduction of the most-favored-nation tariff rate for the ASEAN member states might subside the Asian noodle bowl effect. The author would argue that the same reduction might prove to be beneficial for the members of the AEC. Following the statement in the paper written by the Asian Development Bank (2013), in order to reduce the Asian noodle bowl effect, countries need to eliminate non-discriminatory preferences to non-members. A noticeable effect would be the reduction of different levels of tariff rates. However, that would also result in that the proposed concept would lose its benefit that is gained from the different levels of tariff rates that exists between countries. Therefore, the author would argue that the Asian noodle bowl effect both creates issues and benefits on an industry-specific level. On one hand, it creates complex ROOs. On the other hand, it sustains different levels of tariff rates between countries that are included in FTAs and countries that are not. In turn, this results in that the proposed concept can gain the benefits of reducing duty costs when changing the origin of the manufactured goods.

7 CONCLUSION

The chapter presents concluding remarks on the proposed concept and the research questions and continues with a discussion regarding future research areas to further investigate the topic.

7.1 RESEARCH QUESTION ONE

How does the Asian noodle bowl effect create issues on an intergovernmental as well as industry-specific level?

The Asian noodle bowl effect creates issues on an intergovernmental as well as industry-specific level. On an intergovernmental level the effect contributes to an abundance of FTAs that overlap with each other. In turn, this creates complex ROOs that have differences in the interpretation of the rules, depending on which country and connected FTA that is looked upon. On an industry-specific level, the complexity of ROOs creates challenges when defining the origin of goods. This is especially noticed when the manufacturing stages are extended to include several countries. Moreover, the effect creates discrepancies in tariff rates when comparing members of FTAs with non-members. As mentioned in the previous chapter, this results in that the proposed concept can gain its benefit by generating cost savings derived from the discrepancy of duty levels that exists between FTA members and non-members.

7.2 RESEARCH QUESTION TWO

Is there a way for manufacturing companies to circumvent the Asian noodle bowl effect by adopting new manufacturing strategies?

Krusell Thailand can circumvent the Asian noodle bowl effect by applying a delayed differentiation and concurrent and parallel processing strategy. This is achieved by extending the manufacturing stages to include the plastic case suppliers in China and the FTZ warehouse in Thailand. As previously mentioned, the proposed concept and the value addition in the FTZ warehouse is be sufficient enough for the finished plastic cases to be eligible for a Thai country of origin. This is because of the 63 percent Thai local content that the value addition incurs. Therefore, the proposed concept will reduce the tariff rates for the plastic cases and increase the profit when compared to the current exports from China to Sweden.

7.3 RESEARCH QUESTION THREE

How do the costs and benefits of the proposed concept compare to the current exports from China to Sweden?

The proposed concept generates costs and benefits compare to the current exports from China to Sweden. It has been previously mentioned that increased transport costs and FTZ warehouse costs are generated from the proposed concept.

The transport costs are increased in the proposed concept but can be mitigated by reaching a break-even point where the duty reduction mitigates the increased transport costs. However, there is a need to consolidate the plastic cases with other shipments to increase the volume weight. As presented previously, a MOQ shipment with 5,000 plastic cases weighs too little to be eligible for preferential air freight rates, thus making consolidation a necessity to keep transport costs at a financially feasible level. Therefore, the need to consolidate the plastic cases in both China and Thailand creates challenges in the planning of manufacturing and transport processes. The proposed concept alters the Krusell Thailand's supply chain in several ways. By using a FTZ warehouse for value-added processes in Thailand, the physical characteristics of the transport route is extended and entails several different forwarding companies during transport to Sweden. Moreover, the physical characteristics of the proposed transport route and manufacturing strategy will not negatively affect the transit- and lead-time, i.e. it will be on par with the current concept.

Turning the scope to the manufacturing and value-added processes conducted in the FTZ warehouse, it can be seen that it increases administrative and physical activities in comparison to the original concept. For example, import and export processing of goods, value-adding activities, and manufacturing processes are all administrative and physical activities that are not present in the original concept. Physical alterations of the supply chain can be seen regarding the value-adding processes that will occur at the FTZ warehouse. Since the plastic cases will be exported semi-finished from China and finalized in Thailand, the delayed differentiation and concurrent and parallel processing strategy will incorporate both the plastic case suppliers in China and Krusell Thailand. Therefore, both parties will add value to the semi-finished product at different stages of the supply chain for it to be wholly manufactured.

The main benefit is that the proposed concept can circumvent the issues that the Asian noodle bowl effect creates. As a result, benefits can be seen in reduced write offs, duty exempted goods, and packaging costs. The option to remove packaging suppliers in China and Thailand and shift the packaging manufacturing in-house has been estimated to reduce the manufacturing cost of packaging and alter the physical flow of transports. For instance, the shift will remove all inland transportation of packaging to plastic case manufacturers in mainland China. The same results can be seen in Thailand regarding transports from the packaging supplier to the manufacturing plant in Ayutthaya. However, inland transportation of packaging from the manufacturing plant to the FTZ warehouse will be added.

Therefore, the possibility of moving the packaging manufacturing in-house, reducing the write-offs, and the duty exemption contributes to the overall financial savings pool that the proposed concept generates.

7.4 RESEARCH QUESTION FOUR

Will the reduction of duty costs be enough to mitigate direct and indirect costs that the proposed concept incurs at a given manufactured volume?

It depends on the volume of plastic cases imported. As illustrated, a shipment with 2,260 plastic cases is enough to mitigate the increased transport costs. However, this does not include the costs of renting a FTZ warehouse. However, importing 5,000 plastic cases will result in a reduction of duty costs that covers 95 percent of the costs of the additional FTZ warehouse and the transport costs. As shown in the analysis, an increase of 354 plastic cases, or a total of 5,354 units, in each shipment to Thailand will be enough to wholly cover the costs of the FTZ warehouse and the transport route. Therefore, even excluding the indirect financial gains that the reduction of packaging costs and write-offs generates, shipments with more than 5,354 plastic cases will be sufficient enough to cover all costs that the proposed concept generates.

7.5 RESEARCH QUESTION FIVE

Due to the volatile and complex trade picture that the Asian noodle bowl effect creates, what can be estimated to be the life-span of the proposed concept?

The longevity of the proposed concept is directly related to the trade picture between Thailand and China and the EU. As of spring 2014, the only thing that is certain is that the loss of the GSP for China and Thailand will increase tariff rates for products exported to the EU. The ongoing discussions about a Thai–EU FTA in connection with the AEC are still just talk, and it remains to be seen what will happen after 2015. As a result, the proposed concept might lose the advantage of the reduction of duty costs in the future. It is worth mentioning again that the implementation of the AEC might increase the Asian noodle bowl effect and induce its impact on an intergovernmental as well as industry-specific level. For example, if the member states are able to create individual rules of origins this will result in complex ROOs for industries. However, the Asian noodle bowl effect also creates benefits. By sustaining different levels of tariff rates between countries, the proposed concept can continue to maintain its advantage, thus being able to reduce the duty of manufactured goods.

7.6 RECOMMENDATIONS AND CONCLUDING REMARKS

As illustrated in the previous chapter, the delayed differentiation and concurrent and parallel processing strategy create financial gains at a given manufactured volume. The value added processes in the FTZ warehouse are sufficient to change the plastic cases' country of origin, thus the products are duty exempted when exported to the EU. As a result, the financial benefits of the proposed concept are greater than the generated costs at certain manufactured volumes.

To sum up this master's thesis, the main finding is that the proposed concept can circumvent the Asian noodle bowl effect and allow companies and industries with manufacturing located in a country disfavored by preferential trade agreements to manufacture products that can be included in such

agreements. Therefore, the author's recommendation is that Krusell Thailand tries the proposed concept during 2014 to evaluate it. Perhaps other costs and benefits will arise during a real-life test that have not been presented in this research.

However, due to the Asian noodle bowl effect, the trade picture between Southeast Asia and the European Union is volatile. As mentioned previously, the Asian noodle bowl effect and FTAs are an external factor that can either hinder or develop the proposal. For example, by 2015, the AEC will either sustain the benefits that the proposal generates or increase the Asian noodle bowl effect. On one hand, the AEX can hinder the proposal and its connected manufacturing strategy by creating individual ROOs between its member states, thus creating complex ROOs. On the other hand, it can further develop the gains generated from the proposal if the AEC establishes FTAs with non-member states that creates a beneficiary discrepancy in tariff rates between Thailand and China. Thus, the proposal might prove to be more or less beneficial in the near future.

7.7 FUTURE RESEARCH

A topic suitable for future research is how the implementation of the AEC in 2015 will affect the ROO between the member states and, in turn, how it will affect the proposed concept that the author has researched. This would be an extension of the concluding remarks concerning the abolishment of the GSP and the change of trade environment for Southeast Asian countries that will manifest in early 2015.

For instance, will the increased tariff rates for Thailand due to the loss of the GSP hinder the proposed concept? Moreover, regarding the AEC, one could ponder upon how the goal of creating an economic union will affect companies that have outsourced or offshored manufacturing from developed to developing countries. For instance, the AEC regulates minimum wages and work conditions in member states. In turn, this diminishes the financial gains that can be earned. Another interesting topic is if Thailand and the EU establish a FTA. This could result in a larger reduction of duty costs than the GSP generated. For example, Thai originating products under HS code 4202221000 with a 3.3 percent tariff rate could be duty exempted when exported from Thailand to the EU. The same product is affected by 9.7 percent duty if exported from China to the EU. Therefore, there are high savings potentials regarding duty, and a local content calculation on a product under this HS code would be beneficial to research further.

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A1: TARIFF RATES AND HS CODES FOR PRODUCTS MANUFACTURED IN CHINA

Table 21: Tariff rates for products manufactured in China[32]

HS Codes	Tariff rates China–EU	Tariff rates Thailand–EU	Tariff rates China–Thailand	Products per HS code (total 167)
3926909790	6.5%	0.0%	0.0%	79
4202121100	9.7%	3.3%	0.0%	14
4202129190	3.7%	0.0%	0.0%	2
4202221000	9.7%	3.3%	0.0%	24
4202229090	3.7%	0.0%	0.0%	1
4202310090	3.0%	0.0%	0.0%	3
4202321000	9.7%	3.3%	0.0%	29
4205009000	2.5%	0.0%	0.0%	3
7326909890	2.7%	0.0%	0.0%	2
8518309590	2.0%	0.0%	0.0%	10

Source: Thai FTA (2014), Jerkhage (2014b), Swedish Customs (2014), author's own table

Table 22: HS codes for products manufactured in China

Product groups	HS code product names	HS codes
Plastics and articles thereof	Other	3926909790
Articles of leather, saddles and harness, travel goods, handbags and similar containers, articles of animal gut (other than silkworm gut)	Executive cases, briefcases, school satchels, and similar containers	4202121100
	Other	4202129190
	Of plastic sheeting	4202221000
	Other	4202229090
	Other	4202310090
	Of plastic sheeting	4202321000
	Other	4205009000
Articles of iron or steel	Other	7326909890
Electrical machinery and equipment and parts thereof, sound recorders and reproducers, television image and sound recorders and reproducers and parts and accessories of such articles	Other	8518309590

Source: Jerkhage (2014b), Swedish Customs (2014), author's own table

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[32] This is the European HS code. The same can be seen in table 21.

Table 23: Product name and type of goods manufactured in China

Product Name:	Product Type:
Bomber headphone	Headphones
Iron Fist headphone	Headphones
Motörizer headphone	Headphones
Overkill earphone w/mic	Headphones
Trigger earphone	Headphones
Alvik messenger bag	Laptop bag
Avenyn laptop	Laptop bag
Gaia laptop	Laptop bag
Gaia slim PU	Laptop bag
Uppsala laptop bag	Laptop bag
Vaxholm laptop bag	Laptop bag
WoW base sleeve	Laptop bag
Ystad laptop bag	Laptop bag
Magnetic holders	Magnetic holders
Avenyn mobile pouch	Mobile pouch
Luna mobile pouch	Mobile pouch
ColorCover for tablet	Plastic case
ColorCover smartphone	Plastic case
ColorCover smartphone for mfX	Plastic case
ColorCover smartphone WwN	Plastic case
Donsö tablet case	Plastic case
FlipCase Malmö smartphone	Plastic case
FlipCover Boden	Plastic case
FlipCover Boden mfX	Plastic case
FlipCover Boden WwN	Plastic case
FrostCover for smartphone	Plastic case
FrostCover for smartphone mfX	Plastic case
FrostCover for smartphone WwN	Plastic case
Hector mobile case	Plastic case
Malmö tablet case	Plastic case
Uppsala tablet bag	Tablet bag

Source: Adapted from Jerkhage (2014b), author's own table

A3: COST STRUCTURE FOR RENTING A FTZ WAREHOUSE

Table 24: Cost structure for renting a FTZ warehouse

Storage services	
Normal cargo/express cargo	0.70 THB/kg/day (Minimum charge at 35 THB/day)
Valuable cargo	1.00 THB/kg/day

Document handling for cargo to/from cargo center warehouse – one-way trip charge	
Normal cargo/express cargo/value-added activity cargo	100.00 THB/HAWB
Valuable cargo	400.00 THB/HAWB

Space rental charge for value-added activities (excluding document handling fee for cargo to/from the warehouse)	
Daily rate	40.00 THB/m^2/day
Monthly rate (minimum charge at 40 m^2/ month and weight capacity at 1 ton/ m^2)	420.00 THB/m^2/month

Throughput service charges (including transporting to TMOs)	
Break down service	0.40 THB/kg
Build up service	0.40 THB/kg
Warehouse support/equipment rental charges	
Forklift capacity 2.5 tons and 7 tons	500.00 THB/hour
Handlift	200.00 THB/hour

Manpower services (Mon-Fri 8:30 a.m.–5:30 p.m.)	
Supervisor	
Daily labor rate	1,000.00 THB/person/day
Hour labor rate	200.00 THB/person/hour
Overtime charge	300.00 THB/person/hour
Loader/ Porter	
Daily labor rate	400.00 THB/person/day
Hour labor rate	100.00 THB/person/hour
Overtime charge	150.00 THB/person/hour

Transport services	
Van/Truck @ 100–200 kg	100.00 THB/one-way trip
Van/Truck @ 201+ kg	200.00 THB/one-way trip
Transporter	250 THB/one-way trip
Tractor with 4 dollies	250 THB/one-way trip

Source: Adapted from AOT Free Zone (2014), author's own table

Table 25: Product portfolio

Company	Type of goods	Country of Manufacture
Krusell	Laptop cases	China
	Tablet cases	Thailand & China
	Mobile cases	Thailand & China
	Covers	Thailand & China
	Screen protectors	Taiwan
	OEM products	Thailand
Walk On Water	Laptop/tablet sleeves	Thailand, China, & Vietnam
Motörheadphönes	Headphones	China
	Earphones (in-ear)	China
	Mobile cases	Thailand

Source: Jerkhage (2014a), Wikström (2014), author's own table

B1: INFORMATION REGARDING CONDUCTED INTERVIEWS

Table 26: Summary of interviews

Interviewee	Position	Company	Date	Type of interview
Magnus Jerkhage	Logistics Manager	Krusell International AB	1/20/14	Face-to-face
Ulf Wikström	Purchase & Order Coordinator	Krusell International AB	1/20/14	Face-to-face
Mike Meissner	Deputy Managing Director	Cargo-Partner Logistics	4/2/14	Face-to-face
Chontida Samart	Export & Import Supervisor	Krusell Thailand Co Ltd.	4/10/14	Face-to-face
Mauro Beck	CEO	Krusell Thailand Co Ltd.	4/15/14	Face-to-face
Stefan Van Der Sluys	CEO	Best Global Logistics	5/2/14	Face-to-face
Nisarasmi Tangwongtrakul,	Logistics Manager	Krusell Thailand Co Ltd.	8/2/14	Face-to-face
Jinnpatr Jiraboonpong	Vice President	Best Global Logistics	5/9/14	Face-to-face
Chollawatr Loichollamas	Customs Specialist Manager	Best Global Logistics	5/9/14	Face-to-face
Penpaka Rojanavisas	Air Freight Director	Best Global Logistics	5/9/14	Face-to-face

Source: author's own table

Figure 7: Picture of packaging excluding blister and plastic case

Source: author's own figure

Figure 8: Picture of plastic case

Source: author's own figure

Figure 9: Picture of blister (plastic) tray and top

Source: author's own figure