ABSTRACT

XIAO, RANRAN. An Examination of Apparel Source Countries’ Exports among U.S. Retail Channels and Product Types. (Under the direction of Marguerite Moore and Traci Lamar.)

In the past several decades, intensive competitive pressure in the U.S. apparel market has forced retail firms to seek suppliers that can provide better quality products at lower costs (Cho and Kang, 2001; Fredriksson and Jonsson, 2009). Although retail companies are consistently looking for suppliers that can provide goods at a low price, the final sourcing decision cannot always be determined by price alone (Chi and Kilduff, 2010). Though we know that imports account for the majority of U.S. apparel sold in mainstream retail channels, specific countries in the developing world play different roles in this market. This research provides insight into the specific efforts that developing and LDC designated countries place on apparel exports in the U.S. market.

This research provides a current analysis (i.e., 2010-2012) of the U.S. retail market’s sourcing practices by examining imports from seven predominant apparel source countries (i.e., China, India, Vietnam, Mexico, Indonesia, Bangladesh and Cambodia) that supply major channels in the U.S. retail environment (i.e., mass merchant channel, value department store channel and traditional department store channel). In addition, this research informs the academic work on global sourcing decision making as well as the continued role of Neo-classical export-led development theory within the global textile industry (Salvatore and Hatcher, 1991; Moschos, 1989; Mbaku, 1989; Balassa, 1985). The research findings reveal sourcing countries’ export efforts among large U.S. retail channels and specific product categories (i.e., woven shirts, knit shirts, denim jeans, and pants).

For this research, Decision Tree Analysis (DTA) is the specific technique used to investigate sourcing among U.S. retailers in the global apparel environment. The chi-square
automatic interaction detector (CHAID) algorithm is used to generate the sourcing origin model due to its suitability for modeling the effects of categorical predictors on a categorical dependent variable. Product-level field data from three years is used for the analysis: 2010 (N= 58,916), 2011(N= 51,745) and 2012(N= 35,231). The DTA results are presented in hierarchical form first by retail channel, and next by product type.

Consistent with the logic of export-led growth theory, the developing nations in the study with more extensive export experience including China and India are relatively more engaged in the higher value-added retail channel (i.e., traditional department channel). Likewise, LDCs including Bangladesh and Cambodia concentrated their export efforts on lower value-added channels (i.e., mass merchant channel and value department channel). Both Vietnam and Indonesia focused fragmented export efforts in various channels. Mexico indicated an emphasis on exports in relatively lower-end channels despite its proximity and favorable trade relationship with the U.S. Specific findings related to product type exports from the seven countries within each retail channel examined are presented in the study’s results. The study concludes with implications for sourcing practitioners as well as industry and academic researchers.
An Examination of Apparel Source Countries’ Exports among U.S. Retail Channels and Product Types

by
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BIOGRAPHY

Ranran Xiao came from China. After graduating from Beijing Institute of Fashion Technology, she came to the United States and finished her Master’s degree at Washington State University. Afterwards, she decided to further pursue Doctorate degree at North Carolina States University.

Ranran Xiao always has great interests in research that related with international sourcing of textile and apparel products as well as cross culture study. In the year of 2014, she had opportunity to work at an international sourcing company in the textile industry, which helped her gain knowledge of international sourcing, manufacture and production of textile product in the real industry. Upon graduation, Ranran would like to use what she had learned to help the international sourcing companies in the textile and apparel industry.
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CHAPTER 1

Introduction

In the past several decades, apparel retailers in the United States have faced increasingly intensive competition (Cho and Kang, 2001; Shelton and Wachter, 2005). This competitive pressure has forced apparel retail firms to seek suppliers that can provide better quality products at lower costs (Cho and Kang, 2001; Fredriksson and Jonsson, 2009). Today, outsourcing to China and other low-cost countries is common among U.S. companies. Outsourcing to low-cost countries is often an attempt to gain cost savings through the differences in production wages and market prices (Fredriksson and Jonsson, 2009; Greaver, 1999). In 2012, 98 percent of total U.S. apparel retail sales were generated from imported products, and over a third of these products originated from China (AAFA, 2012). In addition, due to increasing labor costs in the advancing developing economies (e.g., India and China), retailers are increasingly sourcing from lesser developed nations (AT Kearney, 2011).

A number of researchers from various perspectives suggest that factors other than cost also have influence on international sourcing partner selection (Dickson, 1966; Giunipero et al., 2006; Pressey et al., 2007), for example, factors such as quality, lead time and production facilities are also commonly considered while making sourcing decisions. (Dickson, 1966, Hathcote and Nam, 1999; Weber et al., 1991). Although retail companies are consistently looking for suppliers that can provide goods at a low price, the final sourcing decision cannot always be determined by price alone (Chi and Kilduff, 2010).
1.1 Purpose of Research:

The purpose of this study is to identify linkages between source country origin and apparel retail markets in the United States (i.e., defined at both channel and product levels), to determine the degree to which the industry sources from developing versus less developed nations (LDCs) thereby following increasingly lower income source countries, with correspondingly low labor costs. The following research objectives are stated to guide the inquiry:

**Research Objective 1**: To examine the linkage between source country of origin (i.e., China, India, Vietnam, Mexico, Indonesia, Bangladesh, Cambodia) and apparel inventory presence among leading U.S. retail channels (i.e., mass merchandiser, value department store, traditional department store) over the three-year period (2010-2012).

**Research Objective 2**: To examine the linkage between source country of origin (i.e., China, India, Vietnam, Mexico, Indonesia, Bangladesh, Cambodia) and apparel inventory presence among channels by apparel product types (i.e., knit shirts, denim jeans, pants and woven shirts) over the three year period (2010-2012).
1.2 Significance of Research:

This research provides a current view (i.e., 2010-2012) of U.S. retail market sourcing practices by examining imports from the top seven apparel sourcing countries observed in the retail environment (i.e., China, India, Vietnam, Mexico, Indonesia, Bangladesh, Cambodia). The research findings will reveal the actual source country origin of apparel products by both channel and product category. Based on a large product level dataset, multiple years of product level data (2010-2012) gathered in retail markets across the U.S. are used to investigate the study’s objective. Past research indicates that various factors influence the sourcing decision based upon the proportion of apparel imported to U.S. markets from developing countries and LDCs (Levy, 1995; Nelson and Sisk, 2005). Cost appears to continue to be a predominant factor in the sourcing decision (Fredriksson and Jonsson, 2009). The outcomes of this proposed research will reveal whether U.S. apparel imports are increasingly sourced from lower wage countries (i.e., LDCs) over the recent three year period and the specific channels and product categories in which these countries are potentially gaining import share. To this end, the research informs the academic work on global sourcing decisions as well as the continued role of Neo-classical export-led development theory within the global textile industry. From a practical perspective, the research should reveal directions for sourcing among U.S. apparel manufacturers and retailers and provide updated knowledge on sourcing trends in the global textile and apparel industry.
1.3 Structure of Research:

The dissertation is structured as follows: the literature review provides an overview of the context of study, the context includes a review of the U.S. textile and apparel trade environment, a discussion of the relationship between economic development level and export expansion, China’s sourcing environment, and U.S. apparel sourcing from other developing nations and less developed nations (LDCs). Next, the academic literature related to Neo-classical economic theory is reviewed due to its relevance to the research justification and objectives. In addition, strategic sourcing decision factors identified in the extant literature will be reviewed. Chapter three presents the methodology for addressing the research purpose and objectives including a description of the secondary data, measures and analyses. Chapter four presents the data analysis and findings based upon the research design while chapter five presents the research discussion, conclusions, limitations and recommendations for future inquiry.
CHAPTER 2

Review of Literature

Chapter two presents the review of literature that incorporates both academic and trade literature from various areas relevant to the research purpose. The review first considers literature related to the context of the study including: an overview of the U.S. textile and apparel trade. Second, theoretical literature based on neoclassical export-led growth theory including a discussion of the relationship between export expansion and level of economic development is considered for conceptual direction. Third, an overview of China’s sourcing environment as well as the sourcing environments of additional developing and LDCs who are increasing apparel exports to the U.S. are reviewed. Further, the academic work that identifies directions for source selection and strategic sourcing is also reviewed. The literature review concludes with a presentation of empirical findings related to strategic sourcing and source selection criteria within the global textile and apparel industry.

2.1 Overview of U.S. Textile and Apparel Trade

Along with the progressive liberalization of international trade over the past 50 years the United States has experienced a continuously rising trend of textile and apparel imports for domestic consumption. According to the World Trade Organization (WTO), the U.S. is the largest importer of goods in the world, accounting for 12.6 percent of the world total (IBIS World, 2014). As the world’s largest single economy, the U.S. continues to represent a key market for many exporters (Gereffi and Memedovic, 2003). Import growth increased in the early 1990s, with the initiation of the North American Free Trade Agreement (NAFTA) which aims to eliminate tariff and non-tariff trade barriers among the U.S., Canada, and
Mexico (Kilduff, 2005). NAFTA was complemented by the enhancement of the Caribbean Basin Initiative (CBI) that was introduced in the 1980s. The CBI focuses on providing preferential access to the U.S. market for apparel that is made from U.S. fabric and assembled in selected Caribbean countries (Taplin, 2003). This import growth was further accelerated by China’s entry into the WTO- at the end of 2001, by the final abolition of the import quota system under the Multi-Fiber Arrangement (MFA) at the outset of 2005, and by the ratification of the Dominican Republic-Central America Free Trade Agreement (DR-CAFTA) in late 2005 (Au and Wong, 2008).

In 2007, debt in the years following the dot com bust in the U.S. further led to a growing demand for imported cheaper goods. However, the financial downturn, decrease in US consumer spending and the negative impact of frozen credit on world trade wiped away import expansion in two short years. The financial crisis was particularly pronounced during 2009, when U.S. imports collapsed by 13.7 percent. Despite the depth of this downturn, imports rebounded 12.7 percent to near pre-recession levels in 2010 (IBIS World, 2014). As the economy recovered, U.S. consumers who were wary of unstable employment and financial conditions demanded low-priced imports from countries such as China and Mexico. The domestic economy continued to strengthen in 2014, led by increased consumer spending which is expected to drive imports up 3.0 percent to $2.51 trillion (IBIS World, 2014).

In 2013, IBIS world predicted that the United States would represent the single largest domestic market for apparel and textiles accounting for approximately 16.7 percent of total industry revenue. Further, IBIS World (2014) predicts that the U.S. gross domestic product (GDP), 70 percent of which is comprised of consumer spending, is anticipated to grow 2.7
percent. Based upon these predictions, increased domestic demand for imports is a likely
scenario in U.S. retail markets for apparel for the immediate future.

2.2 Economic Development Level and Export Expansion

According to the Neo-classical growth theory, export expansion stimulates economic
growth because it promotes specialization and raises factor productivity (Yaghmaian, 1994;
Tang, 2013). Basic neoclassical growth theory explains how a steady economic growth rate
can be accomplished with the presence of proper amounts of three driving forces: labor,
capital and technology. The basic neoclassical model of Solow and Swan (1956) has been the
foundation of economic growth theorists for several decades. With the advent of
globalization, researchers began to realize the importance of exporting as a determinant for a
country’s economic growth (Tyler, 1981; Feder, 1983).

Neo-classical growth theory has been used in a number of cross-country and time-series
analyses of trade policy and economic growth (Salvatore and Hatcher, 1991; Moschos, 1989;
Mbaku, 1989; Balassa, 1985). Although the results of these studies vary in some aspects,
collectively the findings tend to support of the export-led growth thesis. All studies have
concluded that exports lead to higher growth of economic in developing countries (Ram,

Yaghmaian (1994) proposed a model based on the neoclassical theory of export-led
growth to examine the potential positive impact of exports on economic growth. Export-led
industrialization allows for flexibility in shifting the economy’s resources as a factor that
contribute to the changing patterns of comparative advantage (The World Bank, 1987). This
changing pattern has been explained by using comparative advantage in unskilled labor-
intensive products to replace comparative advantage in land or resource intensive products.

According to this thinking, developing countries have been encouraged to concentrate in the production and export of unskilled-labor intensive products. Yaghmaian (1994) suggests that international cost competitiveness is determined by the level of development, rather than a large amount of low-skilled labor. In addition, statistics support a positive association between exports and economic growth. Study indicates both exports and economic growth can lead to economic development and structural change (Yaghmaian, 1994).

Many studies document a positive relationship between exports and economic growth (Balassa, 1978; Ram, 1985; Edwards, 1993; Crespo-Cuaresma and Wörz, 2005; Mookerjee, 2006; Rangasamy, 2009). Tyler (1981) utilizes a production function framework for a sample of 55 developing countries and generally corroborates earlier results that suggest a positive relationship between export growth and economic growth. Feder (1983) also employs a production function framework, but formally derives the externality effect of exports and finds that the export sector is more productive than the non-export sector. Furthermore, Feder’s research demonstrates that this result is driven by positive production externalities that belong to the export sector and, as such, countries that emphasize exports are expected to grow faster than those that do not emphasize exports. Frenstra and Kee (2007) find that trade liberalization leads to greater export variety, which in turn contributes to increases in total factor productivity and income per capita. Funke & Ruhwedel (2001) and De Benedictis et al. (2009) find the positive correlation between export variety and productivity also holds for both developed and developing countries.
In many middle and low income countries, the clothing sector is crucial to the industrialization process, given its low entry barriers due to low fixed costs and relatively simple technology. Due to the labor intensive nature of clothing production, the industry not only absorbed large number of unskilled, mostly female workers, but also provided upgrading opportunities into higher value-added activities, within and across industries (Hathcote and Nam, 1999). Many developing nations and less developed nations emphasized development in apparel manufacturing and have therefore become sourcing partners for the developed world (Saheed, 2012).

Over recent years, the global clothing trade environment has changed significantly. The rise of organizational buyers and their global sourcing strategies clearly lead the change (Saheed, 2012). Moreover, the expiration of the Multi Fiber Agreement (MFA) at the end of 2004 and the global economic crisis during 2008-2009 cause the downturn for the global sourcing industry (Au and Wong, 2008; IBIS World, 2014; Sheldon and Wachter, 2005). Then, the year 2010 was a year of recovery for most of the countries in the world after the global financial crisis. In 2010, U.S. production and trade started to show positive growth again (IBIS World, 2014).

Global consolidation of sourcing has increased entry barriers both at the country level and company level. At the country level, the expiration of MFA increases entry barriers, because quotas no longer secure market access for low-income countries (Au and Wong, 2008). At the company level, supply chain rationalization strategies continually emphasized by global buyers have resulted in increased entry barriers, because more capabilities and
higher standards are expected from suppliers. Therefore, firms are able to enter the supply chains of global buyers only if they can reach those rising standards (Saheed, 2012).

In addition, apparel and textile buyers raise their requirement on non-manufacturing capabilities, including input sourcing, production development and design, inventory management, logistics and communications (Timlon, 2011). These capabilities require demanding financial as well as human resources at the firm level. Meanwhile, at the country level, reliable, low cost infrastructure and supporting services, education and training facilities, and access to finance are highly requested (Au and Wong, 2008; Chi and Kilduff, 2010). Besides those challenging new development, buyers are looking increasingly to source from factories which utilize Corporate Social Responsibility (CSR) programs and fair labor practices, and at the same time, lower lead times and production flexibility (Cho and Kang, 2000; Fredriksson and Jonsson, 2009; Mainelli and Willcocks, 2009).

As aforementioned, Neo-classical theory states export driven economic growth, and could further lead to structural change of a country. In such case, when a developing or less developed nation experience structural change and transferring to a more developed nation. Will it be forced to stop rely on low skill labor intensive manufacture to develop their economic? Will this change cause trade pattern shifting in a labor intensive industry such as apparel manufacture? Those questions require further statistical analysis to answer, and Neo-classical export theory will be a helpful reference for potential interpretation of findings.
2.3 China’s Sourcing Environment

Over the past few decades, China’s progressively transition from a market driven economy to a globalized and privatized economy, has generated significant economic growth with an average annual GDP growth rate at 7 percent to 10 percent annually (Marketline, 2012). However, China’s development is highly rely on low-wage and unskilled or semi-skilled labor. The apparel industry is a typical example for this low-wage export-oriented development and has accounted for a significant part of China’s economic growth as well as job creation (Zhu and He, 2014). Data indicated that the apparel segment accounts for the remaining 49.4 percent of the total market value (IBIS World, 2014). Globally, China has the largest domestic apparel industry and is the biggest leading apparel exporter as well.,

According to data from the World Trade Organization (WTO) and IBIS World (2014) estimates, China's exports will account for 38.0 percent of the world's export trade in 2014, up from about 34.0 percent in 2009. For taking advantage of lower labor and production costs, many international apparel companies invested heavily in developing manufacturing operations in China. China's global market share increased rapidly following its accession to the WTO in 2001 and the phasing out of international apparel quotas under the General Agreement on Tariffs and Trade. Textile quotas were eliminated among WTO members on first day of 2005 in accordance with the Agreement on Textiles and Clothing (Zhao and Wang, 2009). Furthermore, to help Chinese companies develop foreign markets, the Chinese government has provided a series of preferential policies. Chinese enterprises are encouraged to establish sales networks, set up specialty stores and build delivery and research and
development centers in other countries. The government provides these enterprises with a certain amount of funds for rent, transportation, hiring of senior designers, fit-outs and other relevant purchases (Yao, 2013).

Alongside the development of the economy, wages in China are continuously raising. In addition to the growing price of labor, cost in the Chinese apparel industry is increased by factors including the appreciation of currency, inflation and rising raw materials costs (Li and Fung Research Centre 2008). On one hand, many policies have been changed to reach better corporate social responsibility (CSR) achievement, on the other hand, the unexpected external dynamics such as the slackening global demand after the 2008 global financial crisis have further exacerbated the apparel industry’s predicament (Zhu and Pickles 2013). The changing production and operation environments have reduced Chinese apparel manufacturers’ profit margin to such a degree that some have been forced to shut down, this situation create a dilemma for China’s apparel companies (Wang and Mei 2009). Furthermore, it is costly to adhere to regulations for technical and environmental standards, as well as standards relating to the workforce, such as conditions, pay and safety, which is increasingly required by western buyers (Marketline, 2012).

2.3.1 Influence of Corporate Social Responsibility

In recent years corporate social responsibility (CSR) has been given increasing importance in China and around the world (Lattemann et al., 2009; Porter and Kramer, 2006; Salam, 2009; Zhu and Pickles 2013). Specifically within China, President Hu Jintao encourages leaders to focus on sustainable development, look beyond short-term profits, put
people first and build a harmonious society (Levine, 2008). The Chinese government stated that Chinese companies cannot conduct business without social responsibilities, because it can harm the Chinese economic growth (Levine, 2008).

One of the most important policies of China’s CSR movement is the promulgation of China’s New Labor Contract Law which has been in effect since January 1, 2008. Researchers suggest that this law significantly reforms existing legislation on employment relations in mainland China (Chen and Funke, 2009). The goal of this new law is to improve employment contract systems, more specifically, improve the rights and obligations of the parties to employment contracts, protect the rights of employees, and establish stable employment relationships, which is consistent with China’s vision to become a harmonious society (Baker and McKenzie, 2007). This law has details of how the labor contracts should be written, imposed and terminated. The law covers non-competition clauses, severance payments, part-time employees, probationary periods, collective bargaining, mass layoffs, formulation of company policies, labor dispatch agencies and the role of labor unions (US-China Business Council, 2007). The employer cannot directly or disguisedly force employees to work overtime. (Baker and McKenzie, 2007). According to the Economist Intelligence Unit, this new Labor Contract Law has added approximately 20 percent to workers’ labor costs (Chen and Funke, 2009).

The new law also shows that China change its focus from low value-added manufacturing to innovation (Wang et al., 2009). Chen and Funke (2009) believe it is obvious that China no longer just wants to be the home of low-skilled, low-cost, low-margin
manufacturing. Instead, Chinese companies are trying to move up in the value chain. The government is supporting this trend by using incentives to encourage companies to innovate, meanwhile, government also discourage low-end manufacturers from operating in the country from setting up more strict operation standard. By introducing stricter labor standards, the government has sent a powerful signal about its ambition of upgrading its international sourcing industry. The Chinese government policies now favor high-tech economic zones, research and development centers and companies that promise higher salaries.

In terms of textile and apparel sourcing, The China National Textile and Apparel Council has developed a framework to help companies to follow with regulations, standards, practices and most importantly, laws. The goal of the council is to improve CSR performance in factories as well as create global competitive advantage (Levine, 2008). However, the real challenge is to effectively enforce the laws. Many workers do not know their rights and they also show a lack of trust for the social security system (US-China Business Council, 2007).

2.3.2 Geographic Location and Logistic

In addition to regulation, logistics also poses a sizeable challenge for global sourcing (Cho and Kang, 2001). Studies suggest that major disadvantages of sourcing in China for western companies include: geographic distance and subsequently long lead times. According to foreign companies, this lead time weakness may be traded off with China’s outstanding production capabilities. Long distance and long leading time is crucial for many apparel retailers since short lead time is the key success factor for the fashion industry. The
lack of English language skills among Chinese workers is also a disadvantage (Fang et. al., 2010; Zhang and Hathcote, 2008).

2.3.3 China’s Culture Effect

China’s cultural background is significantly different from western countries. Guanxi, a central concept in Chinese business refers to the importance of relationships and interpersonal connections in daily business transactions (Faure and Fang, 2008; Luo, 2000). Researchers note that in China, business cannot be conducted without using the network of Guanxi (Redding, 1990). However, in a culture purely relying on guanxi, the likelihood of corruption is increased (Fan, 2002). Today, China’s economic reform has fostered the principle of rewarding professional performance and enhancing open competition. Guanxi and “ren qing”, defined as human feeling; personal favor are increasingly balanced with professionalism which is becoming accepted among the Chinese business culture (Faure and Fang, 2008).

Another central concept for doing business in China is face, which refers to person’s reputation and ego. Traditionally, China, as a high-context culture is given the extreme attention to face (Gao et al., 1996). For example, that the answer yes does not always mean yes, and no is rarely used during negotiation. Communication as such could can lead to cause frustrations and make result in time consuming decision-making a time-consuming processes. In recent years, following China’s rapid economic development and market orientation trend, Chinese businessman have been pushed to apply a more direct and open communication style. However, this new communication style still is coexisting with the old
‘face’ style in China’s business environment today (Faure and Fang, 2008). This is consistent with Inglehart and Welzel’s finding (2005) that the more developed the economy, the stronger the desire for self-expression. Overall, trust plays a key role in a good business relationship with the Chinese. Lack of trust will cause confusion in communication, so it is necessary for companies to keep improving the level of trust between the two parties (Fang, 1999; Faure and Fang, 2008).

In conclusion, there are several advantages motivating western buyers to import from China. First, China’s relatively good infrastructure and skillful manufacturing expertise. Second, China offers a large variety of sourcing availabilities in the textile and apparel industry which few other countries can completely match (Saheed, 2012). Third, the Chinese business culture is highly valued in long-term business relationships and will allow foreign parties to use such relationships to leverage high bargaining power (Fang et al., 2010). Fourth, the improvement of Chinese suppliers’ CSR and business ethics enhances the global supply chain (Levine, 2008). Finally, many foreign companies sourcing in China perceive this activity as a starting phase or springboard for future market penetration and expansion when their Chinese experiences and networks increase (Saheed, 2012).

However, recent research suggests that retailers are also targeting zero duty rate countries such as Bangladesh and Cambodia as manufacturing sources (Lamson-Hall, 2012; Saheed, 2012). Subsequently, Chinese companies are engaged in investments in these developing countries’ manufacturing sectors. So for the volume for large volume producers
both Bangladesh and Cambodia represent important emerging sourcing markets (Morrell, 2012).

2.4 Apparel Sourcing Potential for Other developing Nations and Less Developed Nations

Though China is clearly the leader in apparel exporting to the United States and other developed markets, the rising cost of production and appreciation of the Chinese currency have begun to erode the efficiency of their supply chain (Das & Ha-Brookshire, 2012). Today many sourcing organizations are looking beyond China to identify the next ideal locations for production. Since 2011, Chinese manufacturers began to lose market share in the U.S., Europe and Japan (Saheed, 2012). Companies from developing economies have been shifting operations outside of China, particularly for lower end manufacturing (Firedman and Ellis, 2012). Lured by lower labor costs as well as lower tariffs, companies have been seeking sourcing partners from other developing and less developed countries (LDCs) such as India, Bangladesh, Vietnam, Cambodia, and Indonesia (Saheed, 2012).

2.4.1 India

India has been considered one of the next sourcing destinations that might replace China for several reasons, including abundant skilled labor force, low labor wages, production differentiation and specialization, flexible manufacturing based on small scale operations, and pliable manufacturing infrastructure (Das and Ha-Brookshire, 2012). However, Lu and Karpova (2011) find that fragmented manufacturing facilities, unreliable transportation and logistics services, low managerial flexibility and adaptability, and low labor productivity are
the reason that cause the growth of exports among the reasons in that India has failed to meet its expectations as a leading apparel exporter.

2.4.2 Indonesia

Indonesia represents another country with a strong apparel sourcing industry: with maintained growth in international (Gumilang et al., 2011). From 1990 to 2007 Indonesia's export and import values have ranged from approximately 20 to 30 percent of total GDP (Hossain, 2009). Most of this trade occurs between a few dominant trade partners including China, Japan, Singapore, Korea and the United States. Gumilang et al., 2011, point out that Indonesia’s failure to produce a coordinated foreign direct investment (FDI) policy to promote and prioritize the country as a destination for FDI has negatively impacted its trade competitiveness. The authors further explain that FDI has been shifted to product categories in a manner that has excluded capital-intensive industries. They conclude that the lack of clear FDI policy is unlikely to lead to improvements in Indonesia's output production that may affect trade competitiveness of the country. Subsequently, they also note that the focus of Indonesia's exports has continued to be primary goods over the past decade (Gumilang et al., 2011).

2.4.3 Vietnam

Vietnam has become the second largest supplier for the U.S. apparel market (Firedman and Ellis, 2012, Saheed, 2012). Vietnam began to attract FDI following promulgation of the Law of Foreign Investment in 1987 and its ascension to the World Trade Organization (WTO) in 2007. The latter event reinforced reforms in its domestic economy and has led job creation (Anwar and Nguyen, 2011; Ellis, 2014). In 2010, Vietnamese exports accounted for
a 5.15 percent share of the U.S. market for textiles and apparel valued at approximately $5.8 billion (WWD, 2011). In 2011, total Vietnamese apparel exports to the U.S. increased to $14 billion. The country has set higher U.S. apparel and textile export targets for the future with a projected $18 billion for 2015 and $25 billion for 2020 (Pelot, 2009).

2.4.4 Mexico

Mexico has enjoyed renewed competitiveness partly due to increasing wages in China. Preferential trade agreements such as NAFTA between Mexico and the U.S. save money in the long-run, thus making up for higher costs on the front end of the manufacturing supply chain (Moreno-Brid et al., 2005). In addition, a relatively secure political environment, a willingness to build infrastructure, flexible governments, and short lead times benefit Mexico’s competitiveness as a supply source. Lamson-Hall (2012) suggests that Mexican companies are eager to build long-term relationships in the global environment and will accept small orders on short timelines to achieve this end.

2.4.5 Bangladesh and Cambodia

Bangladesh, which is considered a less developed country (LDC), is effectively taking advantage of the decrease in Chinese production as well (Saheed, 2012). Because Bangladesh has relatively lower labor wages and a vast labor base compared to many other developing and less developing countries, even China and India consider sourcing from Bangladeshi companies (Das and Ha-Brookshire, 2012). Another less developed country: Cambodia also shows great potential as an apparel source. Although producers within Cambodia are capable of providing low cost their consistency and reliability has not been established. (Lee, 2013, Ellis, 2014). For example, U.S. Labor Department officials recently
held a conference call with fashion industry trade groups concerning instability in Cambodia's garment industry, according to industry sources (Ellis, 2014). Further, the U.S. Department of Commerce Department reporting that apparel imports from Cambodia and Bangladesh began to decrease in April, 2014. (Ellis, 2014)

In addition to China, there are several developing countries and LDCs that are gaining export share of apparel to the U.S. The features that tend to make these suppliers attractive to western retailers commonly include: low cost, free duty, and or short lead times. On the other hand, these source countries also have obstacles that can interfere with exporting such as issues related to corporate social responsibility (CSR) including human rights, labor practices and environmental concerns (Cho and Kang, 2000; Fredriksson and Jonsson, 2009).

2.4.6 World Bank Indicators for Developing Countries and LDCs

The World Bank (2015) record several different indicators that related to International sourcing of aforementioned developing countries and LDC’s among 3 years (2010 – 2012). Those information could provide some insight view for future analyze of this research (Table 2.1 through Table 2.3).
Table 2.1: World Bank Indicator for Seven Countries for the year 2010

<table>
<thead>
<tr>
<th></th>
<th>Bangladesh</th>
<th>China</th>
<th>Cambodia</th>
<th>India</th>
<th>Indonesia</th>
<th>Mexico</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>763</td>
<td>4,433</td>
<td>783</td>
<td>1,417</td>
<td>2,947</td>
<td>8,921</td>
<td>1,334</td>
</tr>
<tr>
<td>GNI per capita</td>
<td>780</td>
<td>4,240</td>
<td>740</td>
<td>1,290</td>
<td>2,500</td>
<td>8,730</td>
<td>1,270</td>
</tr>
<tr>
<td>Lead time to export, median case (days)</td>
<td>1.4</td>
<td>2.8</td>
<td>1.3</td>
<td>2.3</td>
<td>2.1</td>
<td>2.1</td>
<td>1.4</td>
</tr>
<tr>
<td>Merchandise trade (% of GDP)</td>
<td>40.8</td>
<td>50.1</td>
<td>106.2</td>
<td>33.7</td>
<td>41.4</td>
<td>57.9</td>
<td>135.5</td>
</tr>
<tr>
<td>Export values</td>
<td>300.4</td>
<td>633.1</td>
<td>370.2</td>
<td>534.1</td>
<td>241.7</td>
<td>179.3</td>
<td>500</td>
</tr>
<tr>
<td>Export volume</td>
<td>269.4</td>
<td>568.4</td>
<td>319</td>
<td>278.4</td>
<td>109.1</td>
<td>135.3</td>
<td>294.1</td>
</tr>
<tr>
<td>Investment in energy with private participation</td>
<td>137,130,000</td>
<td>472,970,000</td>
<td>1,863,500,000</td>
<td>37,412,110,000</td>
<td>2,300,000,000</td>
<td>799,700,000</td>
<td>943,050,000</td>
</tr>
<tr>
<td>Cost to export (US$ per container)</td>
<td>1,070</td>
<td>500</td>
<td>732</td>
<td>1,070</td>
<td>644</td>
<td>1,420</td>
<td>555</td>
</tr>
<tr>
<td>Documents to export (number)</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Labor force participation rate, female</td>
<td>57</td>
<td>64</td>
<td>79</td>
<td>29</td>
<td>51</td>
<td>44</td>
<td>72</td>
</tr>
</tbody>
</table>
Table 2.2: World Bank Indicator for Seven Countries for the year 2011

<table>
<thead>
<tr>
<th></th>
<th>Bangladesh</th>
<th>China</th>
<th>Cambodia</th>
<th>India</th>
<th>Indonesia</th>
<th>Mexico</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>842</td>
<td>5,447</td>
<td>878</td>
<td>1,540</td>
<td>3,470</td>
<td>9,803</td>
<td>1,543</td>
</tr>
<tr>
<td>GNI per capita</td>
<td>870</td>
<td>4,900</td>
<td>810</td>
<td>1,450</td>
<td>2,920</td>
<td>9,000</td>
<td>1,390</td>
</tr>
<tr>
<td>Lead time to export, median case (days)</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
<td>Not listed</td>
</tr>
<tr>
<td>Merchandise trade (% of GDP)</td>
<td>47.2</td>
<td>49.7</td>
<td>124.7</td>
<td>40.8</td>
<td>44.6</td>
<td>60.7</td>
<td>150.3</td>
</tr>
<tr>
<td>Export values</td>
<td>382.5</td>
<td>761.8</td>
<td>482.5</td>
<td>714.7</td>
<td>307</td>
<td>210.1</td>
<td>670.8</td>
</tr>
<tr>
<td>Export volume</td>
<td>311.8</td>
<td>644.7</td>
<td>379.4</td>
<td>320.1</td>
<td>113.1</td>
<td>137.9</td>
<td>348.2</td>
</tr>
<tr>
<td>Investment in energy with private participation (current US$)</td>
<td>324,507,000</td>
<td>2,336,470,000</td>
<td>Not listed</td>
<td>18,705,050,000</td>
<td>366,000,000</td>
<td>1,207,000,000</td>
<td>2,770,270,000</td>
</tr>
<tr>
<td>Cost to export (US$ per container)</td>
<td>1,115</td>
<td>500</td>
<td>732</td>
<td>1,045</td>
<td>644</td>
<td>1,450</td>
<td>580</td>
</tr>
<tr>
<td>Documents to export (number)</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Labor force participation rate, female</td>
<td>57</td>
<td>64</td>
<td>79</td>
<td>28</td>
<td>51</td>
<td>43</td>
<td>73</td>
</tr>
</tbody>
</table>
Table 2.3: World Bank Indicator for Seven Countries for the year 2012

<table>
<thead>
<tr>
<th></th>
<th>Bangladesh</th>
<th>China</th>
<th>Cambodia</th>
<th>India</th>
<th>Indonesia</th>
<th>Mexico</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>862</td>
<td>6,093</td>
<td>945</td>
<td>1,503</td>
<td>3,551</td>
<td>9,818</td>
<td>1,755</td>
</tr>
<tr>
<td>GNI per capita</td>
<td>950</td>
<td>5,730</td>
<td>880</td>
<td>1,550</td>
<td>3,420</td>
<td>9,720</td>
<td>1,560</td>
</tr>
<tr>
<td>Lead time to export, median case (days)</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Merchandise trade (% of GDP)</td>
<td>44.5</td>
<td>47</td>
<td>134</td>
<td>42.3</td>
<td>43.2</td>
<td>63.3</td>
<td>146.5</td>
</tr>
<tr>
<td>Export values</td>
<td>393.3</td>
<td>822.1</td>
<td>564.1</td>
<td>700.4</td>
<td>288.2</td>
<td>222.8</td>
<td>792.8</td>
</tr>
<tr>
<td>Export volume</td>
<td>316.4</td>
<td>692.2</td>
<td>440.1</td>
<td>314.3</td>
<td>111.3</td>
<td>149.1</td>
<td>416.9</td>
</tr>
<tr>
<td>Investment in energy with private participation</td>
<td>1,527,800,000</td>
<td>1,639,350,000</td>
<td>Not listed</td>
<td>8,973,400,000</td>
<td>288,000,000</td>
<td>1,326,000,000</td>
<td>168,800,000</td>
</tr>
<tr>
<td>Cost to export (US$ per container)</td>
<td>1,175</td>
<td>580</td>
<td>755</td>
<td>1,005</td>
<td>644</td>
<td>1,450</td>
<td>610</td>
</tr>
<tr>
<td>Documents to export (number)</td>
<td>6</td>
<td>8</td>
<td>8</td>
<td>7</td>
<td>4</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Labor force participation rate, female</td>
<td>57</td>
<td>64</td>
<td>79</td>
<td>27</td>
<td>51</td>
<td>45</td>
<td>73</td>
</tr>
</tbody>
</table>

2.5 Strategic Sourcing Decision Factors

Scholars and practitioners recognize that global supply chains are a powerful force within corporations and the global business community (Giunipero et al., 2008; Chandra and Kumar, 2000). Along with the evolution of global supply chains, companies are able to take advantage of strategic sourcing (Barney and Hesterly, 2010; Chopra and Meindl, 2010). Researchers define strategic sourcing as the process of planning, implementing, controlling,
and evaluating crucial sourcing decisions in an effort to meet a firm’s long-range plans and goals (Carr and Pearson, 2002; Carr and Smeltzer, 2000). Strategic sourcing can be characterized into top management support, relationships development with key suppliers, and sourcing’s active interaction with other functions. For achieve effective strategic sourcing, building awareness of cross-cultural business practices, managing international risk or uncertainty, knowledge of sourcing locations, and international negotiation skills and abilities are highly emphasized. The goal of strategic sourcing is to improve company’s performance by increasing its return on assets, profit margin and market share. At the same time, strategic sourcing can help companies to reduce uncertainty and to improve flexibilities to better handle supply, demand, and competitiveness uncertainties (Sinha et al., 2011; Paulraj and Chen, 2007; Kocabasoglu and Suresh, 2006; Narasimhan and Das, 1999).

Sourcing has long been recognized as a vital process in strategic planning (Kocabasoglu and Suresh, 2006; Carr and Pearson, 2002). This is particularly evident in the apparel industry in which the global supply chain for clothing products are highly complex and diverse (Cho and Kang, 2001). Therefore, strategic sourcing represents a fundamental tool for successful supply chain management in the apparel industry (Chopra and Meindl, 2010). Through examination of different approaches to strategic sourcing, researchers have determined several directions for consideration for source selection among developing nations and less developing nations (LDCs).

Dickson (1966) surveyed 170 purchasing professionals, and used the survey results to identified 23 variables that influence sourcing decisions. Then he ranked those 23 variables
based on their relative importance in making sourcing decisions. The top five variables he identified are 1) quality, 2) delivery, 3) performance history, 4) warranties and claims processes and 5) production facilities and capacity. After decades, Weber et al. (1991), conducted a follow-up study to analyze how frequently each of the 23 variables in Dickson’s research were considered in the academic sourcing. The top five variables in their list include 1) net price, 2) delivery, 3) quality, 4) production facilities and capacity and 5) geographic location (Weber et al., 1991).

Hathcote and Nam (1999) considered the change in quota restrictions and tariffs under NAFTA and determined that 1) labor costs, 2) tariffs, 3) product quality, 4) lead time and 5) exchange rates are critical while choosing sourcing partners in the NAFTA environment. More recently, Au and Wong (2008) examined the Agreement on Textiles and Clothing (ATC) on January 1, 2005, and determined that: 1) costs, 2) product quality, 3) time to market, and 4) country factors are the four major decision factors for making sourcing decisions. After quota elimination, product quality became the most important sourcing decision making factor, under product quality factor, reliability and relationships, supply chain management and vertical integration capabilities of the sourcing country are highly valued. Au and Wong (2008) also indicated that buyers started to pay more attention to supplier’s research and development capability, meanwhile, due to the common practice of fast fashion cycle and short repeated orders in the retail market, transportation time to market play a vital role for making sourcing decision.
Chi and Kilduff (2010) use a gravity model to demonstrate that US apparel sourcing decisions are made not only on the basis of costs, but also on economic conditions, government policy, infrastructure, transport time and cost, and language/culture commonality. Cho and Kang (2001) not only discuss the benefits and challenges of global sourcing for apparel and textile companies, they also indicated various factors have different level of importance among apparel product categories. For example, retailers who import women’s clothing consider service more strongly-, including better delivery, customer service and product availability. From a different perspective, retailers who import children’s clothing face greater challenges in terms of logistics, including inventory management, border-crossing procedures and transportation delays. Therefore, based on different product category, retailer may need to consider different variables in their sourcing decisions for apparel.

Based upon the existing literature, several categories of strategic sourcing decision factors are commonly considered among researchers and practitioners. Figure 2.1 presents a summary of the factors identified in the literature and categorizes them into four major areas: Product quality, cost, time, and country factors.
Figure 2.1: Strategic Sourcing Decision Factors

- **Product Quality**
  - Labour productivity
  - Technological development and innovation
  - Supply chain management
  - Reliability and relationships

- **Costs**
  - Labor Costs
  - Material Costs
  - Quota and Tariff Cost

- **Country Factors**
  - Infrastructure
  - Political and economic stability
  - Import quota/tariff of world major markets
  - Social, language and cultural differences

- **Time**
  - Geographical location of raw materials
  - Geographical location of suppliers
  - Transportation time
CHAPTER 3

Methodology

Chapter three presents the methodology which includes a description of the secondary datasets and the manner they were collected, also, an overview of data mining and decision tree analysis which was used to analyze the data will be presented. In addition, variable measurement is described.

3.1 Data for the Study

Data for the study are accessed from Cotton Incorporated’s Retail Monitor™ which provides a comprehensive base of product level data captured by field researchers in traditional and online retail markets across the United States. Field researchers from Cotton Incorporated collected the data by using hand-held scanners to capture all information that was listed on the label of the apparel products. Data were collected quarterly and were aggregated by year for the analysis, ensuring representation of typical retail selling seasons. Therefore, all collected data is directly from retailers. For this research, records from three years are used: 2010 (N= 58,916), 2011(N= 51,745) and 2012 (N= 35,231), including mass merchants (n=3), mid-tier (n=3) and full line department stores (n=2). Professional field researchers collected product level data for Retail Monitor™ across various product categories and among multiple retail channels. Specifically, the sample is constituted of data for four unique apparel categories (i.e., knit shirts, denim jeans, pants and woven shirts) collected among three retail channels (i.e., mass merchants, value department stores and
Within the three major retail channels, three U.S. market leaders represent the mass merchant channel (e.g., Walmart), likewise, three market leaders represent the value department channel (e.g. Kohls), while two large retail chains represent the traditional department channel (e.g., Macy's). Over the three year period, data were collected at the same physical and web-based store locations for consistency. All types of apparel products are included in the study irrespective of fiber content. Data collected from physical locations were captured in three markets: Charlotte, North Carolina, Freehold, New Jersey and Portland, Oregon. Retail Monitor™ selected these markets based upon the logic that they represent average U.S. retail markets and all retailers included in the data capture were present in each of these markets. Because this research focuses on sourcing from developing nations and less developed nations (LDCs), seven countries are considered in the study: China, India, Vietnam, Mexico, Bangladesh, Cambodia, and Indonesia. Among these countries, China, India, Mexico and Indonesia are considered as developing nations while Vietnam, Bangladesh and Cambodia are considered as LDCs (Firedman and Ellis, 2012, Ellis, 2014, Saheed, 2012).

3.2 Data Mining

A data mining approach is adopted to investigate the study’s objectives among the large market-based dataset. In general, data mining aims to find useful but undiscovered patterns in collected data by using a collection of techniques. The goal of data mining is to establish models for decision-making that predict future behavior based on analyses of past activity. Data mining supports knowledge discovery, defined by William Flawley et al. (1992) as “the
nontrivial extraction of implicit, previously unknown, and potentially useful information from data (page 213-228).” (Berson et al., 2000)

3.3 Decision Tree Analysis

Decision Tree Analysis (DTA) is the specific technique used to investigate the sourcing patterns of U.S. retailers in the global apparel environment. A decision tree is a predictive model that can be viewed through a hierarchical tree structure. Specifically, each branch of the tree is a classification question and the leaves of the tree are partitions of the dataset with their classification (Ozgulbas and Koyuncugil, 2006). The decision tree method is a popular data mining technique used in applications where large datasets are important to decision making in various academic fields (Gorunescu, 2011) The flexibility of this technique and its ability to synthetically summarize the classification of data makes it a favored technique for building understandable models, especially due to its ability to visually depict relationships in the hierarchical tree structure. For this research, a classification tree will be used to analyze the dataset, Classification trees are used to predict the classes of a categorical dependent variable from their measurements on one or more predictor variables (Chang, 2012). Based upon classification tree modeling which is grounded in data mining, DTA identifies hierarchical relationships between numerous, diversely measured predictor variables and a focal dependent variable within a single model. DTA provides a powerful tool for investigating relationships in very large datasets for both continuous and discrete data.
3.4 Chi-square Automatic Interaction Detector

The chi-square automatic interaction detector (CHAID) algorithm is used to generate the sourcing origin model due to its suitability for modeling the effects of categorical predictor variables on a categorical dependent variable. CHAID is used to study the relationship between dependent variable and a series of predictor variables. CHAID selects a set of predictors and their interactions that optimally predict the dependent measure (Kass, 1980). Specifically, the CHAID carries out tests on each attribute to see whether splitting the training sample set based on the attribute under test leads to a statistically significant discrimination in the dependent measure. The resulting model identifies significant predictors and well as the magnitudes through the hierarchical process (Tso and Mather, 2009).

The researcher determines prior rules for constructing the tree include: the maximum number of levels for the tree, minimum number of cases per parent and child node as well as significance levels. In addition the model allows the researcher to select a specific chi-square statistic (i.e., Pearson or Maximum Likelihood) to identify significant differences in groups, and allows for an optional Bonferroni adjustment to mitigate the potential for Type I error. In this research, likelihood ratio are selected as algorithm, and a maximum of three levels, a minimum of 100 cases per parent node and 50 cases per child node are used to conduct tree structure. To prevent merging among different countries, $\alpha=0.99$ is set for merge.

Furthermore, CHAID generates two models: an initial training model to establish the hierarchical structure of relationships and a second testing model to cross-validate this structure. The sample will be split into two groups to accommodate the testing model: 60%
of the dataset is training, 40% of the total dataset are used to conduct testing. Structural consistency between the two models provides confidence that the model configuration generalizes well across the dataset.

### 3.5 Variable Measurement

The dependent variable among all CHAID models is represented by the categorical variable for channel (i.e., products from one channel vs. all others). A total of three retail channel variables are included in the model: mass merchant, value department store and traditional department store. The predictor (i.e., independent) variables include binomial measures for country of origin among the seven countries and among four product types. Count data for both independent and dependent variables for the three year period (i.e., 2010-2012 are presented in Tables 3.1 to Table 3.9).

#### Table 3.1: Mass Merchant Channel by Country of Origin and Product Type, 2010

<table>
<thead>
<tr>
<th>Country</th>
<th>Denim Jeans</th>
<th>Pants</th>
<th>Knit Shirts</th>
<th>Woven Shirts</th>
<th>Total</th>
</tr>
</thead>
<tbody>
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<tr>
<td>Mexico</td>
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<td>272</td>
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<td>13</td>
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<tr>
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Table 3.2: Value Department Store Channel by Country of Origin and Product Type, 2010

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<th>Pants</th>
<th>Knit Shirts</th>
<th>Woven Shirts</th>
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Table 3.3: Traditional Department Store Channel by Country of Origin and Product Type, 2010

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<th>Pants</th>
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<th>Woven Shirts</th>
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Table 3.4: Mass Merchant Channel by Country of Origin and Product Type, 2011

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<th>Pants</th>
<th>Knit Shirts</th>
<th>Woven Shirts</th>
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Table 3.5: Value Department Store Channel by Country of Origin and Product Type, 2011

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Table 3.6: Traditional Department Store Channel by Country of Origin and Product Type, 2011

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Table 3.7: Mass Merchant Channel by Country of Origin and Product Type, 2012

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Table 3.8: Traditional Department Store Channel by Country of Origin and Product Type, 2012

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Table 3.9: Traditional Department Store Channel by Country of Origin and Product Type, 2012

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<th>Pants</th>
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CHAPTER 4

Research Result

The nine decision trees generated similar structures with two significant levels of effects below the root node (retail channel) for all models. The primary split in the nine decision trees is driven by country or origin, followed by the secondary split for product type (Figure 4), each retail channel will be discussed separately. In order to interpret the extensive tree in a manner that addresses the objectives and is understandable, the tree data is visually presented in sub-sets and also interpreted in subsets. Specifically, to address objective one the first layer of the model (i.e., the first level beneath the root node) is interpreted which considers country of origin by retail channel. Because the DTA is hierarchical, the product level results represented in the third level of the tree are nested within the channel configuration and are therefore reported by channel. That is, objectives one and two are presented in the following sections by channel: mass merchant, value department and traditional department.

Figure 4: Decision Tree Structure
4.1 Mass Merchant Channel

4.1.1. Research Objective One: Mass Merchant Channel, Linkage between Source Country of Origin and Inventory Presence (2010-2012)

Figures 4.1 through 4.3 in appendix B present the tree structures by year (i.e., 2010-2012) for the linkage between source country of origin and the mass channel. Each tree indicated identical structure in the training and testing models supporting further interpretation based on this consistency. For all three years the trees indicated a significant split for country of origin across the seven countries: 2010 ($\chi^2=1114.362$, $p<.000$), 2011 ($\chi^2=333.320$, $p<.000$) 2012 ($\chi^2=438.268$, $p<.000$) (refer to tables 4-1-1 through table 4-1-2 respectively). Table 4.1 displays the DTA results for the mass merchant channel through three years (2010-2012), the values in the table are directly drawn from the decision tree model (refer to figure 6.1 through figure 6.3 in Appendix B, respectively).

Table 4.1 Decision Tree Analysis Result for Mass Merchant Channel (2010-2012)

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>Mexico</th>
<th>Bangladesh</th>
<th>Cambodia</th>
<th>India</th>
<th>Indonesia</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>10.80%</td>
<td>23.80%</td>
<td>29.50%</td>
<td>17.70%</td>
<td>9.30%</td>
<td>12.30%</td>
<td>10.90%</td>
</tr>
<tr>
<td>2011</td>
<td>34.90%</td>
<td>45.00%</td>
<td>38.50%</td>
<td>44.70%</td>
<td>29.10%</td>
<td>33.60%</td>
<td>30.60%</td>
</tr>
<tr>
<td>2012</td>
<td>15.20%</td>
<td>27.80%</td>
<td>21.90%</td>
<td>23.10%</td>
<td>12.70%</td>
<td>20.10%</td>
<td>9.10%</td>
</tr>
</tbody>
</table>

The DTA indicated that in the year 2010 (Table 4.1), 14.7 percent of total apparel inventory that originated from the seven countries went into the mass merchant channel. Bangladesh and Mexico concentrated apparel imports in the mass merchant channel, accounting for approximately 29.5 percent and 23.8 percent of inventory respectively. India had the lowest concentration of inventory in the mass merchant channel in 2010, accounting for 9.3 percent of its yearly apparel exports among the three channels. Meanwhile, only 10.8 percent of
Chinese apparel exports to the US in 2010 were distributed into the mass merchant channel. Data suggested that comparatively, Bangladesh and Mexico focused more heavily upon exports within the mass merchant channel in 2010. While China and India focused less exports in the mass channel.

In the year 2011 (Table 4.1), a substantially higher percentage of apparel exports (35.9%) from the seven countries was distributed into mass merchant channel in the U.S. Because the higher imports were indicated among all seven countries: China (34.9%), Mexico (45%), Bangladesh (38.5%), Cambodia (44.7%), India (29.1%), Indonesia (33.6%) and Vietnam (30.6%). The analysis should not be affected due to the fact that DTA focuses on the differences in proportions between the seven countries. Mexico, Cambodia and Bangladesh exported comparatively higher proportions of their apparel into the mass merchant channel for 2011. Further, India indicated the least export emphasis channel. While China concentrated 34.9 percent of its exports to the channel for 2011 in the mass merchant channel.

In the year 2012, 17.4 percent of apparel inventory originated from seven countries were distributed into the mass merchant channel: China (15.2%), Mexico (27.8%), Bangladesh (21.9%), Cambodia (23.1%), India (12.7%), Indonesia (20.1%) and Vietnam (9.1%). Again, Mexico, Bangladesh and Cambodia indicated exports concentration into the U.S. mass merchant channel. In contrast, India and Vietnam suggest the least concentration within the mass merchant channel during 2012, accounting for 12.7 percent and 9.1 percent of their respective apparel exports for the year. China concentrated 15.2 percent of its exports in the mass channel during 2012.
4.1.2. Research Objective 2: Mass Merchant Channel, Linkage between Source Country of Origin and Inventory Presence by Product Type (2010-2012)

The DTA indicated a number of significant splits among product types (within country-of-origin) for all three years. In order to present the data, partial tree structures are organized by two-three countries in a single graphic (i.e., China and Mexico 2010-2012, Bangladesh and Cambodia 2010-2012 and India, Vietnam & Indonesia 2010-2012). The order of country presentation is arbitrary and does not imply statistical significance.

Within the mass channel, the DTA indicated significant differences among exports product type for all countries of origin except Vietnam in 2010: China ($\chi^2=35.625$, $p<.000$), Mexico ($\chi^2=63.980$, $p<.000$), Bangladesh ($\chi^2=54.700$, $p<.000$) Cambodia ($\chi^2=287.079$, $p<.000$), India ($\chi^2=28.630$, $p<.000$), Indonesia ($\chi^2=138.121$, $p<.000$), (Table 4.2). In the year 2011, the DTA indicated significant differences among product types for all seven countries: China ($\chi^2=129.670$, $p<.000$), Mexico ($\chi^2=153.611$, $p<.000$), Bangladesh ($\chi^2=48.797$, $p<.000$) Cambodia ($\chi^2=124.228$, $p<.000$), India ($\chi^2=75.404$, $p<.000$), Indonesia ($\chi^2=227.910$, $p<.000$), Vietnam ($\chi^2=193.305$, $p<.000$) (Table 4.3). For the year 2012, the DTA indicated significant difference among product types in the mass merchant channel for all countries except China: Mexico ($\chi^2=37.816$, $p<.000$), Bangladesh ($\chi^2=20.057$, $p<.000$) Cambodia ($\chi^2=29.588$, $p<.000$), India ($\chi^2=40.658$, $p<.000$), Indonesia ($\chi^2=94.477$, $p<.000$), Vietnam ($\chi^2=28.403$, $p<.000$) (Table 4.4)
Table 4.2: Decision tree effects: Mass Merchant channel 2010, country of origin, product type

<table>
<thead>
<tr>
<th>Split</th>
<th>Variable</th>
<th>Chi-Square</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mass Merchant 2010*Country of Origin</td>
<td>1114.362</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Channel (mass 2010) * Country of Origin (Cambodia)* Product type</td>
<td>287.079</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>Channel (mass 2010) * Country of Origin (Indonesia)* Product type</td>
<td>138.121</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>Channel (mass 2010) * Country of Origin (Mexico)* Product type</td>
<td>63.980</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>Channel (mass 2010) * Country of Origin (Bangladesh)* Product type</td>
<td>54.700</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>Channel (mass 2010) * Country of Origin (China)* Product type</td>
<td>35.265</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>Channel (mass 2010) * Country of Origin (India)* Product type</td>
<td>28.630</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Table 4.3: Decision tree effects: Mass Merchant channel 2011, country of origin, product type

<table>
<thead>
<tr>
<th>Split</th>
<th>Variable</th>
<th>Chi-Square</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mass Merchant 2011*Country of Origin</td>
<td>333.320</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Channel (mass 2011) <em>Country of Origin (Indonesia)</em> Product type</td>
<td>227.910</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>Channel (mass 2011) <em>Country of Origin (Vietnam)</em> Product type</td>
<td>193.305</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>Channel (mass 2011) <em>Country of Origin (Mexico)</em> Product type</td>
<td>153.611</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>Channel (mass 2011) <em>Country of Origin (China)</em> Product type</td>
<td>129.670</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>Channel (mass 2011) <em>Country of Origin (Cambodia)</em> Product type</td>
<td>124.228</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>Channel (mass 2011) <em>Country of Origin (India)</em> Product type</td>
<td>75.404</td>
<td>0.000</td>
</tr>
<tr>
<td>8</td>
<td>Channel (mass 2011) <em>Country of Origin (Bangladesh)</em> Product type</td>
<td>48.797</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Table 4.4: Decision tree effects: Mass Merchant channel 2012, country of origin, product type

<table>
<thead>
<tr>
<th>Split</th>
<th>Variable</th>
<th>Chi-Square</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Mass Merchant 2012*Country of Origin</td>
<td>438.268</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Channel (mass 2012) <em>Country of Origin (Indonesia)</em> Product type</td>
<td>94.477</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>Channel (mass 2012) <em>Country of Origin (India)</em> Product type</td>
<td>40.658</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>Channel (mass 2012) <em>Country of Origin (Mexico)</em> Product type</td>
<td>37.816</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>Channel (mass 2012) <em>Country of Origin (Cambodia)</em> Product type</td>
<td>29.558</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>Channel (mass 2012) <em>Country of Origin (Vietnam)</em> Product type</td>
<td>28.403</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>Channel (mass 2012) <em>Country of Origin (Bangladesh)</em> Product type</td>
<td>20.057</td>
<td>0.000</td>
</tr>
</tbody>
</table>

The significant differences among product types within the mass channel are interpreted by both product types and year in the following sections. The DTA provides results within each year based on the chi-squares tests (α =0.05). In order to evaluate the presence of inventory by product type/country of origin decision tree results are compared, within each model, to determine which countries focus efforts on particular exports of product types into U.S. channels. Quartiles are used to determine the countries which focus on a particular
product/channel export. Quartiles are constructed directly from the country percentages calculated within the trees and the dominant COO’s product type by channel are determined by membership in the first and second quartile among the respective tree data.

4.1.2.1 Mass Channel, Woven Shirts

DTA structures for the four product types in the mass merchant channel in three years (2010-2012) are presented in the Appendices (Appendix B). The results indicated significant differences in woven shirt exports into the mass channel from China, Mexico, Bangladesh, Cambodia, India and Indonesia. Table 4.5 displays the DTA results for the woven shirts in the mass merchant channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.4 through figure 6.14 in Appendix B respectively)

Table 4.5: The Decision Tree Result for Woven Shirts in the Mass Merchant Channel (2010-2012)

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>8.90%</td>
<td>26.70%</td>
<td>N/A</td>
</tr>
<tr>
<td>Mexico</td>
<td>N/A</td>
<td>N/A</td>
<td>11.30%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>28.20%</td>
<td>31.80%</td>
<td>22.90%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>1.90%</td>
<td>21.10%</td>
<td>9.10%</td>
</tr>
<tr>
<td>India</td>
<td>7.20%</td>
<td>22.90%</td>
<td>9.10%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>4.70%</td>
<td>13.90%</td>
<td>10.80%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>15.60%</td>
<td>6.50%</td>
</tr>
</tbody>
</table>

The DTA results suggest that Bangladesh concentrated the highest proportion of its woven shirts exports into the mass merchant channel (28.2%). Cambodia indicates least
emphasis on woven shirts in the mass merchant channel for 2010 (1.9%). While China concentrated 8.9 percent of its woven shirt exports in the mass merchant channel in 2010.

For the year of 2011, results suggested significant differences in woven shirt imports into the mass merchant channel from all seven countries. Again, the DTA indicated that Bangladesh emphasizes its woven shirt exports in the mass merchant channel (31.8%). Indonesia indicated the least concentration for woven shirts in this channel for 2011 (13.9%), while China concentrated 26.7 percent of its woven shirts exports in this channel.

In the year 2012, the DTA results indicated significant difference in woven shirt imports into the mass merchant channel from all seven countries, with the exception of China. Bangladesh again indicated the highest woven shirts exports to the mass merchant channel (22.9%). In contrast, Vietnam indicated the least focus of woven shirts exports in the mass merchant channel (6.5%).

4.1.2.2 Mass Merchant Channel, Denim Jeans:

For denim jeans in the mass merchant channel, table 4.6 displays the DTA results for the denim jeans in the mass merchant channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.4 through figure 6.14 in Appendix B respectively).
Table 4.6: The Decision Tree Result for Denim Jeans in the Mass Merchant Channel (2010-2012)

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>12.00%</td>
<td>41.90%</td>
<td>N/A</td>
</tr>
<tr>
<td>Mexico</td>
<td>N/A</td>
<td>45.50%</td>
<td>31.20%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>39.80%</td>
<td>45.30%</td>
<td>27.60%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>0.20%</td>
<td>36.30%</td>
<td>21.80%</td>
</tr>
<tr>
<td>India</td>
<td>1.90%</td>
<td>54.30%</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>6.20%</td>
<td>26.50%</td>
<td>5.60%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>55.30%</td>
<td>4.20%</td>
</tr>
</tbody>
</table>

For denim jeans in the mass merchant channel for 2010, the DTA result indicated significant difference for the mass channel from China, Bangladesh, Cambodia, India and Indonesia. Result suggested that Bangladesh emphasizes its denim jeans exports in the mass merchant channel (39.8%). Cambodia indicated the least concentration for woven shirts in this channel for 2010 (0.2%). China concentrated 12 percent of its denim jeans exports in the mass merchant channel this year.

In the year 2011, results suggested significant differences in denim jeans imports into the mass channel from all seven countries. The DTA result suggested Vietnam concentrated the highest proportion of its woven shirts exports into the mass merchant channel (55.3%). Indonesia indicated the least concentration of denim jeans in the mass merchant channel (26.5%), percent of its inventory. Meanwhile, 41.9 percent of denim jeans that sourced from
China were distributed through the mass merchant channel in 2011, accounting for the fifth among seven countries.

For the year of 2012, the DTA result indicated significant difference in denim jeans imports into the mass merchant channel from all seven countries, with the exception of China. Mexico and Bangladesh indicated the highest denim jeans exports to the mass merchant channel, accounting for approximately 31.2 percent and 27.6 percent of their total denim jeans exports respectively. In contrast, India indicated the least focus of denim jeans in the mass merchant channel (0%).

4.1.2.3: Mass Merchant Channel, Knit Shirts

For knit shirts that were distributed through the mass merchant channel, table 4.7 displays the DTA results for the knit shirts in the mass merchant channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.4 through figure 6.14 in Appendix B respectively).

Table 4.7: The Decision Tree Result for Knit Shirts in the Mass Merchant Channel (2010-2012)

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>12.20%</td>
<td>26.70%</td>
<td>N/A</td>
</tr>
<tr>
<td>Mexico</td>
<td>19.00%</td>
<td>32.00%</td>
<td>18.60%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>31.80%</td>
<td>43.90%</td>
<td>15.20%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>28.80%</td>
<td>53.70%</td>
<td>29.80%</td>
</tr>
<tr>
<td>India</td>
<td>11.40%</td>
<td>30.30%</td>
<td>15.90%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>17.80%</td>
<td>39.60%</td>
<td>23.20%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>30.40%</td>
<td>8.80%</td>
</tr>
</tbody>
</table>
In the year of 2010, results suggested significant differences in all seven countries, with the exception of Vietnam. The DTA results suggest that Bangladesh concentrated the highest proportion of its knit shirts exports into the mass merchant channel (31.8%). On the other hand, India indicated the least concentration for knit shirts in the channel for 2010 (11.4%). While China concentrated 12.2 percent of its knit shirts export in the mass merchant channel.

For the year of 2011, result suggested significant difference in knit shirts imports into the mass merchant channel from all seven countries. The DTA indicated that Cambodia and Bangladesh emphasizes its knit shirts export in the mass merchant channel, accounting for 53.7 percent and 43.9 percent of their total exports of knit shirts respectively. China indicated the least concentration for knit shirts in this channel for 2011 (26.7%).

In the year of 2012, the DTA result indicated significant difference in knit shirts imports into the mass merchant channel from all seven countries, with the exception of China. Cambodia again indicated the highest knit shirts exports to the mass merchant channel (29.8%). In contrast, Vietnam indicated the least focus of woven shirts exports in the mass merchant channel (8.8%).

4.1.2.4: Mass Merchant Channel, Pants

For pants distributed through the mass merchant channel, table 4.8 displays the DTA results for the pants in the mass merchant channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.4 through figure 6.14 in Appendix B respectively)
Table 4.8: The Decision Tree Result for Pants in the Mass Merchant Channel (2010-2012)

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>8.80%</td>
<td>28.30%</td>
<td>N/A</td>
</tr>
<tr>
<td>Mexico</td>
<td>39.30%</td>
<td>N/A</td>
<td>27.70%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>23.80%</td>
<td>37.10%</td>
<td>19.60%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>12.30%</td>
<td>26.50%</td>
<td>17.40%</td>
</tr>
<tr>
<td>India</td>
<td>4.50%</td>
<td>1.40%</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>11.70%</td>
<td>41.10%</td>
<td>30.30%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>28.20%</td>
<td>13.70%</td>
</tr>
</tbody>
</table>

In the year of 2010, results suggested significant differences in all seven countries, with the exception of Vietnam. The DTA results suggest that Mexico concentrated the highest proportion of its pants exports into the mass merchant channel (39.3%). In contrast India indicated the least concentration for pants in this channel for 2010 (4.5%). While China concentrated 8.8 percent of its pants export.

In the year 2011, the DTA results indicated significant difference in pants imports into the mass merchant channel from all seven countries. Indonesia emphasizes its pants exports in the mass merchant channel (41.1%). India indicated the least concentration for pants in the mass merchant channel for 2011 (1.4%). While China concentrated 28.3 percent of its pants in the mass merchant channel.

In the year of 2012, the DTA indicated significant difference in pants imports into the mass merchant channel from all seven countries, with the exception of China. Indonesia
again indicated the highest pants exports to the mass merchant channel (30.3%). In contrast, Vietnam indicated the least focus of woven shirts exports in the mass merchant channel (13.7%).

4.2 Value Department Store Channel

4.2.1. Research Objective One: Value Department Channel, Linkage between Source Country of Origin and Inventory Presence (2010-2012)

Figures 4-2(a) to 4-2(c) present the tree structures by year for the linkage between source country of origin and the value department channel. Each tree indicated identical structure in the training and testing models supporting further interpretation. For all three years the trees indicated a significant split for country of origin across the seven countries: 2010 ($\chi^2=346.182, p<.000$), 2011 ($\chi^2=390.913, p<.000$), 2012 ($\chi^2=203.238, p<.000$). Table 4.9 displays the DTA results for the apparel product in the value department channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.15 through figure 6.17 in Appendix B respectively).
Table 4.9 Decision Tree Analysis Result for Value Department Channel (2010-2012)

<table>
<thead>
<tr>
<th></th>
<th>China</th>
<th>Mexico</th>
<th>Bangladesh</th>
<th>Cambodia</th>
<th>India</th>
<th>Indonesia</th>
<th>Vietnam</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>53.70%</td>
<td>52.20%</td>
<td>53.40%</td>
<td>54.10%</td>
<td>45.50%</td>
<td>60.20%</td>
<td>63.60%</td>
</tr>
<tr>
<td>2011</td>
<td>32.80%</td>
<td>35.50%</td>
<td>45.00%</td>
<td>31.90%</td>
<td>30.00%</td>
<td>42.00%</td>
<td>43.60%</td>
</tr>
<tr>
<td>2012</td>
<td>37.70%</td>
<td>47.10%</td>
<td>42.70%</td>
<td>41.00%</td>
<td>36.50%</td>
<td>38.90%</td>
<td>50.70%</td>
</tr>
</tbody>
</table>

The DTA indicated that in the year 2010, 55.3 percent of total apparel inventory that originated from the seven countries went into the value department channel. Vietnam and Indonesia concentrated apparel imports in the value department channel, accounting for approximately 63.6 percent and 60.2 percent of inventory respectively. India had the least concentration on the value department channel in 2010, accounting for 45.5 percent of its inventory. While China concentrated 53.7 percent of its apparel product exports in the value department channel.

In the year 2011, 37.1 percent of apparel imports from the seven countries were distributed into value department channel: China (32.8%), Mexico (35.5%), Bangladesh (45%), Cambodia (31.9%), India (30%), Indonesia (42%) and Vietnam (43.6%). Bangladesh, Vietnam and Indonesia exported comparatively higher proportions of their apparel into the value department channel for 2011. Further, India indicated the least export emphasis in this channel. While China concentrated 32.8 percent of its apparel exports into value department channel in 2011.

In the year 2012, 41.5 percent of apparel inventory originated from seven countries were distributed into value department channel: China (37.7%), Mexico (47.1%), Bangladesh
(42.7%), Cambodia (41%), India (36.5%), Indonesia (38.9%) and Vietnam (50.7%).

Vietnam, Mexico and Bangladesh indicated exports concentration into the U.S. value department channel. In contrast, India and China suggested the least concentration in the value department channel during 2012, accounting for 36.5 percent and 37.7 percent of their inventory.

4.2.2. RO2: Value Department Channel, Linkage between Source Country of Origin and Inventory Presence by Product Type (2010-2012)

Within the value department channel, the DTA indicated significant differences among export product types for all countries of origin except Vietnam in 2010: China ($\chi^2$=71.440, $p<.000$), Mexico ($\chi^2$=10.920, $p<.026$), Bangladesh ($\chi^2$=11.185, $p<.0011$) Cambodia ($\chi^2$=79.915, $p<.000$), India ($\chi^2$=193.306, $p<.000$), Indonesia ($\chi^2$=88.796, $p<.000$), (Table 4.10). In the year 2011, the DTA indicated significant differences among product types for all seven countries: China ($\chi^2$=283.158, $p<.000$), Mexico ($\chi^2$=56.212, $p<.000$), Bangladesh ($\chi^2$=79.266, $p<.000$) Cambodia ($\chi^2$=70.304, $p<.000$), India ($\chi^2$=179.534, $p<.000$), Indonesia ($\chi^2$=231.711, $p<.000$), Vietnam ($\chi^2$=157.464, $p<.000$) (Table 4.11). For the year 2012, the DTA indicated significant difference among product types on the value department channel for all countries: China ($\chi^2$=59.120, $p<.000$), Mexico ($\chi^2$=69.622, $p<.000$), Bangladesh ($\chi^2$=61.487, $p<.000$) Cambodia ($\chi^2$=37.838, $p<.000$), India ($\chi^2$=32.229, $p<.000$), Indonesia ($\chi^2$=162.75, $p<.000$), Vietnam ($\chi^2$=32.956, $p<.000$) (Table 4.12)
Table 4.10: Decision tree effects: Value Department channel 2010, country of origin, product type

<table>
<thead>
<tr>
<th>Split</th>
<th>Variable</th>
<th>Chi-Square</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Value Department 2010*Country of Origin</td>
<td>346.182</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Channel (Value 2010) * Country of Origin (China)* Product type</td>
<td>71.440</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>Channel (Value 2010) * Country of Origin (Mexico)* Product type</td>
<td>10.920</td>
<td>0.026</td>
</tr>
<tr>
<td>4</td>
<td>Channel (Value 2010) * Country of Origin (Bangladesh)* Product type</td>
<td>11.185</td>
<td>0.011</td>
</tr>
<tr>
<td>5</td>
<td>Channel (Value 2010) * Country of Origin (Cambodia)* Product type</td>
<td>79.915</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>Channel (Value 2010) * Country of Origin (India)* Product type</td>
<td>193.306</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>Channel (Value 2010) * Country of Origin (Indonesia)* Product type</td>
<td>88.796</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Table 4.11: Decision tree effects: Value Department channel 2011, country of origin, product type

<table>
<thead>
<tr>
<th>Split</th>
<th>Variable</th>
<th>Chi-Square</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Value Department 2011*Country of Origin</td>
<td>390.913</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Channel (Value 2011) * Country of Origin (China)* Product type</td>
<td>283.158</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>Channel (Value 2011) * Country of Origin (Mexico)* Product type</td>
<td>56.212</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>Channel (Value 2011) * Country of Origin (Bangladesh)* Product type</td>
<td>79.266</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>Channel (Value 2011) * Country of Origin (Cambodia)* Product type</td>
<td>70.304</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>Channel (Value 2011) * Country of Origin (India)* Product type</td>
<td>179.534</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>Channel (Value 2011) * Country of Origin (Indonesia)* Product type</td>
<td>231.711</td>
<td>0.000</td>
</tr>
<tr>
<td>8</td>
<td>Channel (Value 2011) * Country of Origin (Vietnam)* Product type</td>
<td>157.464</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Table 4.12: Decision tree effects: Value Department channel 2012, country of origin, product type

<table>
<thead>
<tr>
<th>Split</th>
<th>Variable</th>
<th>Chi-Square</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Value Department2012*Country of Origin</td>
<td>203.238</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Channel (Value 2012) * Country of Origin (China)* Product type</td>
<td>59.120</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>Channel (Value 2012) * Country of Origin (Mexico)* Product type</td>
<td>69.622</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>Channel (Value 2012) * Country of Origin (Bangladesh)* Product type</td>
<td>61.487</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>Channel (Value 2012) * Country of Origin (Cambodia)* Product type</td>
<td>37.838</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>Channel (Value 2012) * Country of Origin (India)* Product type</td>
<td>32.229</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>Channel (Value 2012) * Country of Origin (Indonesia)* Product type</td>
<td>162.75</td>
<td>0.000</td>
</tr>
<tr>
<td>8</td>
<td>Channel (Value 2012) * Country of Origin (Vietnam)* Product type</td>
<td>32.956</td>
<td>0.000</td>
</tr>
</tbody>
</table>

4.2.2.1 Value Department Channel, Woven Shirts

Figure 4.18 through Figure 4.28 in appendix B presents the DTA structure for the four product types in the value department channel through three years (2010-2012). The results indicated significant differences in woven shirts exports into the value department channel from China, Mexico, Bangladesh, Cambodia, India and Indonesia. Table 4.13 displays the DTA results for the woven shirts in the value department channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.18 through figure 6.28 in Appendix B respectively).
Table 4.13: The Decision Tree Result for Woven Shirts in the Value Department Channel (2010-2012)

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>51.90%</td>
<td>42.60%</td>
<td>32.30%</td>
</tr>
<tr>
<td>Mexico</td>
<td>N/A</td>
<td>n/a</td>
<td>67.10%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>55.60%</td>
<td>54.20%</td>
<td>49.90%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>29.60%</td>
<td>25.90%</td>
<td>17.00%</td>
</tr>
<tr>
<td>India</td>
<td>44.60%</td>
<td>50.70%</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>67.50%</td>
<td>61.60%</td>
<td>54.10%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>58.90%</td>
<td>54.80%</td>
</tr>
</tbody>
</table>

The DTA results suggest that Indonesia concentrated the highest proportion of its woven shirts exports into the value department channel (67.5%). Cambodia indicates least emphasis on woven shirts in the value department channel for 2010 (29.6%). While China concentrated 51.9 percent of its woven shirt exports in the value department channel in 2010.

For the year of 2011, results suggested significant differences in woven shirts imports into the value department channel from all seven countries. Again, the DTA result indicated that Indonesia emphasized its woven shirts exports in the value department channel (61.6%). Cambodia indicated the least concentration for woven shirts in this channel for 2011 (25.9%). While China concentrated 42.6 percent of its woven shirts export in value department channel.

In the year 2012, the DTA results indicated significant difference in woven shirts imports into the value department channel from all seven countries. Mexico indicated the
highest woven shirts exports to the value department channel (67.1%). In contrast, Cambodia indicated the least focus of woven shirts exports in the value department channel (17%). While China concentrated 32.3 percent of its woven shirts export in value department channel.

**4.2.2.2 Value Department Channel, Denim Jeans**

Table 4.14 displays the DTA results for the denim jeans in the value department channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.18 through figure 6.28 in Appendix B respectively). The results indicated significant differences in denim jeans exports into the value department channel from China, Mexico, Bangladesh, Cambodia, India and Indonesia.

**Table 4.14: The Decision Tree Result for Denim Jeans in the Value Department Channel (2010-2012)**

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>57.60%</td>
<td>32.70%</td>
<td>44.60%</td>
</tr>
<tr>
<td>Mexico</td>
<td>51.90%</td>
<td>33.30%</td>
<td>41.30%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>52.80%</td>
<td>41.70%</td>
<td>34.90%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>65.00%</td>
<td>31.70%</td>
<td>36.60%</td>
</tr>
<tr>
<td>India</td>
<td>91.80%</td>
<td>33.70%</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>81.50%</td>
<td>10.10%</td>
<td>37.30%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>24.00%</td>
<td>65.40%</td>
</tr>
</tbody>
</table>

The DTA results suggest that India concentrated the highest proportion of its denim jeans exports into the value department channel (91.8%). Mexico indicates least emphasis on
denim jeans in the value department channel for 2010 (51.9%). While China concentrated 57.6 percent of its denim jeans exports in the value department channel in 2010.

For the year of 2011, results suggested significant differences in denim jeans imports into the value department channel from all seven countries. The DTA result indicated that Bangladesh emphasized its denim jeans exports in the value department channel (41.7%). Indonesia indicated the least concentration for denim jeans in this channel for 2011 (10.1%). While China concentrated 32.7 percent of its denim jeans export in value department channel.

In the year 2012, the DTA results indicated significant difference in denim jeans imports into the value department channel from all seven countries. Vietnam indicated the highest denim jeans exports to the value department channel (65.4%). In contrast, Bangladesh indicated the least focus of denim jeans exports in the value department channel (34.9%). While China concentrated 44.6 percent of its denim jeans export in value department channel.

4.2.2.3 Value Department Channel, Knit Shirts

Table 4.15 displays the DTA results for the knit shirts in the value department channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.18 through figure 6.28 in Appendix B respectively). The results showed significant differences in knit shirts exports into the value department channel from China, Mexico, Bangladesh, Cambodia, India and Indonesia.
Table 4.15: The Decision Tree Result for Knit Shirts in the Value Department Channel (2010-2012)

<table>
<thead>
<tr>
<th>Year *</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>50.30%</td>
<td>73.80%</td>
<td>37.30%</td>
</tr>
<tr>
<td>Mexico</td>
<td>N/A</td>
<td>45.60%</td>
<td>53.00%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>56.00%</td>
<td>34.80%</td>
<td>52.30%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>50.20%</td>
<td>27.20%</td>
<td>47.90%</td>
</tr>
<tr>
<td>India</td>
<td>39.60%</td>
<td>23.40%</td>
<td>31.80%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>56.10%</td>
<td>37.60%</td>
<td>36.00%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>41.50%</td>
<td>47.90%</td>
</tr>
</tbody>
</table>

The DTA results suggest that Indonesia concentrated the highest proportion of its knit shirts exports into the value department channel (56.1%). India indicates least emphasis on knit shirts in the value department channel for 2010 (39.6%). While China concentrated 50.3 percent of its knit shirts exports in the value department channel in 2010.

For the year of 2011, results suggested significant differences in knit shirts imports into the value department channel from all seven countries. The DTA result indicated that China emphasized its knit shirts exports in the value department channel (73.8%). India indicated the least concentration for knit shirts in this channel for 2011 (23.4%).

In the year 2012, the DTA results indicated significant difference in knit shirts imports into the value department channel from all seven countries. Mexico indicated the highest knit shirts exports to the value department channel (53%). In contrast, India indicated the least
focus of knit shirts exports in the value department channel (31.8%). While China concentrated 37.3 percent of its knit shirts export in value department channel.

4.2.2.4 Value Department Channel, Pants

Table 4.16 indicated the DTA results for the pants in the value department channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.18 through figure 6.28 in Appendix B respectively). The results indicated significant differences in pants exports into the value department channel from China, Mexico, Bangladesh, Cambodia, India and Indonesia.

Table 4.16: The Decision Tree Result for Pants in the Value Department Channel (2010-2012)

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>59.40%</td>
<td>46.90%</td>
<td>39.30%</td>
</tr>
<tr>
<td>Mexico</td>
<td>59.50%</td>
<td>N/A</td>
<td>63.90%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>49.60%</td>
<td>44.50%</td>
<td>36.30%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>63.40%</td>
<td>51.50%</td>
<td>43.20%</td>
</tr>
<tr>
<td>India</td>
<td>74.40%</td>
<td>78.70%</td>
<td>26.90%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>50.50%</td>
<td>31.10%</td>
<td>19.40%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>51.30%</td>
<td>48.70%</td>
</tr>
</tbody>
</table>

The DTA results suggest that India concentrated the highest proportion of its pants exports into the value department channel (74.4%). Bangladesh indicated least emphasis on pants in the value department channel for 2010 (49.6 %). While China concentrated 59.4 percent of its pants exports in the value department channel in 2010.
For the year of 2011, results suggested significant differences in pants imports into the value department channel from all seven countries. Again, The DTA result indicated that India emphasized its pants exports in the value department channel (78.7%). Indonesia indicated the least concentration for pants in this channel for 2011 (31.1%). While China concentrated 46.9 percent of its pants exports in the value department channel in 2011.

In the year 2012, the DTA results indicated significant difference in pants imports into the value department channel from all seven countries. Mexico indicated the highest pants exports to the value department channel (63.9 %). In contrast, Indonesia indicated the least focus of pants exports in the value department channel (19.4 %). While China concentrated 39.3 percent of its pants export in value department channel.

4.3 Traditional Department Store Channel

4.3.1. Research Objective One: Traditional Department Channel, Linkage between Source Country of Origin and Inventory Presence (2010-2012)

Figures 4.29 to 4.31 present the tree structures by year for the linkage between source country of origin and the traditional department channel. Each tree indicated identical structure in the training and testing models supporting further interpretation. For all three years the trees indicated a significant split for country of origin across the seven countries: 2010 ($\chi^2=967.955, p<.000$), 2011 ($\chi^2=749.191 p<.000$) 2012 ($\chi^2=472.757, p<.000$). Table 4.17 displays the DTA results for the apparel products in the traditional department channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.29 through figure 6.31 in Appendix B respectively).
The DTA indicated that in the year 2010, 30.5 percent of total apparel inventory that originated from the seven countries went into the traditional department channel. India concentrated apparel imports in the traditional department channel, accounting for approximately 46 percent of inventory respectively. Bangladesh had the least concentration on the traditional department channel in 2010, accounting for 17.1 percent of its inventory. While China concentrated 35.9 percent of its apparel product exports in the traditional department channel.

In the year 2011, 26.8 percent of apparel imports from the seven countries were distributed into traditional department channel: China (32.5%), Mexico (19 %), Bangladesh (16.7%), Cambodia (21.9%), India (40%), Indonesia (24.6%) and Vietnam (25.2%). India exported comparatively higher proportions of their apparel into the traditional department channel for 2011. Further, Bangladesh indicated the least export emphasis in this channel. While China concentrated 32.5 percent of its exports to the channel for 2011.

In the year 2012, 41.2 percent of apparel inventory originated from seven countries were distributed into traditional department channel: China (47.2%), Mexico (24.8%), Bangladesh (35.2%), Cambodia (39.8%), India (50.9%), Indonesia (41.4%) and Vietnam (39.3%). India indicated exports concentration into the U.S. traditional department channel. In contrast,
Bangladesh and Mexico suggested the least concentration in the traditional department channel during 2012. While China concentrate 47.2 percent of its exports to this channel.

4.3.2. RO2: Traditional Department Channel, Linkage between Source Country of Origin and Inventory Presence by Product Type (2010-2012)

Within the traditional department channel, the DTA indicated significant differences among export product types for all countries of origin except Vietnam in 2010: China ($\chi^2=86.302, p<.000$), Mexico ($\chi^2=155.082, p<.026$), Bangladesh ($\chi^2=92.084, p<.0011$), Cambodia ($\chi^2=138.681, p<.000$), India ($\chi^2=128.295, p<.000$), Indonesia ($\chi^2=26.374, p<.000$), (Table 4.18). In the year 2011, the DTA indicated significant differences among product types for all seven countries: China ($\chi^2=117.351, p<.000$), Mexico ($\chi^2=116.361, p<.000$), Bangladesh ($\chi^2=23.048, p<.000$), Cambodia ($\chi^2=54.369, p<.000$), India ($\chi^2=105.214, p<.000$), Indonesia ($\chi^2=74.286, p<.000$), Vietnam ($\chi^2=64.234, p<.000$) (Table 4.19). For the year 2012, the DTA indicated significant difference among product types on the traditional department channel for all countries: China ($\chi^2=88.022, p<.000$), Mexico ($\chi^2=71.243, p<.000$), Bangladesh ($\chi^2=81.857, p<.000$), Cambodia ($\chi^2=94.579, p<.000$), India ($\chi^2=16.673, p<.000$), Indonesia ($\chi^2=34.505, p<.000$), Vietnam ($\chi^2=30.552, p<.000$) (Table 4.20)
Table 4.18: Decision tree effects: Traditional Department channel 2010, country of origin, product type

<table>
<thead>
<tr>
<th>Split</th>
<th>Variable</th>
<th>Chi-Square</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Traditional Department 2010*Country of Origin</td>
<td>967.955</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Channel (Traditional 2010) * <em>Country of Origin (Mexico)</em> Product type</td>
<td>155.082</td>
<td>0.026</td>
</tr>
<tr>
<td>3</td>
<td>Channel (Traditional 2010) * <em>Country of Origin (Cambodia)</em> Product type</td>
<td>138.681</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>Channel (Traditional 2010) * Country of Origin (India)* Product type</td>
<td>128.295</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>Channel (Traditional 2010) <em>Country of Origin (Bangladesh)</em> Product type</td>
<td>92.084</td>
<td>0.011</td>
</tr>
<tr>
<td>6</td>
<td>Channel (Traditional 2010) * <em>Country of Origin (China)</em> Product type</td>
<td>86.302</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>Channel (Traditional 2010) <em>Country of Origin (Indonesia)</em> Product type</td>
<td>26.374</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Table 4.19: Decision tree effects: Traditional Department channel 2011, country of origin, product type

<table>
<thead>
<tr>
<th>Split</th>
<th>Variable</th>
<th>Chi-Square</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Traditional Department 2011 * Country of Origin</td>
<td>749.191</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Channel (Traditional 2011) * Country of Origin (China) * Product type</td>
<td>117.351</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>Channel (Traditional 2011) * Country of Origin (Mexico) * Product type</td>
<td>116.361</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>Channel (Traditional 2011) * Country of Origin (India) * Product type</td>
<td>105.214</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>Channel (Traditional 2011) * Country of Origin (Indonesia) * Product type</td>
<td>74.286</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>Channel (Traditional 2011) * Country of Origin (Vietnam) * Product type</td>
<td>64.234</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>Channel (Traditional 2011) * Country of Origin (Cambodia) * Product type</td>
<td>54.369</td>
<td>0.000</td>
</tr>
<tr>
<td>8</td>
<td>Channel (Traditional 2011) * Country of Origin (Bangladesh) * Product type</td>
<td>23.048</td>
<td>0.000</td>
</tr>
</tbody>
</table>
Table 4.20: Decision tree effects: Traditional Department channel 2012, country of origin, product type

<table>
<thead>
<tr>
<th>Split</th>
<th>Variable</th>
<th>Chi-Square</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Traditional Department 2012*Country of Origin</td>
<td>472.757</td>
<td>0.000</td>
</tr>
<tr>
<td>2</td>
<td>Channel (Traditional 2012) * <em>Country of Origin (Cambodia)</em></td>
<td>94.579</td>
<td>0.000</td>
</tr>
<tr>
<td>3</td>
<td>Channel (Traditional 2012) * <em>Country of Origin (China)</em></td>
<td>88.022</td>
<td>0.000</td>
</tr>
<tr>
<td>4</td>
<td>Channel (Traditional 2012) * <em>Country of Origin (Bangladesh)</em></td>
<td>81.857</td>
<td>0.000</td>
</tr>
<tr>
<td>5</td>
<td>Channel (Traditional 2012) * <em>Country of Origin (Mexico)</em></td>
<td>71.243</td>
<td>0.000</td>
</tr>
<tr>
<td>6</td>
<td>Channel (Traditional 2012) * <em>Country of Origin (Indonesia)</em></td>
<td>34.505</td>
<td>0.000</td>
</tr>
<tr>
<td>7</td>
<td>Channel (Traditional 2012) * <em>Country of Origin (Vietnam)</em></td>
<td>30.552</td>
<td>0.000</td>
</tr>
<tr>
<td>8</td>
<td>Channel (Traditional 2012) * Country of Origin (India)* Product type</td>
<td>16.673</td>
<td>0.000</td>
</tr>
</tbody>
</table>

4.3.2.1 Traditional Department Channel, Woven Shirts

Figure 4.32 through Figure 4.42 presents the DTA structure for the four product types in the traditional department channel through three years (2010-2012). The results indicated significant differences in woven shirts exports into the traditional department channel from China, Mexico, Bangladesh, Cambodia, India and Indonesia. Table 4.21 displays the DTA results for the woven shirts in the traditional department channel through three years (2010 -
the values in the table are directly drawn from decision tree model (refer to figure 6.32 through figure 6.42 in Appendix B respectively).

**Table 4.21: The Decision Tree Result for Woven Shirts in the Traditional Department Channel (2010-2012)**

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>40.30%</td>
<td>30.60%</td>
<td>53.90%</td>
</tr>
<tr>
<td>Mexico</td>
<td>N/A</td>
<td>N/A</td>
<td>18.30%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>14.40%</td>
<td>13.50%</td>
<td>25.70%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>59.20%</td>
<td>50.00%</td>
<td>74.00%</td>
</tr>
<tr>
<td>India</td>
<td>48.50%</td>
<td>29.30%</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>27.00%</td>
<td>25.30%</td>
<td>35.50%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>25.30%</td>
<td>37.80%</td>
</tr>
</tbody>
</table>

The DTA results suggest that Cambodia concentrated the highest proportion of its woven shirts exports into the traditional department channel (59.2%). Bangladesh indicates least emphasis on woven shirts in the traditional department channel for 2010 (14.4%). While China concentrated 40.3 percent of its woven shirt exports in the traditional department channel in 2010.

For the year of 2011, results suggested significant differences in woven shirts imports into the traditional department channel from all seven countries. Again, the DTA result indicated that Cambodia emphasized its woven shirts exports in the traditional department channel (50%). Bangladesh indicated the least concentration for woven shirts in this channel for 2011 (13.5%). While China concentrated 30.6 percent of its woven shirts export in traditional department channel.
In the year 2012, the DTA results indicated significant difference in woven shirts imports into the traditional department channel from all seven countries. Cambodia again indicated the highest woven shirts exports to the value department channel (74%). In contrast, Mexico indicated the least focus of woven shirts exports in the traditional department channel (18.3%). While China concentrated 53.9 percent of its woven shirts export in value department channel.

4.3.2.2 Traditional Department Channel, Denim Jeans

Table 4.22 displays the DTA results for the denim jeans in the traditional department channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.32 through figure 6.42 in Appendix B respectively). The results indicated significant differences in denim jeans exports into the traditional department channel from China, Mexico, Bangladesh, Cambodia, India and Indonesia.

Table 4.22: The Decision Tree Result for Denim Jeans in the Traditional Department Channel (2010-2012)

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>30.60%</td>
<td>28.30%</td>
<td>38.30%</td>
</tr>
<tr>
<td>Mexico</td>
<td>26.10%</td>
<td>21.00%</td>
<td>27.30%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>9.70%</td>
<td>14.70%</td>
<td>41.20%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>39.70%</td>
<td>30.20%</td>
<td>48.20%</td>
</tr>
<tr>
<td>India</td>
<td>8.50%</td>
<td>5.70%</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>20.00%</td>
<td>63.20%</td>
<td>51.50%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>16.30%</td>
<td>26.60%</td>
</tr>
</tbody>
</table>
The DTA results suggest that Cambodia concentrated the highest proportion of its denim jeans exports into the traditional department channel (39.7%). India indicates least emphasis on denim jeans in the traditional department channel for 2010 (8.5 %). While China concentrated 30.6 percent of its denim jeans exports in the traditional department channel in 2010.

For the year of 2011, results suggested significant differences in denim jeans imports into the traditional department channel from all seven countries. The DTA result indicated that Indonesia emphasized its denim jeans exports in the traditional department channel (63.2%). India indicated the least concentration for denim jeans in this channel for 2011 (5.7%). While China concentrated 28.3 percent of its denim jeans export in traditional department channel.

In the year 2012, the DTA results indicated significant difference in denim jeans imports into the traditional department channel from all seven countries. Indonesia again indicated the highest denim jeans exports to the traditional department channel (51.5%). In contrast, Vietnam indicated the least focus of denim jeans exports in the traditional department channel (26.6%). While China concentrated 38.3 percent of its denim jeans export in traditional department channel.

4.3.2.3 Traditional Department Channel, Knit Shirts

Table 4.23 displays the DTA results for the knit shirts in the traditional department channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.32 through figure 6.42 in Appendix B respectively).
The results indicated significant differences in knit shirts exports into the traditional department channel from China, Mexico, Bangladesh, Cambodia, India and Indonesia.

Table 4.23: The Decision Tree Result for Knit Shirts in the Traditional Department Channel (2010-2012)

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>37.70%</td>
<td>37.20%</td>
<td>46.60%</td>
</tr>
<tr>
<td>Mexico</td>
<td>N/A</td>
<td>21.20%</td>
<td>28.10%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>17.60%</td>
<td>20.30%</td>
<td>33.30%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>19.90%</td>
<td>19.00%</td>
<td>26.40%</td>
</tr>
<tr>
<td>India</td>
<td>49.60%</td>
<td>44.80%</td>
<td>52.70%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>26.20%</td>
<td>22.10%</td>
<td>41.10%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>28.50%</td>
<td>43.00%</td>
</tr>
</tbody>
</table>

The DTA results suggest that India concentrated the highest proportion of its knit shirts exports into the traditional department channel (49.6%). Bangladesh indicates least emphasis on knit shirts in the traditional department channel for 2010 (17.6 %). While China concentrated 37.7 percent of its knit shirts exports in the traditional department channel in 2010.

For the year of 2011, results suggested significant differences in knit shirts imports into the traditional department channel from all seven countries. Again, the DTA result indicated that India emphasized its knit shirts exports in the traditional department channel (44.8%). Cambodia indicated the least concentration for knit shirts in this channel for 2011 (20.3%). While China concentrated 37.2 percent of its knit shirts exports in the traditional department channel in 2011.
In the year 2012, the DTA results indicated significant difference in knit shirts imports into the traditional department channel from all seven countries. India again indicated the highest knit shirts exports to the traditional department channel (52.7%). In contrast, Cambodia indicated the least focus of knit shirts exports in the traditional department channel (26.4%). While China concentrated 46.6 percent of its knit shirts export in traditional department channel.

4.3.2.4 Traditional Department Channel, Pants

Table 4.24 displays the DTA results for the pants in the traditional department channel through three years (2010-2012), the values in the table are directly drawn from decision tree model (refer to figure 6.32 through figure 6.42 in Appendix B respectively). The results indicated significant differences in pants exports into the traditional department channel from China, Mexico, Bangladesh, Cambodia, India and Indonesia.

Table 4.24: The Decision Tree Result for Pants in the Traditional Department Channel (2010-2012)

<table>
<thead>
<tr>
<th>Year *</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>31.50%</td>
<td>23.80%</td>
<td>48.20%</td>
</tr>
<tr>
<td>Mexico</td>
<td>4.90%</td>
<td>N/A</td>
<td>5.80%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>25.60%</td>
<td>19.10%</td>
<td>43.60%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>26.80%</td>
<td>17.40%</td>
<td>40.70%</td>
</tr>
<tr>
<td>India</td>
<td>22.00%</td>
<td>19.40%</td>
<td>66.70%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>37.00%</td>
<td>27.80%</td>
<td>52.00%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>17.60%</td>
<td>35.80%</td>
</tr>
</tbody>
</table>
The DTA results suggest that Indonesia concentrated the highest proportion of its pants exports into the traditional department channel (37%). Mexico indicated least emphasis on pants in the traditional department channel for 2010 (4.9 %). While China concentrated 31.5 percent of its pants exports in the traditional department channel in 2010.

For the year of 2011, results suggested significant differences in pants imports into the traditional department channel from all seven countries. Again, The DTA result indicated that Indonesia emphasized its pants exports in the traditional department channel (27.8%). Cambodia indicated the least concentration for pants in this channel for 2011 (17.4%). While China concentrated 23.8 percent of its pants exports in the traditional department channel in 2011.

In the year 2012, the DTA results indicated significant difference in pants imports into the traditional department channel from all seven countries. India and Indonesia indicated the highest pants exports to the traditional department channel, accounting for 66.7 percent and 52 percent of their total exports of pants respectively. In contrast, Mexico indicated the least focus of pants exports in the traditional department channel (5.8%). While China concentrated 48.2 percent of its pants export in traditional department channel.
CHAPTER 5:
Conclusions, Discussion, Implications for Industry, Limitations and Future Research

5.1 Conclusions

In order to interpret the highly detailed decision trees, the most pronounced findings are highlighted by ranking the effects within each layer of the model (i.e., for research objective one and research objective two). First, the effects of the seven countries’ inventory presence in each channel will be summarized in terms of their importance followed by the product type results. The importance rankings are based directly upon the inventory proportions in the DTA models. That is, each country’s relative proportion of inventory by channel and for the next tree layer, product type are examined to determine the most important effects. It is important to note that countries may not rank as one who focuses heavily on a particular channel but may emerge as one who focuses heavily on the export of a specific product within this same channel. For example, Cambodia indicated that its highest overall concentration among the three channels is the mass merchant channel. However, the product level data demonstrate that Cambodia concentrates its woven shirts and denim jeans in the traditional department channel.

Quartiles were used to identify the ranking result. A quartile is a type of quantile. A rank set of data values is divided in to four equal groups by using three points. The middle value between the smallest number and the median of the data set is defined as the first quartile. The median of the data set is the second quartile, and the third quartile is defined as the middle value between the median and the highest value of the data set (Weisstein, 2015). For this research, if a country’s export percentage in a certain channel/ product type is above
median would be considered to have focus in that retail channel/product type. Quartiles for the product level are listed under each table for every product type for reference (e.g. Table 5.1-Table 5.3).

5.1.1: Countries of Origin and Channel

Overall, the DTA indicated that Bangladesh, Mexico and Cambodia highly concentrated their exports in the mass merchant channel through all three years (2010-2012). While China is ranked around five among seven countries in the mass merchant channel, which suggests China did not focus its exports as heavily in the mass merchant channel, compared to the other countries in the study.

Vietnam, Bangladesh and Indonesia indicated consistent focus with apparel exports in the value department channel. While China again ranked fifth among the seven countries for its relative inventory focus in the value department channel. Again, indicating that among the examined channels, the value department channel nor the mass channel appear to be a singular focus of China’s apparel export efforts.

India and China focused their apparel exports primarily into the traditional department channel. As expected, the results suggest that China and India are able to focus their export efforts on relatively higher value-added products in contrast to many of the LDCs within the sample data. Subsequently, Bangladesh indicated the least apparel export presence in the channel, consistent with the finding that this country tends to focus exports in the two lower cost channels considered in the study.
5.1.2 Source Country of Origin and Product Type

5.1.2.1 Woven Shirts

The product level findings associated with the presence of woven shirts among the retail channels are mostly consistent with the country level findings. Results for Bangladesh indicated a strong focus on woven shirt exports in both the mass merchant channel and the value department channel (Table 5.1 and Table 5.2). In addition, results for Indonesia indicated a focus on woven shirt exports in the value department channel. To a lesser degree, Vietnam focused on woven shirt exports in the value department channel in the year 2011 and 2012 (Table 5.2). Further, analysis of China and Cambodia indicated concentration of woven shirts in the traditional department channel (Table 5.3).

Table 5.1: The Decision Tree Result for Woven Shirts in the Mass Merchant Channel (2010-2012) with Quartile

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>8.90%</td>
<td>26.70%</td>
<td>N/A</td>
</tr>
<tr>
<td>Mexico</td>
<td>N/A</td>
<td>N/A</td>
<td>11.30%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>28.20%</td>
<td>31.80%</td>
<td>22.90%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>1.90%</td>
<td>21.10%</td>
<td>9.10%</td>
</tr>
<tr>
<td>India</td>
<td>7.20%</td>
<td>22.90%</td>
<td>9.10%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>4.70%</td>
<td>13.90%</td>
<td>10.80%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>15.60%</td>
<td>6.50%</td>
</tr>
</tbody>
</table>

*2010 quartile: range, 26.3 (1.9-8.4, 8.5-15.1, 15.2-21.6, 21.7-28.2); 2011 quartile: range, 17.9 (13.9-18.4, 18.5-22.8, 22.9-27.3, 27.4-31.8); 2012 quartile: range, 16.4 (6.5-10.6, 10.7-14.7, 14.8-18.8, 18.9-22.9)
Table 5.2: The Decision Tree Result for Woven Shirts in the Value Department Channel (2010-2012) with Quartile

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>51.90%</td>
<td>42.60%</td>
<td>32.30%</td>
</tr>
<tr>
<td>Mexico</td>
<td>N/A</td>
<td>n/a</td>
<td>67.10%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>55.60%</td>
<td>54.20%</td>
<td>49.90%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>29.60%</td>
<td>25.90%</td>
<td>17.00%</td>
</tr>
<tr>
<td>India</td>
<td>44.60%</td>
<td>50.70%</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>67.50%</td>
<td>61.60%</td>
<td>54.10%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>58.90%</td>
<td>54.80%</td>
</tr>
</tbody>
</table>

*2010 quartile: range, 37.9 (39.6-39.1, 39.2-48.5, 48.6-58, 58.1-67.5); 2011 quartile: range, 35.7 (25.9-34.1, 34.2-43.7, 43.8-52.6, 52.7-61.6); 2012 quartile: range, 50.1 (17.0-29.5, 29.6-42, 42.1-54.6, 54.7-67.1)

Table 5.3: The Decision Tree Result for Woven Shirts in the Traditional Department Channel (2010-2012) with Quartile

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>40.30%</td>
<td>30.60%</td>
<td>53.90%</td>
</tr>
<tr>
<td>Mexico</td>
<td>N/A</td>
<td>N/A</td>
<td>18.30%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>14.40%</td>
<td>13.50%</td>
<td>25.70%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>59.20%</td>
<td>50.00%</td>
<td>74.00%</td>
</tr>
<tr>
<td>India</td>
<td>48.50%</td>
<td>29.30%</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>27.00%</td>
<td>25.30%</td>
<td>35.50%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>25.30%</td>
<td>37.80%</td>
</tr>
</tbody>
</table>

*2010 quartile: range, 44.8 (14.4-25.6, 25.7-36.8, 36.9-48, 48.1-59.2); 2011 quartile: range, 36.5 (13.5-22.6, 22.7-31.7, 31.8-40.8, 40.9-50); 2012 quartile: range, 55.7 (18.3-32.2, 32.3-46.1, 46.2-60, 60.1-74)
5.1.2.2 Denim Jeans

Bangladesh and Mexico emerge as the two countries that focus denim jeans exports within the mass merchant channel (Table 5.4). The data suggest that India focuses its denim exports in the value department channel (Table 5.5). Results for Indonesia indicate focus of denim jean exports in the traditional department store channel, along with those for Cambodia (Table 5.6). Again, though Cambodia does not focus its highest relative proportion of exports into the traditional department channel, it appears to have inroads into this channel with its denim jeans exports.

Table 5.4: The Decision Tree Result for Denim Jeans in the Mass Merchant Channel (2010-2012) with Quartile

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>12.00%</td>
<td>41.90%</td>
<td>N/A</td>
</tr>
<tr>
<td>Mexico</td>
<td>N/A</td>
<td>45.50%</td>
<td>31.20%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>39.80%</td>
<td>45.30%</td>
<td>27.60%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>0.20%</td>
<td>36.30%</td>
<td>21.80%</td>
</tr>
<tr>
<td>India</td>
<td>1.90%</td>
<td>54.30%</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>6.20%</td>
<td>26.50%</td>
<td>5.60%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>55.30%</td>
<td>4.20%</td>
</tr>
</tbody>
</table>

*2010 quartile: range, 39.6 (0.2-10.1, 10.2-20, 20.1-29.9, 30-39.8); 2011 quartile: range, 28.8 (26.5-33.7, 33.8-40.9, 41-48.1, 48.2-55.3); 2012 quartile: range, 27 (4.2-10.9, 11-17.7, 17.8-24.5, 24.6-31.2)
Table 5.5: The Decision Tree Result for Denim Jeans in the Value Department Channel (2010-2012) with Quartile

<table>
<thead>
<tr>
<th>Year *</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>57.60%</td>
<td>32.70%</td>
<td>44.60%</td>
</tr>
<tr>
<td>Mexico</td>
<td>51.90%</td>
<td>33.30%</td>
<td>41.30%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>52.80%</td>
<td>41.70%</td>
<td>34.90%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>65.00%</td>
<td>31.70%</td>
<td>36.60%</td>
</tr>
<tr>
<td>India</td>
<td>91.80%</td>
<td>33.70%</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>81.50%</td>
<td>10.10%</td>
<td>37.30%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>24.00%</td>
<td>65.40%</td>
</tr>
</tbody>
</table>

*2010 quartile: range, 39.9 (51.9-61.8, 61.9-71.8, 71.9-81.8, 81.9-91.8); 2011 quartile: range, 31.6 (10.1-18, 18.1-25.9, 26-33.8, 33.9-41.7); 2012 quartile: range, 30.5 (34.9-42.5, 42.6-50.1, 50.2-57.7, 57.8-65.4)

Table 5.6: The Decision Tree Result for Denim Jeans in the Traditional Department Channel (2010-2012) with Quartile

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>30.60%</td>
<td>28.30%</td>
<td>38.30%</td>
</tr>
<tr>
<td>Mexico</td>
<td>26.10%</td>
<td>21.00%</td>
<td>27.30%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>9.70%</td>
<td>14.70%</td>
<td>41.20%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>39.70%</td>
<td>30.20%</td>
<td>48.20%</td>
</tr>
<tr>
<td>India</td>
<td>8.50%</td>
<td>5.70%</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>20.00%</td>
<td>63.20%</td>
<td>51.50%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>16.30%</td>
<td>26.60%</td>
</tr>
</tbody>
</table>

*2010 quartile: range, 31.2 (8.5-16.3, 16.4-24.1, 24.2-31.9, 32-39.7); 2011 quartile: range, 57.5 (5.7-20, 20.1-34.4, 34.5-48.8, 48.9-63.2); 2012 quartile: range, 24.9 (26.6-32.8, 32.9-39, 39.1-45.2, 45.3-51.5)
5.1.2.3 Knit Shirts

The data suggest that Cambodia and Bangladesh concentrated their exports of knit shirts in the mass merchant channel (Table 5.7). China focused their knit shirts exports into the value department channel. To a lesser degree, Bangladesh and Cambodia indicated focus in the knit shirts export in the value department channel (Table 5.8). Both China and India focused their knit shirt exports into the traditional department channel, India indicated the largest focus on knit shirts was in the traditional department store channel (Table 4.23).

Table 5.7: The Decision Tree Result for Knit Shirts in the Mass Merchant Channel (2010-2012) with Quartile

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>12.20%</td>
<td>26.70%</td>
<td>N/A</td>
</tr>
<tr>
<td>Mexico</td>
<td>19.00%</td>
<td>32.00%</td>
<td>18.60%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>31.80%</td>
<td>43.90%</td>
<td>15.20%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>28.80%</td>
<td>53.70%</td>
<td>29.80%</td>
</tr>
<tr>
<td>India</td>
<td>11.40%</td>
<td>30.30%</td>
<td>15.90%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>17.80%</td>
<td>39.60%</td>
<td>23.20%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>30.40%</td>
<td>8.80%</td>
</tr>
</tbody>
</table>

*2010 quartile: range, 20.4 (11.4-16.5, 16.6-21.6, 21.7-26.7, 26.8-31.8); 2011 quartile: range, 27 (26.7-33.4, 33.5-40.2, 40.3-47, 47.1-53.7); 2012 quartile: range, 21 (8.8-14, 14.1-19.3, 19.4-24.5, 24.6-29.8)
Table 5.8: The Decision Tree Result for Knit Shirts in the Value Department Channel (2010-2012) with Quartile

<table>
<thead>
<tr>
<th>Year *</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>50.30%</td>
<td>73.80%</td>
<td>37.30%</td>
</tr>
<tr>
<td>Mexico</td>
<td>N/A</td>
<td>45.60%</td>
<td>53.00%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>56.00%</td>
<td>34.80%</td>
<td>52.30%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>50.20%</td>
<td>27.20%</td>
<td>47.90%</td>
</tr>
<tr>
<td>India</td>
<td>39.60%</td>
<td>23.40%</td>
<td>31.80%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>56.10%</td>
<td>37.60%</td>
<td>36.00%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>41.50%</td>
<td>47.90%</td>
</tr>
</tbody>
</table>

*2010 quartile: range, 16.5 (39.6-43.7, 43.8-47.8, 47.9-51.9, 52-56.1); 2011 quartile: range, 50.4 (23.4-36, 36.1-48.6, 48.7-61.2, 61.3-73.8); 2012 quartile: range, 21.2 (31.8-37.1, 37.2-42.4, 42.5-47.7, 47.8-53)

Table 5.9: The Decision Tree Result for Knit Shirts in the Traditional Department Channel (2010-2012) with Quartile

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>37.70%</td>
<td>37.20%</td>
<td>46.60%</td>
</tr>
<tr>
<td>Mexico</td>
<td>N/A</td>
<td>21.20%</td>
<td>28.10%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>17.60%</td>
<td>20.30%</td>
<td>33.30%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>19.90%</td>
<td>19.00%</td>
<td>26.40%</td>
</tr>
<tr>
<td>India</td>
<td>49.60%</td>
<td>44.80%</td>
<td>52.70%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>26.20%</td>
<td>22.10%</td>
<td>41.10%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>28.50%</td>
<td>43.00%</td>
</tr>
</tbody>
</table>

*2010 quartile: range, 32 (17.6-25.6, 25.7-33.6, 33.7-41.6, 41.7-49.6); 2011 quartile: range, 25.8 (19-25.4, 25.5-31.9, 32-38.3, 38.4-44.8); 2012 quartile: range, 26.3 (26.4-32.9, 33-39.5, 39.6-46.1, 46.2-52.7)
5.1.2.4 Pants

Results indicated that Indonesia and Bangladesh had indicated the highest relative export of pants in the mass merchant channel as well as Mexico (Table 5.10). While India and Cambodia emphasized their pant exports into the value department channel (Table 5.11). Results for Cambodia also indicated a focus on the pants category in the traditional department channel. To a lesser degree, results showed China had indicated a focus on the pants category in the traditional department channel (Table 5.12).

Table 5.10: The Decision Tree Result for Pants in the Mass Merchant Channel (2010-2012) with Quartile

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>8.80%</td>
<td>28.30%</td>
<td>N/A</td>
</tr>
<tr>
<td>Mexico</td>
<td>39.30%</td>
<td>N/A</td>
<td>27.70%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>23.80%</td>
<td>37.10%</td>
<td>19.60%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>12.30%</td>
<td>26.50%</td>
<td>17.40%</td>
</tr>
<tr>
<td>India</td>
<td>4.50%</td>
<td>1.40%</td>
<td>N/A</td>
</tr>
<tr>
<td>Indonesia</td>
<td>11.70%</td>
<td>41.10%</td>
<td>30.30%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>28.20%</td>
<td>13.70%</td>
</tr>
</tbody>
</table>

*2010 quartile: range, 34.8 (4.5-13.2, 13.3-21.9, 22-30.6, 30.7-39.3); 2011 quartile: range, 39.7 (1.4-11.3, 11.4-21.2, 21.3-31.2-31.3-41.1); 2012 quartile: range, 16.6 (13.7-17.8, 17.9-22, 22.1-26.1, 26.2-30.3)
Table 5.11: The Decision Tree Result for Pants in the Value Department Channel (2010-2012) with Quartile

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>59.40%</td>
<td>46.90%</td>
<td>39.30%</td>
</tr>
<tr>
<td>Mexico</td>
<td>59.50%</td>
<td>N/A</td>
<td>63.90%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>49.60%</td>
<td>44.50%</td>
<td>36.30%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>63.40%</td>
<td>51.50%</td>
<td>43.20%</td>
</tr>
<tr>
<td>India</td>
<td>74.40%</td>
<td>78.70%</td>
<td>26.90%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>50.50%</td>
<td>31.10%</td>
<td>19.40%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>51.30%</td>
<td>48.70%</td>
</tr>
</tbody>
</table>

*2010 quartile: range, 24.8 (49.6-55.8, 55.9-62, 62.1-68.2, 68.3-74.4); 2011 quartile: range, 47.6 (31.1-43, 43.1-54.9, 55-66.8, 66.9-78.7); 2012 quartile: range, 44.5 (19.4-30.5, 30.6-41.6, 41.7-52.7, 52.8-63.9)

Table 5.12: The Decision Tree Result for Pants in the Traditional Department Channel (2010-2012) with Quartile

<table>
<thead>
<tr>
<th>Year*</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>31.50%</td>
<td>23.80%</td>
<td>48.20%</td>
</tr>
<tr>
<td>Mexico</td>
<td>4.90%</td>
<td>N/A</td>
<td>5.80%</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>25.60%</td>
<td>19.10%</td>
<td>43.60%</td>
</tr>
<tr>
<td>Cambodia</td>
<td>26.80%</td>
<td>17.40%</td>
<td>40.70%</td>
</tr>
<tr>
<td>India</td>
<td>22.00%</td>
<td>19.40%</td>
<td>66.70%</td>
</tr>
<tr>
<td>Indonesia</td>
<td>37.00%</td>
<td>27.80%</td>
<td>52.00%</td>
</tr>
<tr>
<td>Vietnam</td>
<td>N/A</td>
<td>17.60%</td>
<td>35.80%</td>
</tr>
</tbody>
</table>

*2010 quartile: range, 32.1 (4.9-12.9, 13-20.9, 21-28.9, 29-37); 2011 quartile: range, 10.4 (17.4-20, 20.1-22.6, 22.7-25.2, 25.3-27.8); 2012 quartile: range, 60.9 (5.8-21, 21.1-36.2, 36.3-51.4, 51.5-66.7)
5.2 Discussion:

For the years 2010 through 2012, the DTA results indicated that LDCs including Bangladesh, Cambodia and Indonesia focused their ability on supplying apparel to the mass merchant channel. This finding is not surprising given that the mass channel business model is centered on selling low-cost inventory at high volumes. In contrast, two developing nations, China and India emphasized their exports in the traditional department channel. Although from a sheer quantity perspective, China remains the largest supplier for the U.S. apparel market, the DTA results indicate that China emphasizes its exports in the higher price channel (i.e., traditional department channel) rather than the lower price channels (i.e., mass merchant and value department) included in this study. This finding supports the logic of Neo-classical export growth theory (Salvatore and Hatcher, 1991; Moschos, 1989; Mbaku, 1989; Balassa, 1985; Funke & Ruhwedel, 2001 and De Benedictis et al., 2009) which states that as economies develop, labor costs rise and they become less competitive in low cost production, but capable of supplying higher value-added products.

China’s experience as a major global exporter to the developed world, has indeed contributed to economic growth and an increase of per capita income which facilitates the country to engage in the manufacture of higher value products (Marketline, 2012). During the three year period, The World Bank economic data indicated growth in GDP per capita, GNI per capita, and export values (Table 2.1 to Table 2.3) providing supporting evidence of China’s continued economic progress.

The DTA also illustrates that specific countries tend to focus their exports of specific product types into certain channels. Among the dataset, Bangladesh focused exports of denim
jeans, knit shirts and pants in the lowest price market (i.e. mass merchant channel). Similarly, Bangladesh focused its woven shirt exports in the two lower-price channels (i.e. mass merchant channel and value department channel).

5.2.1: The Role of the LDCs

The two LDCs included in the study are represented by Bangladesh and Cambodia. As such these countries have similar macro-economic environments but may be different in terms of their micro-economic environments and internal manufacturing capability in the garment industry. The results clearly suggested that LDCs tend to focus efforts in the low cost channels for the U.S. apparel market. Though, limited findings may point to inroads into higher value apparel exports from Cambodia to the U.S.

Bangladesh primarily focuses efforts on the low cost channel with garments that require extensive cut and sew manufacturing capability which is heavily reliant on labor for production. This explains Bangladesh’s position in woven shirts and denim jeans production. In addition, previous research pointed out Bangladesh has well-established supply chain for knit wear, 85 percent to 90 percent of knit fabric required in the Bangladesh apparel industry can be sourced domestically (Lopez-Acevedo, G. & Robertson, 2012). The findings can be further explained by examining the Bangladeshi export environment including its economy, trade policy with the United States and labor practices. Bangladesh represents one of the two LDCs included in the study and has the second lowest GNI per capita (e.g. $950 per annum, 2012) among the seven countries. As a result of its economic status Bangladesh qualifies for the U.S. Tariff Relief Assistance for Developing Economies Act of 2009 which allows for "duty-free access for apparel assembled in those (member) countries and exported to the U.S.

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(United Nations, 2012)." until 2019. Clearly, this preferential policy gives Bangladesh as well as Cambodia advantages in the U.S. market for apparel.

However, as aforementioned, the Bangladeshi garment industry has recently been criticized for worker safety and labor violation issues. This criticism has also been attributed to U.S. retailers and supply chain partners in numerous channels including Walmart (The Independent, 2012). The risk associated with the unstable political and social climate in Bangladesh may impact its sustainability and reputation as a supplier country, which in the future could hinder the country’s ability to advance economically and enter higher end markets.

In contrast to Bangladesh, Cambodia exported a large proportion of woven shirt and denim jeans and pants exports in the higher price channel (traditional department channel). However, as expected Cambodia also focused on the lower-end mass merchant channel with its export of knit shirts. Cambodia has the lowest GNI per capita (e.g. $880 per annum, 2012) among the countries in the study and is noted along with Bangladesh as one of the lowest labor cost source countries in the world according to the Verisk Maplecroft™ (2015) global ranking based upon an aggregate measure of wages, employment regulations, social security contributions and labor productivity. Therefore, Cambodia is competitive in terms of its ability to produce low-cost apparel based on its labor market

From a risk perspective, Cambodia is also experiencing negative impacts from its garment industry. Recently, Cambodia’s garment workers achieved a wage raise after a long protest (Chen, 2015). Though western companies indicated support for these positive ethical
actions, Cambodian manufacturers were concerned that the wage increase would result in fewer orders from western companies (Green, 2014).

In contrast to Bangladesh, the study’s results suggest that Cambodia focuses its apparel export efforts (i.e., for woven shirts, denim jeans, pants) more heavily in the traditional department store channels which suggests that the country may be positioned to develop stronger supply relationships with higher price retailers in the U.S. Further, from product perspective, report (Kane, 2015) indicated that 60 percent of Cambodia’s garment industry is cut make trim, which reveal Cambodia’s good ability of complete labor intensive tasks in the apparel industry. This fact helps to explain Cambodia’s focus on woven shirts, denim jeans and pants production.

5.2.2: The Role of Developing Countries

The five developing countries considered in the study indicate a range of economic, social and political climates. The two highest countries in terms of per annum GNI are represented by Mexico and China, respectively. Indonesia reports the next highest per annum GNI followed by Vietnam and India, respectively (Table 2.1 to Table 2.3). The heterogeneity within this group of five countries is comparatively more extensive than it is between the two LDCs included in the study (i.e., Bangladesh and Cambodia).

Mexico concentrates its export efforts on denim jeans and pants to low price channels (i.e. mass merchant channel) in the study. Although, Mexico has the highest GNI per capita (e.g. $9,720 per annum, 2012) among the seven countries, as well as a proximate geographic location to the U.S. and the regulatory benefit of CAFTA and NAFTA, its focus has remained on low cost channels. Furthermore, Mexico is noted as one of the most important
producers of denim fabric which helps to explain its position in the denim jeans market (Agarwa, 2012).

Some potential reasons that Mexico may focus on apparel exports for distribution to lower-end U.S. retail channels include cultural characteristics, supply chain organization and potential trade policy issues. Li (2012) suggested that a number of characteristics typical of Mexican culture impact the country’s ability to do business in the global environment. For example, the author points out that Mexican workers lack a strict sense of time which results in lengthy business meetings and ultimately slows the negotiation process (Li, 2012).

Further, an earlier Wharton article from 2005 reported that Mexico’s supply chains are comparatively less organized and not as well established as supply chains in China, which causes production delays. As such, the article also points out that a large percentage of Mexican production is limited to the manufacture of basic items with little added-value, instead of more fashionable products that sell for higher prices. The article attributes this situation to the existence of Mexican protectionist policies that are designed to inhibit foreign investment and ownership of textile production facilities in the country (“The Chinese Dragon Threatens”, 2005).

Additionally, according Kurtz (2013) there is a lack of well educated workers in the Mexican work force that inhibits their production capability for higher value-added products which require greater skill and knowledge to produce. However it is important to note that in recent years examples of Mexican exporter’s efforts to improve their supply-chain capabilities are evident in the trade literature (Moreno-Brid et al., 2005).
The results suggest that India highly concentrated its exports of knit shirts to the higher-end market (i.e. value department channel and traditional department channel). In a lesser degree, India also focus its exports of denim jeans and pants in the value department channel. India reports a relatively low GNI per capita (e.g. $1,550 per annum, 2012) and a comparatively higher cost of export per container (e.g. $1,005 per container, 2012) among the countries in the study.

Similar to the situation in Mexico, research suggests that cultural practices may impede labor productivity among Indian workers which might jeopardize the country’s capability to be a volume exporter of apparel (Lu and Karpova, 2011). However, in contrast to Mexico which tends to serve lower-end U.S. markets, India appears to be more focused on the higher-end channels in the study. Also, Indian’s export value had become 700.4% of its export value in 2000, which showed a 600.4% growth in 12 years. This fast growth in export value as well as the study findings indicate the India’s status as a higher value producer of apparel (Table 2.1 to Table 2.3).

Results for Indonesia indicated a fragmented focus among various product types across the three channels. For woven shirts and denim jeans, Indonesia focus more heavily on the mass merchant channel, for denim jeans, Indonesia focus more on the value department channel, and for pants, Indonesia put more effort into the mass merchant channel. Indonesia has the third highest GNI per capita (e.g. $3,420 per annum, 2012) among seven countries, but its export value is the grown second lowest among the seven countries. In 2012, Indonesia’s export value only had become 288.2% of its export value in 2000, which only had risen 188.2% since 2000. Mentioned previously, Indonesia’s lack of clear foreign direct
investment (FDI) policy may interfere with export-led growth for this country in the future (Gumilang et al., 2011).

Vietnam concentrated its woven shirt exports in the value department channel. Although Vietnam didn’t present obvious focus in other product category, research results showed that to a lesser degree, Vietnam exported decent percentage of their other product (denim jeans, knit shirts, and pants) in to value department channel compare with other countries. Vietnam indicates a relatively low GNI per capita (e.g. $1,560 per annum, 2012) among the seven countries. However, Vietnam’s export values grew from 2010-2012, making this country grew as the second fastest behind China among the seven countries. In 2012, Vietnam’s export value had become 792.8% of its export value in 2000, or had risen 692.8% since 2000 (Tables 2.1 - Tables 2.3).

The trade literature provides numerous examples of Vietnam’s focus on developing its textile and apparel industry to be competitive in the global market. For example, Vietnam demonstrated persistent efforts to improve its textile and apparel capabilities in recent years. For example, Textile World (2012) reported that in 2010, Vietnamese investment in textile machinery (i.e. 3,656,756 ring spindles and 104,348 rotors), as well as incentives for FDI have resulted in the improvement of the country’s industry, which strengthen Vietnam’s competitive position in the global apparel market. In addition, Textile World (2012) points out the success of the Vietnam National Textile and Garment Group (VINATEX) which has established relationships with more than 400 organizations from 65 countries worldwide and is considered an important to the Asian region. VINATEX plans to continue focusing on R&D for the industry and is dedicated to the development of a skilled Vietnamese workforce.
(“Vietnam: A Small Tiger”, 2012). Currently, Vietnam is negotiating a multi-lateral trade agreement, the Trans-Pacific Partnership (TPP), which is a regional free trade agreement (FTA) with a group of countries also including Australia, Brunei, Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and the United States. If and when the TPP is finalized, it will allow Vietnam’s textile and garment exports duty-free access to the United States (‘Vietnam on the move’, 2014). The efforts of the Vietnamese government appear to have positioned the country’s apparel industry in a strong position for future participation in the global market.

The DTA results indicated China focuses on the production of knit shirts for the higher end channel (i.e. value department channel and traditional department channel) as well as woven shirts and pants for the higher end channel (i.e. traditional department market).

The economic development and newly applied Labor Contract Law lead to continually raising GNI per capita (e.g. $5,730 per annum, 2012) (Chen and Funke, 2009; The World Bank, 2015). Meanwhile, The Chinese government began focus on sustainable development, Chinese companies are required to conduct business with social responsibilities, because Chinese government states that doing business without pay attention to social responsibilities can harm the Chinese economic growth (Levine, 2008). all the improvement in the CSR raised labor cost and production cost in China (Chen and Funke, 2009), which explains China’s focus on supply for high value-added retail channels.

Despite the increasing cost, China still has relatively good infrastructure and skillful manufacturing expertise. China also offers a large variety of sourcing availabilities in the textile and apparel industry which few other countries can completely match (Saheed, 2012).
Therefore, China presented strong ability of exports all four kinds of product discussed in this study, and still is a domain exporter for the U.S. apparel market.

5.3 Implications for Industry

This research provides insight view of developing countries and LDCs supply focus among three retail channels and four product types. The research results provide direction for U.S. retailer sourcing partner selection. Although volume wise China still is the dominant supplier for the U.S. apparel market, given its continuously higher costs, U.S. retailers may begin to look for lower-cost suppliers from other developing nations and LDCs. For instance, retailers in the mass merchant channel can increasingly take advantage of suppliers from Bangladesh and Mexico. In addition, U.S. retailers in the value department channel could focus their network on Vietnamese suppliers who are already supplying this channel in specific product categories (i.e., woven shirts, knit shirts, denim jeans and pants). Likewise, while Mexico currently provides denim jeans for the mass merchant channel, retailers in higher-end channels can target this source country for denim products if it manages to modernize its supply chain organization. Finally, Cambodian and Indonesia producers indicated a focus on woven shirts in higher-end channels which may suggest the countries future potential for providing higher-value cut and sew woven garments for U.S. retail channels.

This research also reveals that though countries may categorized as LDCs, they have begun to build networks in the higher-end retail channel within this study. For example, Cambodia is known as one of the LDCs that would typically be expected to focus on low cost manufacturing, however, Cambodia concentrates most of its apparel exports to the U.S.
in the traditional department channel. Therefore, for high-end buyers, Cambodia offers a competitive supply alternative to more developed nations such as China and India.

5.4 Limitations and Future Research

First of all, this research employs observed market data to infer the sourcing effort of the seven focal countries among three large U.S. retail channels. Though efforts were made to capture a large, representative sample of market level apparel data, the potential for sampling error cannot be ignored.

Second, though the data collection method was designed to capture a specific representation of inventory on the retail floor, sample size fluctuation from year to year, within channels is present in the data. Though this fluctuation may be realistic as market demands change and inventory naturally follows this change, during 2011 in the mass channel considerably more data were captured in the mass channel. For example, in 2010 the mass channel accounted for 14.7 percent of imports across the tree channels compared to 2011 where mass accounted for 36.2 percent of apparel imports. Trade data does not suggest overall increases in apparel imports, thereby suggesting potential sample error with the data. Therefore, the data are only interpreted within year by percentages. Comparisons among years are avoided.

Third, the study assumes that apparel products in the traditional department store have higher value (i.e., higher cost and retail price), while apparel products in the value department store channel and the mass merchant channel have lower prices, respectively. However, specific price data are not examined in this research. Further, significant retail channels including specialty channels (e.g., Anthropologie), category specialists (e.g., Dick’s
Sporting Goods) and luxury retailers are not included in this analysis. These channels tend to 
cater to consumers willing to pay higher prices for apparel. However, they may also have 
sourcing advantages in LDCs as well as continued relationships with China.

Previous academic research indicates that a number of different factors can influence 
retailer’s selection of sources for production. Though this research did not investigate these 
factors directly, interpretation of the secondary data findings suggest that culture, country- 
level labor climate, trade policy, education and level of economic development appear to 
affect countries ability to source to the mainstream U.S. retail market.

Furthermore, this study specifically focused on five developing nations and two LDCs. 
A comparison of international trade performance that incur prorates developed nations along 
with developing nations and LDCs could add to future understanding in this area.

Finally, because the study’s results are based entirely upon secondary data, a follow-up 
study that focuses on primary data gathered directly from U.S. retail buyers would add 
important insight into understanding the countries’ roles as sources of supply in the retail 
environment. Vice versa, supplier perspectives of the U.S. market should also be considered 
particularly within the areas of business culture and trade policy. From a more general 
perspective, further research into the impacts of workforce development and labor protection 
may provide insight into the manner that LDCs can offer a stable source of supply for 
western markets.
REFERENCES


APPENDICES
Appendix A

Explanation of Terms

The World Bank (2015) provided clear identifications for indicators in the table.

Table 6.1 Explanation of World Bank Indicator

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP per capita</td>
<td>GDP per capita is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars.</td>
</tr>
<tr>
<td>GNI per capita</td>
<td>GNI per capita (formerly GNP per capita) is the gross national income, converted to U.S. dollars using the World Bank Atlas method, divided by the midyear population. GNI is the sum of value added by all resident producers plus any product taxes (less subsidies) not included in the valuation of output plus net receipts of primary income (compensation of employees and property income) from abroad. GNI, calculated in national currency, is usually converted to U.S. dollars at official exchange rates for comparisons across economies, although an alternative rate is used when the official exchange rate is judged to diverge by an exceptionally large margin from the rate actually applied in international transactions. To smooth fluctuations in prices and exchange rates, a special Atlas method of conversion is used by the World Bank. This applies a conversion factor that averages the exchange rate for a given year and the two preceding years, adjusted for differences in rates of inflation between the country, and through 2000, the G-5 countries (France, Germany, Japan, the United Kingdom, and the United States). From 2001, these countries include the Euro area, Japan, the United Kingdom, and the United States.</td>
</tr>
</tbody>
</table>

*Note. From “Indicators” by The World Bank, 2015*
Table 6.1 continued

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lead time to export</td>
<td>Lead time to export is the median time (the value for 50 percent of shipments) from shipment point to port of loading. Data are from the Logistics Performance Index survey. Respondents provided separate values for the best case (10 percent of shipments) and the median case (50 percent of shipments). The data are exponentiated averages of the logarithm of single value responses and of midpoint values of range responses for the median case.</td>
</tr>
<tr>
<td>Merchandise trade</td>
<td>Merchandise trade as a share of GDP is the sum of merchandise exports and imports divided by the value of GDP, all in current U.S. dollars.</td>
</tr>
<tr>
<td>Export values</td>
<td>Export values are the current value of exports (f.o.b.) converted to U.S. dollars and expressed as a percentage of the average for the base period (2000). UNCTAD's export value indexes are reported for most economies. For selected economies for which UNCTAD does not publish data, the export value indexes are derived from export volume indexes (line 72) and corresponding unit value indexes of exports in the IMF’s International Financial Statistics.</td>
</tr>
<tr>
<td>Export volume</td>
<td>Export volume indexes are derived from UNCTAD's volume index series and are the ratio of the export value indexes to the corresponding unit value indexes. Unit value indexes are based on data reported by countries that demonstrate consistency under UNCTAD quality controls, supplemented by UNCTAD’s estimates using the previous year’s trade values at the Standard International Trade Classification three-digit level as weights. To improve data coverage, especially for the latest periods, UNCTAD constructs a set of average prices indexes at the three-digit product classification of the Standard International Trade Classification revision 3 using UNCTAD’s Commodity Price Statistics, international and national sources, and UNCTAD secretariat estimates and calculates unit value indexes at the country level using the current year’s trade values as weights. For economies for which UNCTAD does not publish data, the export volume indexes (lines 72) in the IMF's International Financial Statistics are used.</td>
</tr>
</tbody>
</table>

Note. From “Indicators” by The World Bank, 2015
<table>
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<tr>
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</thead>
<tbody>
<tr>
<td>Investment in energy with private participation (current US$)</td>
<td>Investment in energy projects with private participation covers infrastructure projects in energy (electricity and natural gas transmission and distribution) that have reached financial closure and directly or indirectly serve the public. Movable assets and small projects such as windmills are excluded. The types of projects included are operations and management contracts, operations and management contracts with major capital expenditure, greenfield projects (in which a private entity or a public-private joint venture builds and operates a new facility), and divestitures. Investment commitments are the sum of investments in facilities and investments in government assets. Investments in facilities are the resources the project company commits to invest during the contract period either in new facilities or in expansion and modernization of existing facilities. Investments in government assets are the resources the project company spends on acquiring government assets such as state-owned enterprises, rights to provide services in a specific area, or the use of specific radio spectrums. Data are in current U.S. dollars.</td>
</tr>
<tr>
<td>Cost to export (US$ per container)</td>
<td>Cost measures the fees levied on a 20-foot container in U.S. dollars. All the fees associated with completing the procedures to export or import the goods are included. These include costs for documents, administrative fees for customs clearance and technical control, customs broker fees, terminal handling charges and inland transport. The cost measure does not include tariffs or trade taxes. Only official costs are recorded. Several assumptions are made for the business surveyed: Has 60 or more employees; Is located in the country's most populous city; Is a private, limited liability company. It does not operate within an export processing zone or an industrial estate with special export or import privileges; Is domestically owned with no foreign ownership; Exports more than 10% of its sales. Assumptions about the traded goods: The traded product travels in a dry-cargo, 20-foot, full container load. The product: Is not hazardous nor does it include military items; Does not require refrigeration or any other special environment; Does not require any special phytosanitary or environmental safety standards other than accepted international standards.</td>
</tr>
</tbody>
</table>

*Note. From “Indicators” by The World Bank, 2015*
Table 6.1 Continued

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Documents to export (number)</strong></td>
<td>All documents required per shipment to export goods are recorded. It is assumed that the contract has already been agreed upon and signed by both parties.</td>
</tr>
<tr>
<td><strong>Labor force participation rate</strong></td>
<td>Labor force participation rate is the proportion of the population ages 15 and older that is economically active: all people who supply labor for the production of goods and services during a specified period.</td>
</tr>
</tbody>
</table>

*Note. From “Indicators” by The World Bank, 2015*
Appendix B

Figures of Decision Tree

Figure 6.1 - Inventory by Sourcing Country of Origin, Mass Merchant Channel, 2010

Figure 6.2 - Inventory by Sourcing Country of Origin, Mass Merchant Channel, 2011

Figure 6.3 - Inventory Presents by Sourcing Country of Origin, Mass Merchant Channel, 2012
Figure 6.4 - Inventory Presence from China and Mexico in Product level for Mass Merchant Channel in 2010

Figure 6.5 - Inventory Presence from Bangladesh and Cambodia in Product level for Mass Merchant Channel in 2010
Figure 6.6 - Inventory Presence from India, Vietnam and Indonesia in Product level for Mass Merchant Channel in 2010

Figure 6.7 - Inventory Presence from China and Mexico in Product level for Mass Merchant Channel in 2010
Figure 6.8-Inventory Presence from Bangladesh and Cambodia in Product level for Mass Merchant Channel in 2011

Figure 6.9-Inventory Presence from India and Indonesia in Product level for Mass Merchant Channel in 2011
Figure 6.10 - Inventory Presence from Vietnam in Product level for Mass Merchant Channel in 2011

Figure 6.11 - Inventory Presence from China and Mexico level for Mass Merchant Channel in 2012
Figure 6.12-Inventory Presence from Bangladesh and Cambodia level for Mass Merchant Channel in 2012

Figure 6.13-Inventory Presence from India and Indonesia level for Mass Merchant Channel in 2012
Figure 6.14 - Inventory Presence from India and Indonesia level for Mass Merchant Channel in 2012

Figure 6.15 - Inventory by Sourcing Country of Origin, Value Department Channel, 2010
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Figure 6.17 - Inventory by Sourcing Country of Origin, Value Department Channel, 2012
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Figure 6.20-Inventory Presence from India, Vietnam and Indonesia in Product level for Value Department Channel in 2010

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Figure 6.25 - Inventory Presence from China and Mexico in Product level for Value Department Channel in 2012
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Figure 6.27 - Inventory Presence from India and Indonesia in Product level for Value Department Channel in 2012
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Figure 6.29 Inventory by Sourcing Country of Origin, traditional Department Channel, 2010
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Figure 6.31 Inventory by Sourcing Country of Origin, traditional Department Channel, 2012
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Figure 6.33 - Inventory Presence from Bangladesh and Cambodia in Product level for Value Department Channel in 2010
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Figure 6.35-Inventory Presence from China and Mexico in Product level for Value Department Channel in 2011
Figure 6.36 - Inventory Presence from Bangladesh and Cambodia in Product level for Value Department Channel in 2011

Figure 6.37 - Inventory Presence from India and Indonesia in Product level for Value Department Channel in 2011
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Figure 6.39-Inventory Presence from China and Mexico in Product level for Value Department Channel in 2012
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Figure 6.41-Inventory Presence from India and Indonesia in Product level for Value Department Channel in 2012
Figure 6.42-Inventory Presence from Vietnam in Product level for Value Department Channel in 2012