

MARKET OPPORTUNITIES FOR VIRGINIA'S WOOD PRODUCTS IN CENTRAL AMERICA FY 2009

In the future, there may be a greater demand for international forest products in Central America due to increasing population, tourism, and deforestation. The goal of this research was to determine drivers of and barriers to sales of Appalachian wood products in Central America. Government and non-government forest agencies and top wood products importers were surveyed. Researchers investigated distribution channels, local production capacity, level of demand, and policies affecting sales of wood products in Central America. A survey of wood products retailers and manufacturers revealed several barriers to sales of Appalachian wood products to the Central American market.

Results suggested that U.S. wood products companies could put more effort into marketing forest products as buyers lack knowledge of Appalachian wood products and their advantages over wood products currently used in Central America. Inconsistencies between Appalachian and Central American wood products such as product dimensions and species terminology act as a barrier to the efficient exchange of wood products. To address these challenges and become more competitive, Appalachian forest products should consider partnering with local wholesalers, offering more value-added products, maintaining competitive prices, and offering sales and product discounts.

FINAL REPORT

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Breaking down barriers: Market opportunities for Appalachian forest products companies in Central America

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Executive Summary

The research purpose was to determine drivers and barriers of Appalachian wood products sales in Central America. In the future, there may be a greater need for international forest products in Central America due to increasing population size, tourism, and deforestation. This high demand has caused wood products consumption in Central America to increase over 3.4 million m³ in 2008. Plantations are the main source of raw materials and they are being harvested more than reforested. To fill the growing demand, Central American countries have imported over \$540 million of wood products globally. The demand for wood products results in a need for an imported source of products from other areas that have an abundant supply of timber and a stable infrastructure, such as the Appalachian Region. Potential market opportunities for Appalachian forest products companies in Central America were evaluated and strategies were developed to increase exports from Appalachian wood product companies. The overall goal of this study was to identify expanded market opportunities for Virginia wood products in Central America. A case study was conducted with government and non-government forest agencies and top wood products importers to determine the main competitors of Appalachian forest product companies in Central American countries. The study was also conducted to investigate the Central American forest products industry distribution channels and the local production, demand, and policy of wood products in Central America. A survey of wood products retailers and manufacturers was conducted to identify market barriers for Appalachian wood products to the Central American market.

Results suggested that U.S. wood products companies have not put enough effort into marketing forest products in Central America. Central American wood products consumers lack knowledge of Appalachian wood products and their advantages over wood products currently

used in Central America. Inconsistencies between Appalachian and Central American wood products industries (e.g., dimensions, species terminology) act as a barrier to the efficient exchange of wood products. The best market strategies for Appalachian forest products companies to increase sales in Central America are: partner with local wholesalers, offer higher value-added products, maintain similar pricing with competition, and offer sales and product discounts.

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Overall Goal and Justification

Virginia forest products companies may have a unique opportunity to meet the current demand for wood products in Central America. There is a lack of research about marketing United States forest products to Central America. In the past few years, the Appalachian region has suffered from the economic crisis including forest products mill closures and loss of employment due to an increase in global competition. The region may need to increase product competitiveness by expanding export markets and improving product promotion (Wang et al. 2010). Therefore, the overall goal of this study is to expand market opportunities in Central America for Virginia wood product.

Objectives

1. Conduct an extensive literature research in order to understand the dynamics of the Central American marketplace (Chapter 1).
2. Quantify market demand for Virginia wood products in Central America (Chapter 1, &2).
3. Identify potential industry and service sectors (market segment analysis) that will benefit from the purchase of hardwoods and softwoods from Virginia (Chapter 2).
4. Identify market barrier access of Virginia wood products to the Central American market (Chapter 2 & 3).
5. Identify the advantages and disadvantages of the CAFTA (Central American Free Trade Agreement with United States) for Virginia Wood Products producers (Chapter 3).
6. Identify partnerships in the target countries for Virginia wood products industries (distribution channels) (Chapter 2).
7. Evaluate different logistical alternatives for wood products trade between the target countries and the Appalachian region (Chapter 2).

In the near future, softwood and hardwood lumber will be needed in Central America due to an increase of housing starts, tourism, and public infrastructure improvements. Governmental laws have regulated national forests and severely limited legal harvests in Central American countries. These restrictions lead to a need for an imported source of wood products from other areas that have an abundant supply of timber and a well built infrastructure, such as the Appalachian Region.

This handbook consists of four chapters. The objectives for chapter 1 were (1) conduct an extensive literature research in order to understand the dynamics of the Central American market place and (2) quantify market demand for Virginia wood products in Central America. The objectives of Chapter 2 were to identify potential industry and service sectors (market segment analysis) that will benefit from the purchase of hardwoods and softwoods from Virginia, (2) quantify market demand for Virginia wood products in Central America, (3) identify market barrier access of Virginia wood products to Central American market, (4) identify partnerships in the target countries for Virginia wood products industries, (5) Evaluate different logistical alternatives for wood products trade between the target countries and the Appalachian region. To accomplish the objectives, a case study was conducted with government and non-government agencies, forest agencies, and top wood products importers to determine main competitors of forest products companies in Central American countries, investigating the Central American forest products industry distribution channels and investigating the local production, demand, and policy of wood products in Central America.

The objective of Chapter 3 was to identify market barrier access of Virginia wood products to the Central American market. To accomplish this objective, a face-to-face survey was conducted with wood products retailers/manufacturers in six Central American countries.

Also, a model was developed based on preliminary studies and the survey and applied to perceptions of wood products retailers and manufacturers of Central America.

Chapter 4 summarizes the study and presents the strategy for Appalachian wood products companies marketing products to Central America. To characterize different factors that affect marketing of Appalachian wood products into Central America. To accomplish this goal, a model was developed based on preliminary studies and applied to perceptions of wood products retailers and manufacturers of Central America.

Each chapter covers relevant objectives, methodology used, findings, discussion, and conclusions.

Methodology

The methods used in the research were: (1) secondary research; (2) personal interviews in Panama, Costa Rica, Guatemala, and El Salvador with top importing forest products companies and government and non-government agencies; (3) a survey was implemented with wood products retailers and manufacturers in Panama, Costa Rica, Nicaragua, Honduras, Guatemala, and El Salvador. Each chapter covers relevant objectives, methodology used, findings, discussion, and conclusions.

Project Limitations

Since the personal interviews with companies were chosen by the Gold Key Service, they are not representative of all wood products companies in Central America. Due to time constraints, large supply of raw materials and politically unstable governments, the researchers did not perform case studies in Nicaragua or Honduras. Also due to time and costs constraints, the researchers did not examine Belize as a potential buyer of Appalachian wood products.

The researchers could not effectively survey wood products retailers and manufacturers via mail due to the lack of appropriate mailing addresses. Instead, surveys had to be conducted

in person or over the phone. The researchers had a few problems trusting the survey contractor's employees of actually collecting data from a reliable retailer/manufacturer.

Chapter 1. Literature Review

1.1 Introduction

Appalachian forest products companies have a unique opportunity to meet the current demand for wood products in Central America. According to Salamone (2000), “*the United States forest products companies have overlooked Central America as an opportunity to expand their markets.*” In the future, there will be a greater need for international forest products in Central America due to increasing population size, tourism, and deforestation. Because of improvements in health care, sanitation and education, the Central American population has almost quadrupled from 11 million in 1950 to 40 million in 2008 (Fox 1990; World Bank 2010).

In addition to increasing population size, tourism is booming in Central American countries. Nicaragua had an 11% increase in tourists from abroad in the first five months of 2009 (Rogers 2009). In the first year after breaking ground for the expansion of the canal in 2007, Panama has experienced an 11.2% increase in tourism investment. Panama offers a variety of tourist destinations including beaches, Spanish ruins, and islands. Royal Caribbean cruise line has built a “home port” in the providence of Colon to help attract visitors to a historic part of Panama (Aparicio 2008; Royal Caribbean International 2010). Ecotourism has played a big part in Central America’s tourism trade because 8% of the world’s animal and plant species live in Central America (Schieber 2009). Costa Rica is one of the most visited destinations for ecotourism, including 132 protected areas for flora and fauna (Sánchez-Azofeifa et al 2003). In addition to ecotourism, some retired Americans are moving to the Costa Rican coast to benefit from an inexpensive retirement and tropical environment (Kristof 2010).

The tourism increase in Central America has resulted in a growing need for wood products. A shortage of hotel rooms was observed in 2007 due to a 19% increase in number of tourists since 2005 (Fallas 2008). Due to the rapid increase of tourism in Costa Rica, foreign

investors have provided funding to help expand the infrastructure. In 2007, twenty-five percent of Costa Rica's foreign investment was provided to tourism (Quesada et al. 2009). To meet the wood demand as more hotels are built in Central America, some countries such as Costa Rica, Panama, and El Salvador look to their neighboring countries and continents to procure supplies. For example, the South and Central American countries of Chile, Honduras, Guatemala, and Nicaragua are the main providers of softwood lumber for building construction in Central America (Quesada et al. 2009).

Another driver for the import of international wood products is deforestation and related issues, which continues to be a major challenge today for all Central American countries. For instance, the Panama government removed Law No. 7 that provided tax incentives for landowners to reforest their properties. This removal resulted in illegal logging and a decrease of reforestation projects (Muñoz 2007). Guatemala has been losing 54,000 ha of forest each year and only replants about 10,000 ha per year, which is not nearly enough to meet the growing demand for timber (Hurtarte et al. 2006). Also, the natural forests of Costa Rica have been exploited due to shortages of wood for housing and furniture (Montagnini et al. 2003). Throughout Central America, pasture expansion in easily burned dry, tropical forests has occurred over past decades contributing to deforestation (Kaimowitz 1996).

In most Central American countries, forest plantations were developed in the 1960s and 1970s through incentives offered by the government (DGF 1996 in FAO 2009). *Tectona grandis*, *Eucalyptus spp.* and *Pinus Caribaea* are primarily the tree species grown in Central American plantations (Table 1.1; (Solórzano 1994; AFE-COHDEFOR 1996; DGF 1996 in FAO 2009, Ronnie de Camino and Marielos Alfaro 1998; Boyd 1998; Gutiérrez and Diaz 1999; IRSG

1997 and 1999; Lopez and Veliz 1999; Rodriguez Cruz and Vaquerano Gómez 1999 in FAO 2009).

Table 1.1 Central American forest plantation species

Costa Rica	Panama	Nicaragua	Guatemala	Honduras	El Salvador
<i>Gmelina arborea</i>	<i>Tectona grandiz</i>	<i>Pinus spp.</i>	<i>Pinus spp.</i>	<i>Pinus Caribaea</i>	<i>Tectona grandiz</i>
<i>Tectona grandiz</i>	<i>Pinus Caribaea</i>	<i>Eucalyptus spp.</i>	<i>Gmelina arborea</i>	<i>Pinus spp.</i>	<i>Pinus Caribaea</i>
<i>Cordia alliodora</i>	<i>Khaya senegalensis</i>	<i>Swietenia macrophylla</i>	<i>Eucalyptus spp.</i>	<i>Eucalyptus spp.</i>	<i>Gliricidia sepium</i>
<i>Bombacopsis quantum</i>	<i>Bombacopsis quantum</i>	<i>Swietenia humilus</i>	<i>Tectona grandiz</i>	<i>Tectona grandiz</i>	<i>Eucalyptus spp.</i>
	<i>Tabebuia pentaphylla</i>			<i>Gmelina arborea</i>	<i>Inga vera</i>
	<i>Acacia mangium</i>			<i>Gliricidia sepium</i>	
	<i>Cordia alliodora</i>			<i>Leucaena leucocphala</i>	

The main issue for plantations in Panama is that they are new and long term projects developed and maintained by landowners. The landowners need to borrow money to maintain the plantations and the banks are less likely to lend money for plantations because they are new and long-term projects (Gutiérrez and Diaz 1999 in FAO 2009). Reforestation rates of plantations in Panama have been decreasing over the past decade (Table 1.2). Problems exist in Guatemalan forest plantations because they are spread throughout the country on poor growing sites and lack an inherent quality of seed (MAGA 1995). Honduras has a rich volume of natural forests resulting in a reduced need for plantations (Anon 1998 in FAO 2009). El Salvador has very little forested area (107,000 ha), therefore, it needs to import a large volume of timber and fuelwood to meet the demand (Earthtrends 2003; FAO 2009). Most of the natural forests in El

Salvador were deforested for coffee plantations, sugarcane, and cotton to meet the international demand (Rodriguez Cruz and Vaquerano Gomez 1999 in FAO 2009).

Table 1.2 Panama reforestation by species per year (Hectares) (Adapted from ANAM 2010)

Species	Before 2000	2000-2004	2005	2006	2007	2008	2009	Total
<i>Tectona grandis</i>	21,748	14,700	2,678	2,315	1,553	3,846	1,155	47,995
<i>Pinus caribaea</i>	10,386	396	12	20	37	47	82	10,980
<i>Bombacopsis quinatum</i>	1,377	259	8	28	7	186	6	1,871
<i>Acacia mangium</i>	1,109	213	0	0	13	65	0	1,400
<i>Khaya senegalensis</i>	1,123	149	1	2	0	1	2	1,278
Others	2,474	3,248	157	409	1,569	1,172	704	9,733
Total:	38,217	18,965	2,856	2,774	3,179	5,317	1,949	73,257

The goal of this research was to evaluate potential market opportunities for Appalachian forest product companies in Central America. This project follows a 2008 market study funded by the USDA focused on market opportunities for Appalachian wood products in Mexico and the Dominican Republic conducted by Smith et al. (2008) from Virginia Tech. Smith et al. (2008) suggests that opportunities for Appalachian forest products companies may exist in Mexico and the Dominican Republic.

1.2 Appalachian Forest Products Industry Background

The Appalachian region consists of 205,000 square miles stretching from southern New York to northern Mississippi including Pennsylvania, Ohio, Maryland, West Virginia, Virginia, North Carolina, South Carolina, Tennessee, Kentucky, Georgia, and Alabama (ARC 2010). The economy in this region was fueled historically by forestry, mining, farming and industry. Currently, the region is primarily involved in a mix of manufacturing and service industries

(ARC 2010). Because of diversifying the economy, the amount of distressed counties in the region has been reduced from 223 in 1965 to 82 counties in 2010 (ARC 2010).

The manufacturing of forest products in this region is an essential sector of the economy employing over 1.1 million people (Murphy et al. 2008; NC-IOF & NCFA 2003; NESFA 2001; SCFC 2006; Ammerman Unknown Date; PFPA 2005; Young et al. 2007; VDACS 2008; Childs 2005; EDPA 2010; Ervin et al. 1994; McClure 2008; Mississippi State University 2010). An increase in global competition has caused the decrease of domestic markets for U.S. furniture. This increase in competition has taken a toll on the Appalachian hardwood lumber industry (Bowe et al. 2001). The forest products industry in the Appalachian region must be innovative in their marketing strategies to find potential markets for their products (Naka et al. 2009). The forest products industry has been impacted by urbanization in addition to increased competition. Land development and population growth has reduced the amount of timber available to the forest products industry (Young et al. 2007).

1.3 International Marketing

Onkvisit and Shaw (1997) stated international marketing is “*firm-level marketing practices across the border including market identification and targeting, entry mode selection, marketing mix, and strategic decisions to compete in the international markets.*” International business channels are more intricate than U.S. markets (Rosenbloom 1990). This complexity in overseas distribution channels is because of more channel members handling the product between the manufacturer and the end-user (Stern & El-Ansary 1992). International marketing is not an addition to domestic marketing because companies have different challenges in each country where they direct their marketing efforts. These challenges include issues such as politics, competition, law, logistics, geography, culture, marketing channels, technology and economics (Jain 1995; Joshi 2005). To limit these challenges, companies need to do the

following when entering international marketing for the first time. 1.) Establish management commitment. A company's management team must be fully involved in the development and executing of a marketing plan overseas (Smith 2011). 2.) Analyze firm's objectives, strengths, and weaknesses. Companies need to create short and long term goals to exporting. They must define the resources needed for the marketing plan such as personnel required, production capability, finances needed, and knowledge of the export market. A review of the exporting company sales force and distribution must be done to decide if they are capable of selling overseas (Anderson & Coughlan 1987). 3.) Develop overseas contacts and collect market information on a potential market. To find contacts and export market information, exporting firms may need to perform market intelligence on the market they are trying to enter. Federal and state government agencies provide exporting assistance and education to firms entering a new market. Also, trade associations can help provide exporting firms information on international markets, trade shows, and trade leads (Stopha 2011).

Exporting companies must decide if they will export by themselves or through a private distribution channel. A company exporting by itself to a new sales territory brings more responsibility and risks (Ahmed 1977). These challenges are primarily uncontrollable by the exporting company. Economic factors include import tariffs and exchange rates that impact competitiveness of the product or service being marketed internationally. The legal factors affecting international marketing include modifying trade policies, such as restrictions on importing products from a certain country. These factors will greatly influence where countries choose to export products (Waller 2000). Companies new to exporting should only focus on one or two markets until they are confident about performing international business (Smith 2011).

The country's culture also affects how a company markets a product or service to them. These cultural and social features include languages, customs, religion and social beliefs (Joshi 2005; Hsieh 1994). Companies need to understand the cultures and social features of potential customers in the countries where they are exporting; if they do not, it will make international marketing difficult (Joshi 2005; Shoham et al.1997). Competition is stronger in international markets than in a firm's current domestic markets and competitors may have different trade barriers when marketing to the same country (Joshi 2005).

When exporting overseas, customer loyalty has been found to be important when trying to foster a long term business to business relationship. Buyers are more likely to continue purchasing products from companies with whom they are satisfied from past experiences (Reichheld and Sasser 1990; Lam et al. 2004). To maintain this loyalty, companies will need to service and maintain international markets by meeting customer needs and schedule periodic visits (Smith 2011). By servicing the customer, it will build on their long term relationship and possibly to lead to new contacts (Smith 2011).

1.4 Forest Products Exporting

International marketing of wood products is essential for the Appalachian region in order to strengthen the economy (Hammett 1996). Exporting wood products offers many advantages for firms entering the global market such as increased profits and credit, market growth, and economic strength (Parhizkar 2008; McMahon and Gottko 1989). Exporting of U.S. wood products globally has been increasing over the past five years (Figure 1.1).

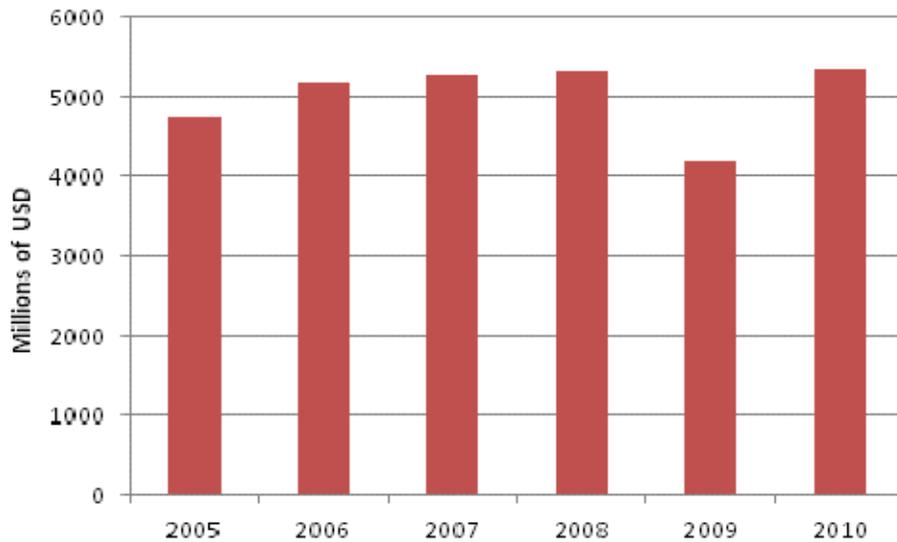


Figure 1.1 U.S. Exports of The North American Industry Classification System (NAICS) for wood products manufacturing (NAICS 321) (NAICS Association 2011).

Forest products industry export studies found several factors that impact successful export of products. Ifju and Bush (1993) suggested that small, domestically-oriented companies view themselves as non-exporters, but they still have potential to export. Many non-exporting companies are trying to enter a global market but have not because of lack of market information regarding product specifications and distribution channels (Ifju and Bush 1993). Ringe et al. (1987) found that Kentucky hardwood lumber exporters invested in global market information and built long-term relationships with overseas customers resulting in greater success with exporting products overseas. Overall, lack of market information is a main barrier for potential exporters of forest products overseas. A 2002 study of Appalachian hardwood lumber exports (Parsons 2002) showed that the lack of employee manpower and production limitations did not significantly affect exporting, but the need for marketing information was a major hurdle for companies.

1.5 Central American Market Segment

Market segmentation involves segregating a market into groups of similar buyers (Peter & Donnelly 2008). A variety of markets are available for Appalachian forest products in Central America. The Central American Free Trade Agreement (CAFTA) was established when El Salvador, Guatemala, Honduras, and Nicaragua entered into the agreement in 2006 (USDA FAS 2009). From 2006 to 2008, the exporting of wood products from the Appalachian region to Central America increased by 51% (Figure 1.2). Furniture exports to Central America increased by 43% from 2006 to 2007 (Figure 1.2). The rise in exports from the Appalachian region to Central America may be a result of the establishment of CAFTA-DR. Starting in 2008, forest products companies in the Appalachian region may have reduced the amount of wood products and furniture exported to Central American countries (Figure 1.2) because of past unstable financial markets, higher freight rates, tighter credit lines, and soft housing markets (VDACS 2008).

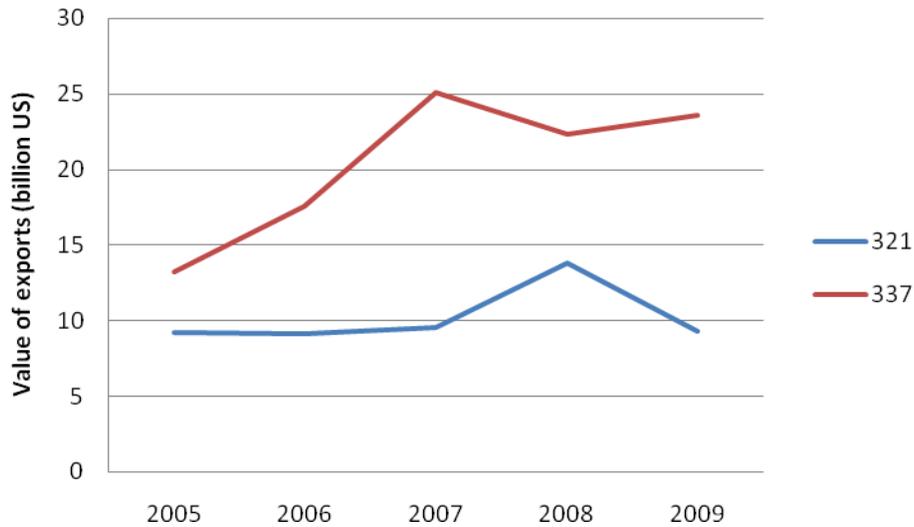


Figure 1.2 The North American Industry Classification System (NAICS) for wood products manufacturing (NAICS 321) and furniture and related products with wood, metal, and plastics (NAICS 337) exported from the Appalachian region to Central America. (USDC 2010)

Quesada (2008) concluded that Appalachian forest products companies need to partner with local wholesalers to distribute products. Also, forest products companies must export more value-added products that must be priced similarly to locally produced products (Quesada 2008). As a result of a worldwide “green” movement, there may be potential for certified sustainable forest products in Central America.

1.6 Central American Forest Products

In Guatemala, the use of forest products has been increasing over the past few decades due to wood-frame construction for roofs, walls and floors. In the late 1990s, the Guatemalan government estimated a shortage of 536,000 housing units (Salamone 2000). Because of the increase in the housing market, manufacturing plants began to appear and produce furniture and cabinets to fill the newly built homes (Salamone 2000). To help meet the demand, the U.S. exported \$184,000 of hardwood logs to Guatemala in 2009 (Table 1.3). Costa Rica was thought

to be short 150,000 housing units for its increasing population (Salamone 2000). Also, Costa Rica needs to construct more than 50,000 hotel rooms by 2012 to lodge the growing number of tourists visiting the country (Quesada et al 2009). Although concrete and steel remain the dominant building materials in Central American countries, wood products are frequently used in interior applications (e.g., cabinets, furniture) (Salamone 2000; Fry 2008).

In September 2007, the Panama Canal expansion started which caused a strong demand for concrete plyform used in the canal construction. Panama was the 12th largest importer of U.S. plywood at 2.5 million square feet (3/8-inch basis) by quantity in 2009. Since 2000, U.S. exports to Panama have been at their highest level (Random Lengths 2010). From January to October 2009, the U.S. exported over \$990,000 of softwood plywood and \$675,000 of softwood lumber (Table 1.3).

Table 1.3 U.S. Exports to Central American Countries from January-October 2009
(1000 DOLLARS) (USDC 2010)

Commodities Exported	Costa Rica	Nicaragua	Honduras	Panama	El Salvador	Guatemala
Hardwood Logs	0	0	39	36	0	184
Softwood Logs	149	0	218	27	25	50
Hardwood Lumber	0	0	159	153	10	0
Softwood Lumber	114	6	3,237	675	47	0
Treated Lumber	130	0	0	20	4	-
Hardwood Veneer	70	0	283	8	4	0
Softwood Veneer	8	-	43	26	0	16
Hardwood Plywood	10	10	153	335	10	85
Softwood Plywood	213	0	60	998	53	0
Hardboard	25	10	44	148	12	316
Medium Density Fiberboard	95	10	500	40	10	327
Particleboard	149	3	227	3	0	0
Hardwood Flooring	19	-	3	5	31	245
Softwood Flooring	28	0	18	130	0	0
Hardwood Molding	0	0	0	10	0	6
Softwood Molding	0	3	10	20	0	0
OSB/Waferboard	32	-	120	0	0	11
Wood Packing Material	58	43	1,404	47	84	215
Prefabricated Buildings	30	0	69	62	0	0
Assembled Flooring Panels	18	6	71	31	6	106

Although some Central American countries have little forested land, some countries have a strong wood product production industry. Costa Rica's medium-density fiberboard production competes with the U.S. in sales to Central American countries (Salamone 2000). In 2007, Costa Rica remained the number one producer of wood-based panels in Central America with 65,000 m³ (Table 1.4). Between January and October 2009, Honduras imported over \$150,000 of hardwood plywood and \$283,000 of hardwood veneer from the U.S. (Table 1.3). These wood products are primarily used in furniture production, however, Honduras has also imported over \$3 million in softwood lumber for building construction (Table 1.3).

Table 1.4 Central American countries forest product removal and production for 2009 (Adapted from FAO 2010)

	Units x 1,000	Costa Rica	Nicaragua	Honduras	Panama	El Salvador	Guatemala
Industrial Roundwood	Cubic Meter	1,198	93	822	174	682	454
Wood Fuel	Cubic Meter	3,410	6,003	8,641	1,173	4,210	16,960
Wood Chips and Particles	Cubic Meter	-	-	-	4	-	-
Wood Residue	Cubic Meter	-	80	-	2	457	-
Sawnwood	Cubic Meter	1,132	54	79	30	16	366
Wood Charcoal	Metric Ton	11	26	26	5	21	21
Wood-based panels	Cubic Meter	65	8	6	7	-	31
Other Fiber Board	Metric Ton	7	-	1	-	-	-

Chapter 2. A Case Study to Determine Strengths and Weaknesses of Appalachian Forest Products in Central America

2.1 Introduction

The purpose of this part of the research was to determine strengths and weaknesses of Appalachian wood product competitors in Central America through personal interviews. Previous research suggests that United States forest products companies have overlooked Central America as an opportunity to expand their markets (Salamone 2000). To understand the forest products market in Central America, an extensive market analysis was performed through interviews and observation of industries in Central America. Interviews with 4 top importers of forest products and 2 forestry related government and non-government agencies in each four countries (i.e., Costa Rica, Guatemala, El Salvador, and Panama) were conducted. Two questionnaires were developed using secondary sources of information from the Central American forest products market. The questionnaires included questions regarding current imports, product line, cultural opinions, transportation, and trade barriers. Also, previous research from Smith et al. 2008; Parhizkar (2008) was used to develop the questionnaires.

Research indicated that Central American wood products companies are not familiar with the benefits and advantages of Appalachian wood products. Central American wood products companies typically import from neighboring and South American countries. For the Appalachian wood products industry to be successful in Central America, companies need to partner with local distributors and offer value added products at similar prices to currently purchased products from South America.

Results support the claim that United States forest products companies have not placed enough emphasis into entering the forest products market in Panama, Guatemala, El Salvador, and Costa Rica. Limited harvesting of forestlands occurs in Panama, Costa Rica, and El

Salvador and the industry lacks support from the government, causing a reduction in the availability of raw material and amount of production. An outside source of wood is needed to meet the demands of a growing regional infrastructure. Central America will see an increase in current and future demand for wood product building materials due to the growing population size and tourism industry. Because of this demand and the variety of products, the Appalachian forest products industry has to offer, they may have the opportunity to expand their markets into Central America.

The overall goal of this Chapter was to evaluate potential market opportunities for Appalachian forest products companies in Central America through personal interviews. To accomplish this goal, 5 objectives were examined to understand the forest products market in Central America:

1. Quantify market demand for Virginia wood products in Central America (Objective 2)
2. Identify potential industry and service sectors (market segment analysis) that will benefit from the purchase of hardwoods and softwoods from Virginia (Objective 3).
3. Identify market barrier access of Virginia wood products to Central American market (Objective 4).
4. Identify partnerships in the target countries for Virginia wood products industries (distribution channels) (Objective 6).
5. Evaluate different logistical alternatives for wood products trade between the target countries and the Appalachian region (Objective 7).

2.2 Methodology

In order to conduct an extensive market analysis of Central America, interviews were conducted with top importing forest products companies and government and non-government agencies. The government agencies involved in the study are responsible for managing the

public and private forests in the countries. These interviews were used as part of a case study to better understand the forest products market in Central America and gain more detailed information (Yin, 2009; Easterby-Smith et al 1991).

To guide the interviews, two structured questionnaires were developed from secondary research of the Central American forest product market (see Appendix E and F). The questionnaires focused on forestry management, wood products imported, supplier attributes, state of the forest products industry in Costa Rica, Panama, Guatemala, and El Salvador, transportation issues (e.g. custom's documentation, inspections) and barriers to importing. The questionnaire also requested demographic and general information about the companies to better understand their line of business. The questions were adapted from a previous Virginia Tech study conducted in Mexico and the Dominican Republic (Smith et al. 2008; Parhizkar 2008).

These companies and agencies were purposively selected by the U.S. Commercial Service's Gold Key member program to save time and money (Smith et al. 2008; Parhizkar 2008). The Gold Key program was efficient because it helped perform market analysis for the researchers. The program arranges business meetings with prescreened contacts to develop potential business partners or customers. By prescreening contacts, the service helps to find the clients that are the best fit for interviewing; however, these preselected companies may not represent all companies in the country. The service provides the client company with information on performing business in the specific country of interest. The program also contacts the company after the visit to follow up and see if they have increased sales to the country.

Due to time, a large supply of raw materials determined from the literature review (Objective 1) and politically unstable governments, the researchers did not perform interviews in

Nicaragua or Honduras. The researchers decided to focus the research on Costa Rica, Panama, Guatemala and El Salvador for Central American countries with a higher demand for an outside source of wood products. Also due to time and costs constraints, the researchers did not examine Belize as a potential buyer of Appalachian wood products

2.3 Results and Discussion

This section discusses the results from interviews at wood products companies in four countries, including government agencies and non-government agencies. The wood products companies consisted of wholesalers and manufacturers. The wholesalers and manufacturers interviewed had 100-500 employees on average, with one wholesaler that had over 2,000 employees. Their customer base consists of retailers, homeowners, contractors, manufacturers, and government offices. The government and non government agencies are responsible for either managing the forests or certifying the forests that are sustainably managed. These agencies were chosen by the U.S. Commercial Service to help understand Central American forests and forest management practices.

2.3.1 Forestry Management

Forests in Panama, Costa Rica, and Guatemala are mainly Forest Stewardship Council (FSC) certified by the Smartwood program through Rainforest Alliance. There are currently no certified forest lands in El Salvador because of expensive certification costs and the Ministry of Agriculture and Livestock lags behind the widely accepted sustainable forest management practices. Many of the companies and agencies interviewed claimed no incentives are available for companies to offer certified wood products; users primarily look at price and quality of a product when purchasing instead of certification.

Companies and agencies interviewed reported that a lack of incentives from the government is preventing reforestation. In Guatemala, government incentives are given to

landowners to help fund reforestation, protection, and management of natural forests over a 5-6 year plan. One agency stated that instead of harvesting forests, it is better to protect the forest in order to protect watersheds for local communities. A government official in Costa Rica claimed that the government has created an incentive to preserve forestland in order to encourage ecotourism. A non-governmental organization in El Salvador claimed that the agriculture bank had given incentives to replant native tree species, but these incentives are not enough to meet the demand for wood products.

The agencies in the majority of the countries stated that the forests are managed by each country's government. For example, local residents may own the property, but they must ask permission of the governing agency before harvesting in Panama and Costa Rica. In some instances, Guatemalan communities must pay a pre-harvest tax before cutting timber, which may prevent communities from harvesting.

During the interview, researchers asked about forest management practices in the 4 countries. Companies and agencies responded that these practices primarily include clear cutting and selective harvesting. An agency in El Salvador reported that the forests are managed by the government and approximately 5,000 m³ are harvested a year. Generally, individual trees of poor quality with small diameters, irregularities (e.g., knots), and poor form (e.g., crooked) are harvested from agroforestry locations throughout El Salvador.

Plantations seem to be the main source for raw materials for wood products in Central America. Most of the harvesting in Panama and Costa Rica occurs in plantations instead of the natural forests. The government agency stated some land in Panama used for pine plantations has poor quality soils and is not suitable for growing other more valuable timber species such as teak (*Tectona grandis*). Plantations in Panama plant around 11,000 hectares annually and grow

typically 60% teak (*Tectona grandis*), and other species such as Caribbean pine (*Pinus caribaea*), eucalyptus (*Eucalyptus spp.*), cedar and African mahogany (*Khaya spp.*) (Table 2.1).

In plantations, companies replant more teak (*Tectona grandis*) than native species because teak (*Tectona grandis*) is highly marketable overseas to Asia and Europe. Typically, privately owned plantation forestlands in Guatemala grow pine (*Pinus spp.*), whereas public lands grow broadleaf species such as mahogany. Plantations in Guatemala grow 11,000 hectares a year annually of teak (*Tectona grandis*), gmelina (*Gmelina arborea*), palo blanco (*Tabebuia donnell-smithii*), and cypress (Table 2.1).

Table 2.1 Response of interviewees about current species planted in each Central

American country

	Panama	Costa Rica	Guatemala	El Salvador
Teak (<i>Tectona grandis</i>)	X	X	X	X
Caribbean pine (<i>Pinus caribaea</i>)	X	X		
Pine (<i>pinus spp.</i>)			X	X
Eucalyptus (<i>Eucalyptus spp.</i>)	X	X		X
African mahogany (<i>Khaya spp.</i>)	X			
Gmelina (<i>Gmelina arborea</i>)	X	X	X	X
Chanco blanco (<i>Vochysia quatemalensis</i>)		X		
Palo blanco (<i>Tabebuia donnell-smithii</i>)			X	
Laurel (<i>Cordia alliodora</i>)		X		X
Cortez blanco (<i>Tabebuia donnell-smithii</i>)				X

At the time of plantation harvest, typically only small diameter trees are cut, yet the forest products industry does not have a strategy for production and marketing of small diameter trees. Costa Rica replants 6,000 hectares annually in plantations. The main species replanted are gmelina (*Gmelina arborea*), teak (*Tectona grandis*) and chancho blanco (*Vochysia quatemalensis*) (Table 2.1). El Salvador has 6,000 hectares of plantations and 1,000 additional hectares are planted a year. The plantations in El Salvador do not require a management plan. The species growing in the El Salvador plantations consist of teak (*Tectona grandis*), eucalyptus (*Eucalyptus spp.*), laurel (*Cordia alliodora*), Cortez blanco (*Tabebuia donnell-smithii*), and pine (*pinus spp.*) (Table 2.1). The natural forests comprise 19% of the land mass in El Salvador, yet only 1,500 hectares are managed for forestry. Conifers such as pitch pine (*Pinus oocarpa*), and thinleaf pine (*pinus maximinoi*) consist of 15,000 hectares (Table 2.1).

2.3.2 Wood Products Importer Profile

The 4 companies in each country interviewed consisted of wood products wholesalers and manufacturers. The wholesalers and manufacturers interviewed had 100-500 employees on average, with one wholesaler with over 2,000 employees. Their customer base consists of retailers, homeowners, contractors, manufacturers, and government offices. The companies stated their customers are primarily using cement and steel for building construction because they are insect and decay resistant materials. Historically, these items have been preferred building materials because of the hot and humid climate in Central America. The wholesalers' wood product lines currently consist of lumber, panels, cabinets, flooring, furniture, millwork, and home improvement items. The manufacturers' products included furniture, furniture parts, doors, and panels. Due to geographical closeness to North America companies, companies in El Salvador and Guatemala tend to import more from the U.S. and Canada than companies in Costa Rica and Panama.

2.3.3 Wood Products Imported

The companies interviewed largely import pressure treated lumber, softwood lumber, panels, hardwood lumber, hardwood veneer, flooring, and furniture/parts (Table 2.2). A few wholesaler companies in Panama and El Salvador imported pressure treated lumber from the United States treated with alkaline copper quaternary (ACQ). Some of the wood product wholesalers interviewed have interacted with wood product brokers in the U.S. for softwood lumber (Southern yellow pine) and panels, but all of the buyers were familiar with Southern yellow pine lumber from the United States. The buyers claimed that Southern yellow pine was comparable to Caribbean (*Pinus caribaea*) and radiata (*Pinus radiata*) pine they current purchase (Table 2.2). Companies in Panama and Costa Rica primarily import softwood lumber from Chile, Brazil, Honduras, and Uruguay, which is dried to 12-14% moisture content. Chile is the main exporter of radiata pine (*Pinus radiata*) to Central America, the primary softwood species used in building construction. Other softwood species used in construction come from Brazil or Uruguay, such as elliotis pine (*Pinus elliotis*), loblolly pine (*Pinus taeda*), and slash pine (*Pinus elliotii*). Companies in Guatemala and El Salvador import softwood lumber and other building materials primarily from Chile, United States and Canada, as well as purchase softwood from local sawmills. Pine lumber is also used in Costa Rica, Panama, Guatemala, and El Salvador for furniture production, so Eastern white pine (*Pinus strobus*) may be a substitute for the current species being used in furniture.

Table 2.2 Wood products and species imported or used in Panama, Costa Rica, Guatemala, and El Salvador

Product	Species	Uses	Exported From	Primary Countries of Use
Softwood Lumber	Radiata pine (<i>Pinus radiata</i>)	Construction/Furniture	Chile	Costa Rica, Panama, Guatemala, El Salvador
	Pine spp. (<i>Pinus spp.</i>)	Construction/Furniture	USA, Canada	Costa Rica, Panama, Guatemala, El Salvador
	Caribbean pine (<i>Pinus caribaea</i>)	Construction	Central America	Costa Rica, Panama, Guatemala, El Salvador
	Chilean Oregon pine (Douglas Fir) (<i>Pseudotsuga menziesii</i>)	Construction Furniture	Chile	Costa Rica, El Salvador
Panel	Oriented Strand Board (OSB)	Construction	USA, Chile, Argentina	Costa Rica, Panama, Guatemala, El Salvador
	Plywood	Construction Furniture	China, Chile	El Salvador, Guatemala Costa Rica, Panama
	Medium Density Fiberboard (MDF)	Construction Furniture	Chile, Brazil	El Salvador, Guatemala Costa Rica, Panama
	Particleboard	Construction Furniture	Argentina	El Salvador, Guatemala, Costa Rica, Panama

Imported panel products consist of oriented strand board (OSB), plywood, medium-density fiberboard (MDF), particle board, and concrete plyform (Table 2.2). Buyers stated that China and Chile are the top exporters of plywood to Central America. The companies were introduced to specialized wood products such as fire-retardant lumber/panel, mold and insect resistant lumber/panel, and engineered wood products (e.g., I-joist beams, glulam, laminated veneer lumber). The majority of buyers agreed there will be a need for specialized wood products in the future because of the tropical climate in Central America. Some of the buyers were not aware of the engineered wood products available from the Appalachian region. The buyers stated the need for composite products such as medium-density fiberboard, plywood, and oriented strand board for current and future building construction.

The buyers frequently purchased certified wood products, but they believed that their customers take into account the price and quality of the product and are less interested in buying certified. A few buyers claimed that the market for certified forest products has improved over the past few years and they expect it to increase because of environmental concerns. In some instances, countries do not understand the meaning of sustainably managing forests. A government agency in Panama directly stated, "*Panamanians don't understand sustainability.*"

Companies interviewed stated that wood products companies from South America offer a variety of products with better prices than United States and Canada. In addition to higher prices in North America, companies also do not offer the product dimensions required by Central American buyers.

When asked about future demands for wood products, some respondents believed demand would increase in the future. One Costa Rican wholesaler stated that using wood for building construction will make more affordable housing available for low income families and

that there is still a lot of land available for development. A government agency stated that Costa Rica is required to be carbon neutral by 2021, therefore the need for utilizing wood in construction may increase over the next few years to meet that goal.

The majority of the buyers were familiar with Appalachian hardwoods and they were willing to import them if they were priced similarly to the native tropical species in the region. Appalachian hardwoods can be used in doors, mouldings, cabinets, furniture, flooring, and ceiling panels. Lighter colored hardwood species are found in many kitchen cabinets since customers can easily match appliances and other kitchen items to them. Appalachian hardwoods such as hard maple (*Acer saccharum*), soft maple (*Acer spp.*), red oak (*Quercus rubra*), and American beech (*Fagus grandifolia*) would meet similar color specifications. Flooring and furniture are primarily manufactured using dark reddish species, therefore, black cherry (*Prunus serotina*) and black walnut (*Juglans nigra*) from the Appalachian region could be a substitute for the tropical hardwood species currently used, such as Guanacaste (*Enterolobium cyclocarpum*) (Table 2.3).

Table 2.3 Hardwood lumber species used in Central American countries

Product	Species	Uses	Primary Countries of Use
Hardwood Lumber	Almendro (<i>Dipterix panamensis</i>)	Exterior Applications	Costa Rica, Panama, Guatemala, El Salvador
	Guapinol (<i>Hymenaea courbaril</i>)	Interior Applications	Costa Rica
	Cedro Amargo (<i>Cedrela odorata</i>)	Furniture/Interior Applications	Guatemala, Costa Rica
	Guanacaste (<i>Enterolobium cyclocarpum</i>)	Furniture/Interior Applications	Costa Rica, Panama
	Cenízaro (<i>Samanea saman</i>)	Furniture/Interior Applications	Costa Rica
	Pucte (<i>Bucida buceras</i>)	Furniture/Exterior Applications	Guatemala
	Danto (<i>Vatairea Iundellii</i>)	Construction/Interior Applications	Guatemala, Costa Rica
	Manchiche (<i>Lonchocarpus castilloi</i>)	Construction/Furniture/Interior Applications	Guatemala
	Santa Maria (<i>Calophyllum brasiliense</i>)	Furniture/Interior Applications	Guatemala, Costa Rica,
	Chanco blanco (<i>Vochysia guatemalensis</i>)	Furniture/Interior Applications	Costa Rica, Panama, Guatemala, El Salvador
	Palo blanco (<i>Tabebuia donnell-smithii</i>)	Furniture/Interior Applications	Guatemala, El Salvador
	Laurel (<i>Cordia alliodora</i>)	Furniture/Interior Applications	El Salvador, Costa Rica
	Caoba (Mahogany) (<i>Swietenia Macrophyllaa</i>)	Furniture/Interior Applications	Guatemala, Costa Rica, Panama, El Salvador
	Teak (<i>Tectona grandiz</i>)	Furniture/Interior Applications	Guatemala, El Salvador, Costa Rica, Panama
	Gmelina (<i>Gmelina arborea</i>)	Construction Furniture	Costa Rica, Guatemala, Panama, El Salvador

2.3.4 Supplier Attributes

Buyers from the wholesalers and manufacturers were asked what criteria they take into account when selecting a wood products supplier. Buyers stated they are looking for a long history of business, on-time delivery, quality of the product, competitive price, variety and availability of products, and long-term relationships. Companies preferred to buy products from other companies that have been conducting business for a long time rather than a new start-up company. Companies did repeated business with suppliers who were on-time with deliveries of products. Respondents said that wood products purchased from suppliers need to be made with high quality materials. For example, a few importers complained that some plywood from China is made with poor quality materials causing the plywood to delaminate. Importers stated wood products being sold to them must be sold at a competitive price to Central American countries. For example, wood products from Chile were found to be of high quality and sold to Central American countries at a competitive price. Some companies required their suppliers to have a large assortment of products available for fast shipping. Some wholesalers stated they had problems with suppliers not meeting lead times and not having products in stock when purchasing. When companies are looking for new suppliers, they want to have a long-term relationship by making frequent orders and helping to promote products at tradeshows. Suppliers would need to have a representative at the tradeshow to help with any product demonstrations and questions from potential customers.

2.3.5 State of the Forest Products Industry in Costa Rica, Panama, Guatemala, & El Salvador

Companies and agencies were asked about the current state of the forest products industry in their country. In Panama, a state agency stated that the industry has been on a downward spiral since 1993 and only 5 large wood products companies exist with more than 50

employees (Table 2.3). Panama's forest products industry is technologically limited and there is a long distance between the forest and the primary processing facilities, which leads to problems with logistics. Costa Rica has only a few large wood products companies and the small-medium enterprises are technologically limited and segmented throughout the country (Table 2.3). Forest products companies in Costa Rica on average employ only 11 workers in the industry. Most companies use small diameter logs for production. Raw material typically comes from plantations and rate of reforestation has begun to drop because of high land costs and legal restrictions.

The furniture companies researchers visited in Guatemala, Costa Rica, and Panama were more technologically advanced with computer numerical controlled (CNC) machines than companies in El Salvador. These computer-integrated machines give companies a competitive advantage (Doll and Vonderembse 1987). Most companies visited in El Salvador were small family operated furniture companies with less than 10 employees using obsolete equipment and production techniques. Companies stated that the government does not help in the promotion of wood products in Panama, Costa Rica and El Salvador (Table 2.4). Pallet production used for exporting of agricultural crops overseas is the main wood products industry in Costa Rica. In Guatemala, an agency promotes the use of wood products at a few tradeshows throughout the year (Table 2.4). One agency in Guatemala pointed out that companies are technologically limited and produce low value-added products (Table 2.4). The main industries are pallet and furniture production and companies tend to use small diameter trees as a raw material.

The industry in El Salvador uses limited technology and the raw material is scarce because of poor quality trees (Table 2.4). Approximately 80 to 90 percent of the forest products industry is furniture production. Agencies and companies stated that the majority of small to

medium enterprises were not familiar with kiln drying as a method to dry lumber, yet the wholesalers and manufacturers interviewed required their lumber to be kiln dried when purchasing. Local small to medium enterprises may reduce shipping costs if lumber is properly dried by reducing the overall weight (Simpson 1991). Since companies only have a small supply of raw materials, they must import hardwood species from Nicaragua and Guatemala. In 2011, the El Salvadorian government is taking a stand to prevent illegal harvesting; companies in El Salvador will be required to obtain a permit to harvest trees. This permit must accompany the wood product through the harvesting and manufacturing process, which may persuade some companies to look elsewhere for raw material.

Overall, the wood products industry in Central America is limited due to lagging technological advances and governmental support.

Table 2.4 Responses from interviews when asked about the Central American forest products industry in each country

	Panama	Costa Rica	Guatemala	El Salvador
Limited Technology	X	X	X	X
Few large companies	X	X		
Lack of Raw Material				X
Lack of Government Promotion	X	X		X

2.3.6 Transportation Issues

Transportation of wood products was a challenge for some companies, but was not an issue for others. In Panama, Costa Rica and Guatemala, companies did not report a problem with logistics. The main problem in these countries was delayed delivery of products due to port strikes in exporting countries. Also, some products entering the Central American countries

have experienced delays due to phytosanitary issues, such as lack of appropriate markings and paperwork to show that the product meets customs requirements. Custom authorities delay arrivals of products because of necessary inspections. Table 2.5 shows the main ports of entry of imports entering the Central American countries.

Table 2.5 Main ports of entry for wood products in Central America

Country	Port	Coast
Guatemala	Puerto Barrios	Caribbean
El Salvador	Puerto Barrios, Guatemala	
	Puerto Cortes, Honduras	
Costa Rica	Port of Limón	Pacific
	Caldera Port, Puntarenas	
Panama	Panama City Port	

Most imports to El Salvador arrive by ship to either Guatemala or Puerto Cortes, Honduras and are then trucked to El Salvador. Companies have had problems when importing from South America because containers have been lost in transit at ports. Central American wood products companies primarily have products shipped by cost, insurance, and freight (CIF) to their main port of entry. Some companies may have available a cheaper freight opportunity and purchase the product Free on Board (FOB).

2.3.7 Barriers to Importing

Companies were asked about potential barriers that Appalachian forest products companies face when exporting to Central America. The interviewees stated the most critical barriers to importing wood products are: lumber dimensions, language and wood product knowledge (Table 2.6). Most companies stated that they import wood products from Chile because they offer high quality products at a competitive price. Companies stated the United States must price products similarly to Chilean wood products in order to be successful as an

exporter to Central America. A manufacturer in El Salvador stated, “*U.S. furniture is high in cost and low in quality.*”

Table 2.6 Responses from interviewees when asked about barriers to importing wood products to Central American countries

Barrier	Country(ies)	Problem
Language	Costa Rica, Panama, El Salvador, Guatemala	Most buyers only speak Spanish
Lumber Dimensions	Costa Rica, Guatemala, El Salvador	Use different lumber dimensions than the U.S.
Price	El Salvador	Competition with Chilean wood products
Wood Product Knowledge	Costa Rica, Panama, El Salvador, Guatemala	Builders, architects, and designers lack knowledge of wood and wood products
Wood Product Distribution	Guatemala, El Salvador	Lack of proper distribution of wood products to the country and end-users

The largest barrier reported by companies and agencies interviewed was incompatible dimensions of wood products offered by the U.S. Lumber dimensions seemed to be an important barrier for exporting to Central America, since lumber is purchased and sold in Central America in the unit of “varas.” A vara measures as 32.908 in or 83.587 cm in length (Rowlett & UNC 1999). Companies stated that they preferred exporters to supply products to meet the specific dimensions required in their country. Therefore, Appalachian wood products companies may need to produce products to the specific dimensions required or educate Central American companies and/or end-users on the dimensions currently produced in the Appalachian region.

The dimension barrier has been found to be important in China, Mexico, Italy, and Vietnam (Snow 2011).

Another barrier reported by companies and agencies interviewed was the lack of knowledge of the wood attributes. Companies and agencies stated that many builders and engineers have little knowledge of wood and wood products for practical uses. When designing homes and commercial buildings, architects and engineers primarily use construction materials with which they are experienced and familiar, usually cement and steel in Central America. Hence, Appalachian companies may try to educate these firms and end-users on the benefits of using wood products over cement and steel for building construction.

Distribution of wood products seemed to be challenging for some companies, but was not an issue for others. In Costa Rica and Panama, hardware stores and lumber deposits offer wood products to customers (Figure 2.1). Companies stated Guatemalan wood product distribution is currently a problem because of the lack of retail stores stocked with treated, dried and proper dimension lumber. A clearly defined supply chain needs to be implemented in Guatemala to target markets effectively.

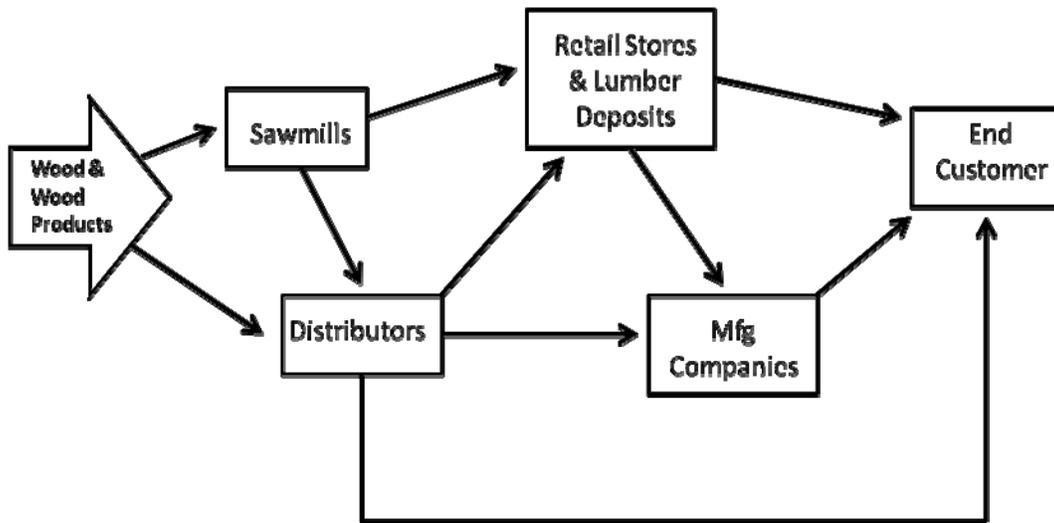


Figure 2.1 Distribution of forest products in Central American countries (Adopted from Quesada 2008)

Another barrier reported from the companies was language. Some companies interviewed stated that they had trouble negotiating importing forest products from the United States because of the language barrier. Companies with importing experience from the United States have primarily made purchases from a broker that speaks fluent Spanish. For that reason, Appalachian wood products companies may need to invest time and resources in having a multi language product literature, websites, and a sales staff to help better serve potential customers in Central America.

2.4 Conclusions and lessons learned

The goal of this chapter was to examine the opportunities for Appalachian wood products in Central America using personal interviews and observations. Objective 2 from the study was to quantify market demand for Virginia wood products in Central America. The demand for wood and wood products is high throughout Central America. In 2009, the Central American wood products industry produced over 1.6 million cubic meters of sawn wood. Since the start of the expansion of the Panama Canal, wood products are being used for construction of the canal

and also in homes and businesses developing because of the strong economy. In Costa Rica, the demand for wood products is rising because of the initiative to be carbon neutral by 2021. The source for available raw materials in El Salvador is decreasing because of strict environmental regulations and the amount of wood available to fill growing demand. Although Guatemala has numerous amounts of forests, environmental concerns have decreased the amount of forests being harvested. The research found that production is low because of strict environmental regulations, lack of governmental support and the low amount of raw material available for production. Because of the low production of wood products in Central America, companies primarily import wood and wood products to meet the demand. Most Central American countries produce lumber in specific dimensions and countries exporting to this region needs to either produce to the specific dimensions or educate the consumers on the benefits of using the other dimensions.

Objective 3 was to identify potential industry and service sectors that will benefit from the purchase of hardwoods and softwoods from Virginia. The research found that Central American wood products companies purchase wood products from either local companies, neighboring countries, South America, China and a small amount from the U.S. Central American wood products importers purchase from South America because of the high quality and competitively priced products. The research found that the furniture and building materials industry is strong in all the countries examined in the case study. The furniture industry varies in size and technology throughout the region. The majority of the companies are small family run businesses with less than ten employees operating old, out of date machinery. The building materials market is strong and growing because of the increased population and tourism in the region. Builders primarily purchase wood products through retailers and/or distributors. In

Guatemala, the research found that retailers and lumber deposits are lacking from the supply chain for wood products. Retailers and lumber deposits are efficient means for distributing products to the consumer.

The majority of Central American wood products companies interviewed were willing to import wood products from the Appalachian region. In order for Appalachian companies to perform well in the Central American wood products market, they need to educate the public about wood and its uses, sell products that are of equal quality, produce products in the current dimensions used in Central America, price competitively with Chilean wood products, and partner with a local company to reduce any trade barriers.

El Salvador is the smallest of the Central American countries and has a very high population density. This country seems to offer the highest potential for Appalachian wood products because of the high demand for building materials, scarce raw material source and strict environmental regulations. Although port access may be a problem, the country is still accessible through its neighboring countries. Panama and Costa Rica also provide the greatest potential for export success of Appalachian forest products because of the need for building materials to meet the demands of tourism and population increases. Also, these countries have strict environmental regulations and a lack of available resources to meet the growing needs.

Objective 4 of the study was to identify market barrier access of Virginia wood products to the Central American market. The largest barrier reported by companies and agencies interviewed was incompatible dimensions of wood products offered by U.S. wood products firms. Companies stated that they preferred exporters to supply products to meet the specific dimensions required in their country. Therefore, Appalachian wood products companies may need to produce products to the specific dimensions required or educate Central American

companies and/or end-users on the dimensions currently produced in the Appalachian region.

The best market strategies for Appalachian wood product companies to access the Central American market are to partner with local wholesalers, offer higher value-added products than local suppliers, and keep prices similar to local competition. Central American lumber dimension requirements have caused problems in the past when importing from the United States. Appalachian wood products companies need to produce products in the standard dimensions required in Central America to be successful exporters.

Objective 6 of the study which was to identify partnerships in the target countries for Virginia wood products industries (distribution channels). The research found that wood products importing to Central America primarily enter the countries through a wholesaler and then distributed to retailers or lumber deposits. Respondents stated that Guatemala companies lack wood product retailers and lumber deposits to help distribute wood products to the end-consumer. Therefore, Appalachian wood products companies may want to sell directly to the manufacturers in Guatemala. In Panama, Costa Rica, and El Salvador, Appalachian wood products companies may try to partner with wholesalers in order to efficiently distribute products. A list of potential partnerships and customers may be found in Appendix A.

The last objective of this chapter was (objective 7) to evaluate different logistical alternatives for wood products between the target countries and the Appalachian region. Primarily each Central American country examined in the case study has port access on the Caribbean Coast for easy access from the Appalachian region. El Salvador is the only country that does not have access to Caribbean Coast. Wood products delivered to El Salvador from the Appalachian region may arrive at the ports in Guatemala or Honduras and then truck into El Salvador.

This research may support the claim that United States forest products companies should consider expanding their international markets into Guatemala, El Salvador, Costa Rica and Panama. Wholesalers and government officials in Central American countries reported that the majority of the general public is unfamiliar with the properties and uses of wood since steel and cement are the currently preferred building materials. They also noted that the wood products industry lacks support from the government and forest harvesting has been declining. These factors are leading to a reduction of raw material and production, therefore, an outside source of wood may be necessary to meet the needs of a growing region infrastructure. Because the Appalachian region's forest products industry offers products that are similar to those currently imported in Guatemala, El Salvador, Costa Rica and Panama, they have a unique opportunity to expand their markets into Central America.

Chapter 3. Survey of Central American Wood Products Retailers and Manufacturers

3.1 Introduction

Chapter 3 covers objective 4 of the study which was to identify market drivers and barriers for the sale of Appalachian wood products in the Central American market. Although end-consumer preferences were of interest for the survey, retailers and manufacturers were chosen as the target populations because they rely on end-consumer behavior when promoting products. From January through April 2011, a survey was conducted with wood products retailers and manufacturers in Panama, Costa Rica, Nicaragua, Honduras, Guatemala, and El Salvador. Two hundred and forty-seven valid questionnaires were completed. The majority of responding firms were small with less than 25 employees. The results indicated that Appalachian wood products may be suitable alternatives for wood products currently used in Central America.

This chapter also examined what factors impact the marketing of Appalachian wood products into Central America. A conceptual model was developed based on preliminary studies and applied to the survey of perceptions of wood products retailers and manufacturers from Central America regarding supplier attributes, product attributes, retailer/manufacturer promotion strategy, supplier promotion strategy, potential importing barriers, and company performance. Barriers were found to positively affect company performance and supplier attributes. These constructs may be important to consider when Appalachian wood products companies are interested in exporting to Central American countries. Appalachian wood products companies need to invest resources and work to overcome barriers in order to be successful exporters to Central America.

To market wood products to Central American companies and the general public, the most successful promotional strategy identified by respondents was personal selling. Appalachian wood product companies need to take time and personally visit companies to promote products with potential customers in Central America. This will give buyers in Central America a better understanding of Appalachian wood products and their applications. By partnering with local wholesalers, small wood products firms may be able to purchase variable amounts of wood products from the Appalachian region. Because the forest products industry in the Appalachian region offers products that are similar to those currently used in Guatemala, El Salvador, Nicaragua, Honduras, Costa Rica, and Panama, they have a unique opportunity to expand their markets into Central America.

3.2 Methodology

3.2.1 Data Collection

Surveys were conducted from January through April 2011. Due to a lack of trade directories and mailing addresses the researchers needed to employ a contractor to implement the survey to wood products retailers and manufacturers. Employees at the contract survey company (PHI Strategy, S.A.) located representatives and conducted the survey with them via phone, in person or email. The questionnaire structure (Table 3.1) was constructed with information from the results of the personal interview surveys of forest products importers and government officers in the Central America from Chapter 2. Also, some questions were adapted from a previous Virginia Tech study in Mexico and the Dominican Republic (Smith et al. 2008), a study in the U.S. concerning unknown Bolivian wood species (Cossio Antezana 2007) and a study of retail stores for hardwood specialty products (Cesa 1987). The questionnaire was reviewed by wood products marketing experts and the researcher's fellow graduate students. The questionnaire was revised based on reviewers' suggestions. The questionnaire was translated

into Spanish by native-speaking Central and South Americans who were experienced in the wood products industry in the region.

Table 3.1 Questionnaire structure

Questionnaire Structure		
Section	Questions	Citations
1. Demographic Information	1. Type of business 2. Major products imported 3. Major products sold 4. Customer Demographics 4. Number of employees 5. Annual average gross sales	(Cesa 1987; Sun 1998; Bowe et al. 2001; Cossio 2007; Parhizkar 2008; Perkins 2009)
2. Supplier	6. Supplier attributes (e.g. honesty, patience, commitment)	(Parhizkar 2008)
3. Product Attributes	7. Product attributes when purchasing wood and wood products	(Cesa 1987; Hammett 1996; Sun 1998; Cossio 2007)
4. Retailer/ Manufacturer Promotion Strategy	8. Promotional strategies for selling wood products	(Cesa 1987; Parhizkar 2008)
5. Supplier Promotion Strategy	9. Promotional strategies when purchasing wood and wood products	(Cesa 1987; Parhizkar 2008)
6. Barriers	10. Potential barriers to importing Appalachian forest products	(Ifju and Bush 1993; Hammett 1996; Parhizkar 2008; Naka et al 2009)
7. Company Performance	11. How well your company performed within the last 5 years?	(Perkins 2009)
8. Products	12. Hardwood lumber thicknesses 13. Softwood lumber dimensions 14. Softwood board dimensions 15. Panel thicknesses 16. Panel dimensions 17. Hardwood lumber color preferences 18. Future demand of Appalachian wood products 19. Finding information regarding new wood products 20. What category of suppliers do you purchase wood products from? 21. How often does your company place orders? 22. Number of 20-foot containers of hardwood lumber 23. Number of 20-foot containers of softwood lumber 24. Number of 20-foot containers of panels 25. List the top 5 countries where you purchase wood products?	(Cossio 2007; Parhizkar 2008)
9. Price	26. How much are you willing to pay for Appalachian wood products? 27. How much are you willing to pay for certified wood products?	(Cossio 2007; Parhizkar 2008)

Review of literature, case studies, and the survey acted as the foundation to formulate factors, research hypotheses. A conceptual model was developed based on review of literature (Objective 1), case studies (Chapter 2) and applied to this survey of perceptions of wood products retailers and manufacturers from Central America regarding supplier attributes, product attributes, retailer/manufacturer promotion strategy, supplier promotion strategy, potential importing barriers, and company performance.

3.2.2 Data Analysis

Because the participants were purposively selected, the results are not representative of all wood products retailers and manufacturers in Central America. This type of non-probability sampling is useful when a sampling frame is not available or a complete census of a population is not possible (Magnani et al. 2005; Babbie 2010). However, the results can give insights into drivers and barriers of exporting Appalachian wood products to Central America. Survey data was entered in SurveyPro 5.0 and statistical analysis was performed using SPSS® and MS-Excel®. Descriptive statistics were used to identify the means and standard deviations of marketing factors (e.g. supplier attributes, promotional strategy). The rating questions used a 5-point Likert response format (e.g. strongly agree to strongly disagree) to indicate the respondent's level of agreement. The researchers chose to use a Likert response format to provide a consistent interval response format (Jamieson 2004; Babbie 2010). The 5-point Likert response format was chosen over a 7-point format to reduce the respondent burden and because more than 5 points have not shown to offer any more added reliability (Lissitz and Green 1975). During analysis, the data was assumed to be interval. Analysis of Variance (ANOVA) was used to test for significant differences in responses among Central American countries. Because response distributions were found to be non-normal, non-parametric statistics (i.e., Kruskal-Wallis one-way analysis of variance) were also used to identify differences between countries.

The results of the parametric and non-parametric statistics were compared. Because minimal differences were detected between the two methods, the researchers decided to use the ANOVA results. Data were categorized into multiple respondent groupings by country (n=5; Questionnaires from Nicaragua were removed from the analysis because of invalid data).

To test the conceptual model, Cronbach's alpha and factor analysis were used to check the reliability and validity of the data. The results of factor analysis suggested meaningful groupings within many of the constructs, including factors such as product attributes, purchasing attributes, and supplier services. Two hypothetical models were developed and the relationships were tested for significance using ANOVA and multiple regression analyses.

In order to understand the factors that affect marketing of wood products to Central America, a conceptual research model describing findings from the literature was developed prior to this research, similarly to other research studies (Li, 2002; Lee, 2009; Sanchez 2011; (Figure 3.1). In the following sections, the conceptual research model is explained, as well as research hypotheses, data purification and analysis, and hypotheses testing of the significance of factors. All of the hypotheses are shown in the conceptual model in Figure 3.1.

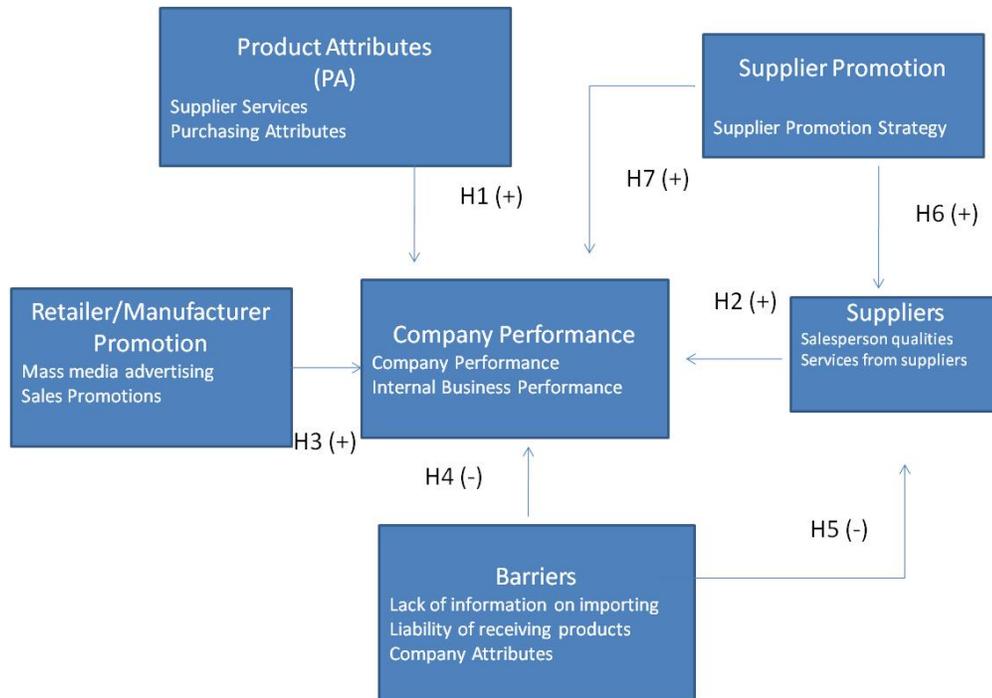


Figure 3.1 Conceptual research model developed from the literature

A) Research hypothesis 1 (Product Attributes and Company Performance)

Product Attributes determine if the product will be purchased by a consumer. If the customer expectations of the product are met, then they will likely make a re-buy from the supplier increasing their performance (Swan and Combs 1976). This leads to the following hypothesis:

H₁: Product Attributes affect the product offered to consumers, causing a positive impact to Company Performance.

B) Research hypothesis 2 (Suppliers and Company Performance)

The relationship between suppliers and buyers must be successful to increase mutual profits (Anderson and Weitz 1992). Communication, cultural sensitivity, commitment and patience were discovered to be important factors in developing a long-term

relationship between buyers and sellers (Robicheaux and Coleman 1994; Olsen and Ellram 1997; Leonidou et al. 2006). This leads to the following hypothesis:

H₂: Suppliers affect the marketing plan, causing a positive impact to Company Performance.

C) Research hypothesis 3 (Retailer/Manufacturer Promotion and Company Performance)

Promotion plays an important part in the marketing mix of a company. Walters and MacKenzie (1988) found that coupon promotions in a store circulation increased company profits. Advertising and sales promotions are part of the promotion mix. This leads to the following hypothesis:

H₃: Retailer/Manufacturer Promotion affect products sold, causing a positive impact to Company Performance.

D) Research hypothesis 4 (Barriers and Company Performance)

Companies entering the export market find themselves struggling with barriers such as lack of information of international markets (Parhizkar 2008). Buyers in international markets may currently procure low quality products and are looking for high value-added products. However, firms exporting high value-added products may not enter the global market because of barriers, which may cause company performance to decrease in international markets. This leads to the following hypothesis:

H₄: Barriers affect products sold, causing a negative impact to Company Performance.

E) Research hypothesis 5 (Barriers and Suppliers)

Lack of information of global markets and long-term commitment are the main barriers affecting exporting forest product companies (Ringe et al. 1987). Exporters need to

understand markets, distribution channels and desired products in overseas markets in order to be successful (Ifju and Bush 1993). This leads to the following hypothesis:

H₅: Barriers facing wood product companies in importing markets negatively impact suppliers in global markets.

F) Research hypothesis 6 (Supplier Promotion and Suppliers)

The supplier's promotion strategy affects how buyers perceive their products. Personal selling is one part of the promotion strategy that affects the supplier's overall sales performance, especially when the salesperson has adequate selling knowledge (Szymanski 1988). This leads to the following hypothesis:

H₆: Supplier's promotion strategy positively affects suppliers performance in the amount of products sold.

G) Research hypothesis 7 (Supplier Promotion and Company Performance)

Trade promotions help increase demand with resellers. Temporary price discounts offered to resellers will help reduce raw material costs, allowing the reseller to increase profits when passing the product onto the end-user (Abad 2003). This leads to the following hypothesis:

H₇: Supplier promotion strategy positively affects reseller's Company Performance by increasing profits.

3.3 Results and Discussion

3.3.1 Demographics

The last six questions of the questionnaire provided demographic information about the respondent's business type, manufacturer type, customer type, number of locations, number of employees and gross sales in 2009.

3.3.1.1 Business Type and Manufacturer Business Type

The majority of respondents (43%) were manufacturers, followed by retailers (37%) and distributors (19%) (Table 3.2). Some respondents indicated that their company can be classified as more than one business type (e.g. manufacturer and/or retailer).

Table 3.2 Distribution of respondents by type of business (n=237)

Type of Business	Respondents	Percentage of Total
Manufacturer	139	43.3%
Retailer	120	37.4%
Distributor	62	19.3%

The largest category of manufacturer respondents was furniture manufacturers (29%) (Table 3.3). Although the results from Chapter 2 indicate that pallet manufacturing may be the largest consumer of wood products, only 1% of respondents to this questionnaire were classified as pallet manufacturers. Some respondents indicated that their company may be classified as more than one manufacturer type (e.g. window and/or door).

Table 3.3 Manufacturer business type (n=357)

Type of Manufacturer	Respondents	Percentage of Total
Furniture	104	29.1%
Door	55	15.4%
Cabinet	51	14.3%
Retailer	34	9.5%
Window	31	8.7%
Flooring	28	7.8%
Moulding/Millwork	25	7.0%
Dimension	24	6.7%
Pallet	5	1.4%

3.3.1.2 Customer Types

Respondents stated their companies sell primarily to homeowners and contractors (Figure 3.2). Over 36% of respondents reported that they sell to homeowners and 30% sell to contractors. Some respondents stated they have customers in multiple categories (e.g. manufacturers and/or retailers).

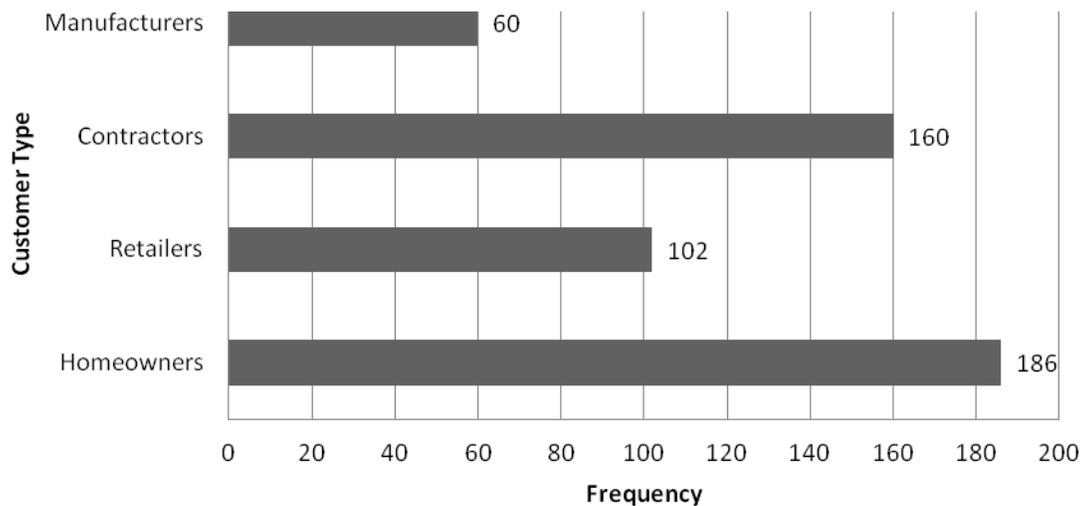


Figure 3.2 Customer types stated by respondents

3.3.1.3 Total Sales, Number of Locations, and Number of Employees

Figure 3.3 shows the approximate total sales in 2009 of the retailer and manufacturer respondents. Large companies have corresponding higher sales figures compared with smaller companies with lower amount of sales; 87% of companies reported less than \$1,000,000 in sales, and only 10% of the companies reported sales between \$1,000,000 and \$5,000,000. The remaining respondents (3%) reported sales over \$5,000,000.

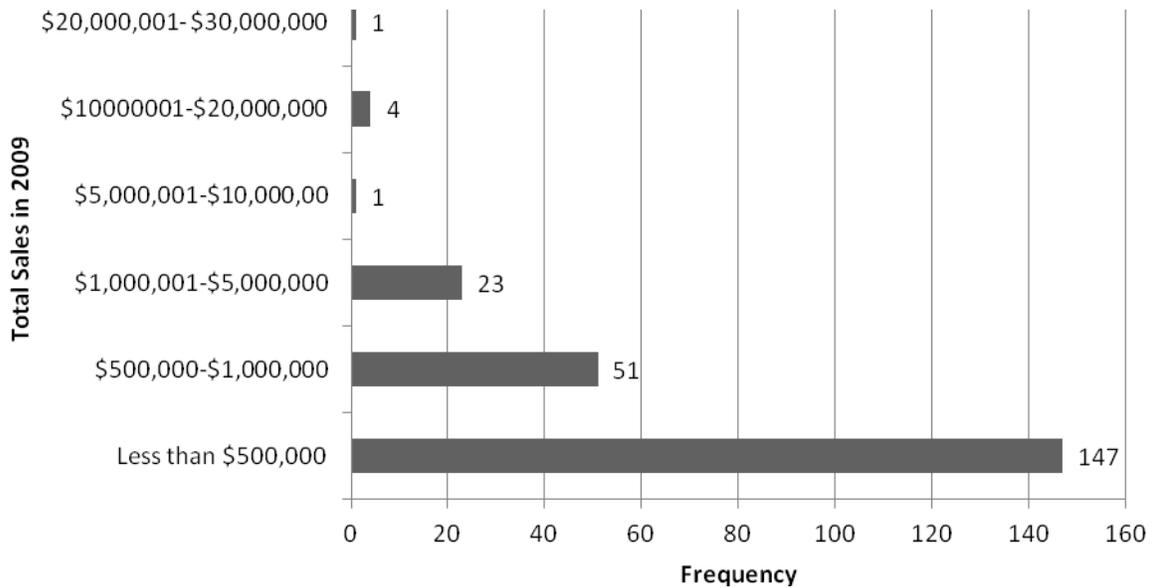


Figure 3.3 Approximate total sales in 2009 of respondents (n= 227)

The majority of respondents (56%) stated that their company had one company location (Figure 3.4). Ninety-two respondents (39%) reported that their company had between 2-5 locations, eleven respondents' companies (5%) had 6-15 locations and one company had more than 16 locations. Generally, responding companies had fewer than 25 employees (62%) (Figure 3.5). Only three percent of responding companies had more than 200 employees. The number of locations is correlated with the amount of sales and number of employees; in other words, larger companies tend to have higher sales and more employees.

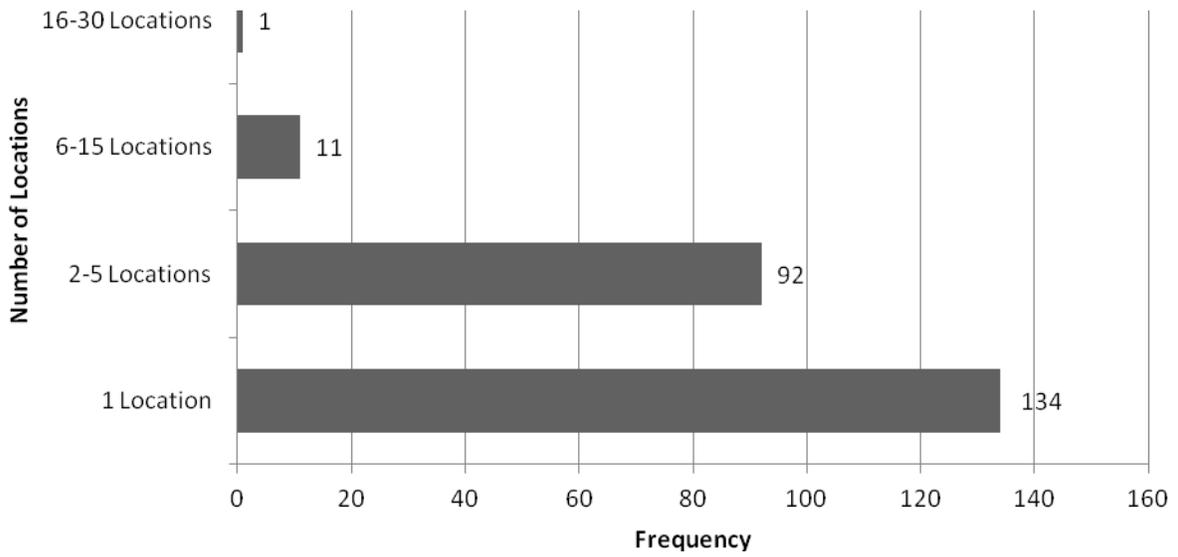


Figure 3.4 Number of company locations reported by respondents (n=238)

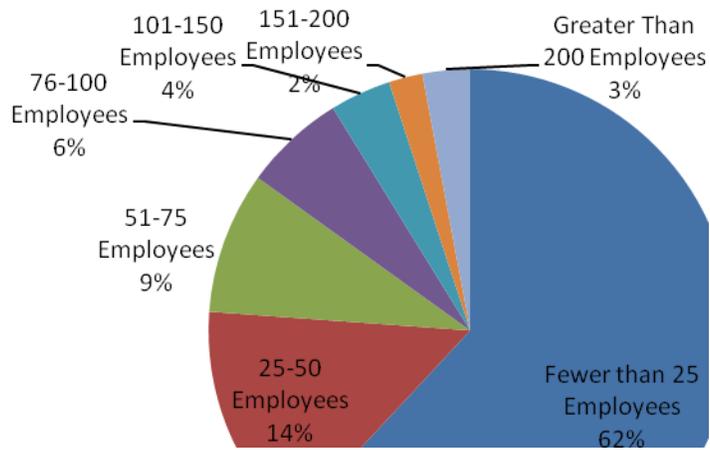


Figure 3.5 Number of employees reported by respondents (n=239)

3.3.2 Suppliers Attributes

Respondents were asked to rate the supplier attributes desired when purchasing wood products on a five-point Likert scale. Respondents believed that most supplier attributes were important when purchasing wood products (Figure 3.6, Table 3.4). All the Central American countries surveyed provided consistent responses for *offering quality products, information sharing, and visits*. Panama and Costa Rica respondents indicated that *culture sensitivity* was more important to them than El Salvador and Guatemala.

The supplier attributes of most importance were *offer quality products, honesty, compromise, and communication*. Wood products companies look for suppliers that offer quality products. Buyers also look for suppliers who are honest and willing to work with buyers to reach a mutual agreement when selling. Buyers prefer that their suppliers communicate with them regularly to help maintain the buyer-seller relationship. Although all supplier attributes were believed to be important, the attribute rated the least important was *culture sensitivity*. Appalachian wood products companies should market products of good quality and priced competitively to be successful in Central American markets. Central American wood products buyers prefer Appalachian companies that frequently visit and share information with them on current and new products. Appalachian companies entering Panama and Costa Rica may need to educate themselves on Panamanian and Costa Rican culture in order to be successful in marketing wood products to them.

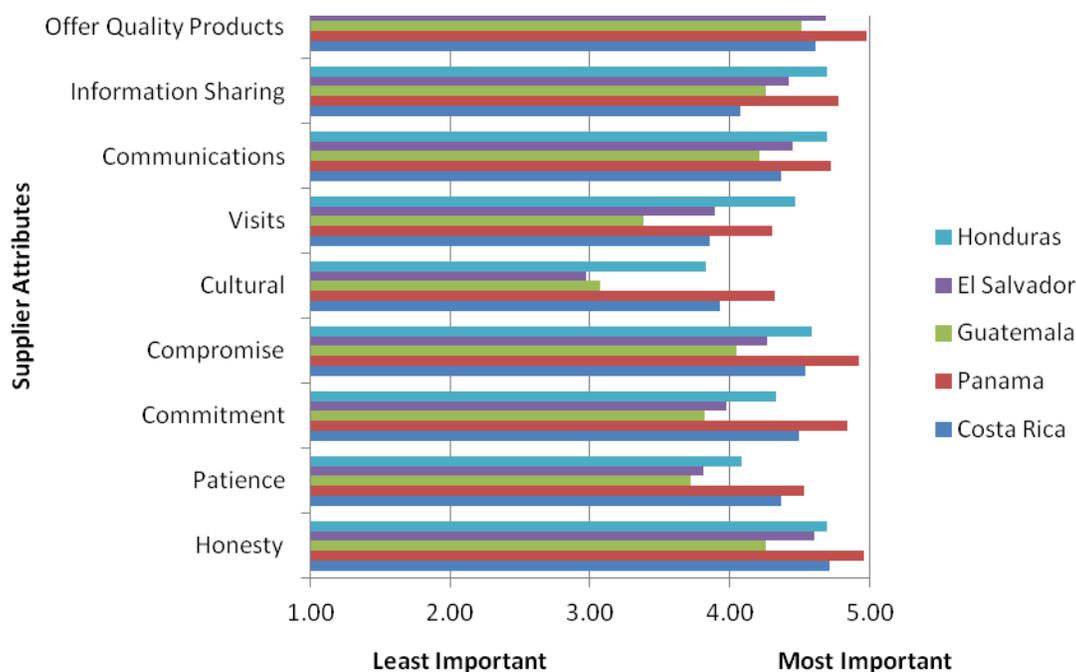


Figure 3.6 Supplier attributes by respondents (n=226)

Table 3.4 Mean responses to supplier attributes items. Values within each item with the same letter were not significantly different ($P > 0.05$) based on Tukey’s multiple comparison tests.

Supplier Attributes	Costa Rica n=76	Panama n=50	Guatemala n=39	El Salvador n=38	Honduras n=36
Offer Quality Products	4.61A	4.98A	4.51A	4.68A	4.69A
Compromise	4.54AC	4.92B	4.05C	4.26AC	4.58ABC
Communication	4.37A	4.72B	4.21A	4.45AB	4.68AB
Information Sharing	4.08A	4.78A	4.26A	4.42A	4.69A
Commitment	4.49A	4.48A	3.82B	3.97B	4.33AB
Patience	4.37A	4.53A	3.72A	3.82A	4.08A
Honesty	4.72AB	4.96A	4.26B	4.61AB	4.69AB
Visits	3.86A	4.30A	3.38A	3.89A	4.47A
Culture Sensitivity	3.93A	4.32A	3.08B	2.97B	3.83AB

3.3.3 Product Attributes

Respondents were asked to rate product attributes desired when purchasing wood products on a 5-point Likert scale. Respondents thought most product attributes were considered important when purchasing wood products (Figure 3.7). All the Central American countries

surveyed provided consistent responses for *product quality, price, volume discounts, and warranties on products* (Table 3.5). When purchasing wood products, respondents from Panama and Costa Rica believed that *environmentally certified* products were more important than Guatemala, Honduras and El Salvador. The highest rated product attributes were *product quality, price, on time delivery, volume discounts, and product warranty*. Products purchased need to be of good quality and priced competitively for Central American wood products companies to purchase from suppliers.

Appalachian wood products suppliers need to be on time with deliveries in order to continue business with buyers. Companies would like suppliers to offer volume discounts on the amount of products they purchase; in other words, the more products the company purchases, the lower the price for each item. Companies prefer products that are backed with a warranty so if they are not satisfied, the products can be returned. Although all product attributes were believed to be important, the product attributes with the lowest rating were *packaging and brand*. Central American wood products companies were not very interested in how the product was packaged. Brand is not particularly important to companies as long as the product is of good quality and competitively priced.

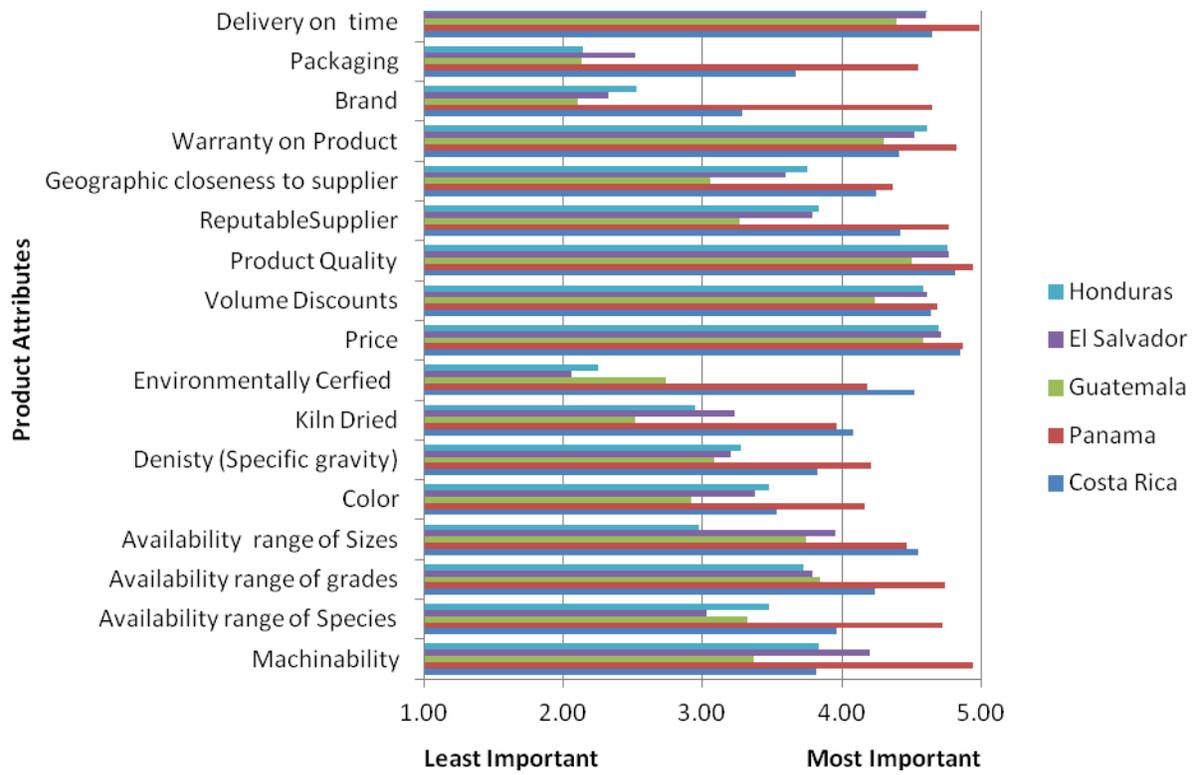


Figure 3.7 Importance of wood/wood product attributes (n=195)

Table 3.5 Mean responses to product attributes items. Values within each item with the same letter were not significantly different ($P > 0.05$) based on Tukey's multiple comparison tests.

Product Attributes	Costa Rica n=76	Panama n=50	Guatemala n=37	El Salvador n=37	Honduras n=36
Product Quality	4.81A	4.94A	4.50A	4.76A	4.75A
Price	4.85A	4.86A	4.58A	4.71A	4.69A
Delivery on time	4.64A	4.98A	4.39A	4.59A	4.61A
Volume Discounts	4.63A	4.68A	4.24A	4.61A	4.58A
Warranty on product	4.41A	4.82A	4.30A	4.51A	4.61A
Availability of a range of grades	4.24A	4.73B	3.84A	3.79A	3.72A
Reputable supplier	4.42A	4.76A	3.26B	3.79C	3.83C
Availability of a range of sizes	4.55A	4.46AB	3.74C	3.95BC	2.97D
Machinability	3.81A	4.94B	3.36A	4.19A	3.83A
Geographic closeness to supplier	4.24A	4.36A	3.05A	3.59A	3.75A
Availability of a range of Species	3.96A	4.72B	3.32C	3.03C	3.47AC
Density	3.83A	4.20A	3.08B	3.20B	3.28B
Color	3.53A	4.16C	2.92B	3.38AB	3.47AB
Kiln-dried	4.08A	3.96AC	2.51BC	3.23B	2.94ABC
Environmentally certified	4.51A	4.18A	2.74B	2.06B	2.25B
Packaging	3.67A	4.54A	2.14B	2.51B	2.14B
Brand	3.29A	4.64B	2.11C	2.32C	2.53C

3.3.4 Retailer/Manufacturer Promotion Strategy

Respondents were asked to rate the importance of retailers' or manufacturers' promotional strategies for selling wood products to the end consumer on a 5-point Likert scale (Figure 3.8). All the Central American countries surveyed provided consistent responses for personal selling (Table 3.6). When selling wood products, respondents from Panama and Costa Rica believed that *trade shows, sales and product discounts, word of mouth* and *attractive display racks* were more important media for promoting products than Guatemala, Honduras and El Salvador. Overall, respondents believed that *personal selling, sales and products discounts, and point of purchase product literature* were the most important promotional strategies. Respondents believed advertisement in *magazines and newspapers, and radio and television*

commercials were the promotional strategies of lowest importance for selling wood products to the end consumer. Results suggest that end consumers prefer personal contact (e.g., visiting a store and talking to a sales representative about a product) when looking for wood products to meet their needs.

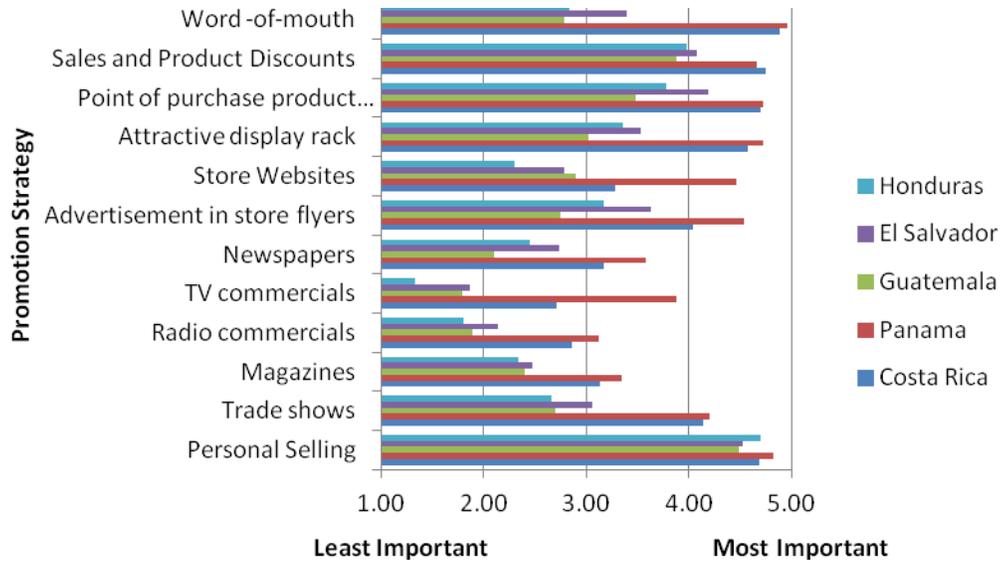


Figure 3.8 Importance of retailer/manufacturer promotion strategy (n=204)

Table 3.6 Mean responses to retailer/manufacturer promotion strategy items. Values within each item with the same letter were not significantly different ($P > 0.05$) based on Tukey's multiple comparison tests.

Retailer/Manufacturer Promotion Strategy	Costa Rica n=66	Panama n=50	Guatemala n=39	El Salvador n=38	Honduras n=36
Personal Selling	4.68A	4.82A	4.49A	4.53A	4.69A
Trade Shows	4.14A	4.20A	2.69B	3.06B	2.67B
Magazines	3.14A	3.35A	2.39AB	2.47AB	2.33B
Radio Commercials	2.86A	3.12A	1.89B	2.14B	1.81B
TV Commercials	2.70A	3.88A	1.79B	1.86B	1.33B
Advertisement in local newspaper	3.17A	3.58A	2.11B	2.73AB	2.44B
Advertisement in store flyer	4.03AC	4.54A	2.74B	3.63AC	3.17BC
Store website	3.28AC	4.46B	2.90AC	2.78AC	2.31C
Attractive display rack	4.57A	4.72A	3.03B	3.53B	3.36B
Point of purchase product literature	4.69A	4.72A	3.48B	4.18A	3.78AB
Sales and product discounts	4.74A	4.66A	3.88B	4.08B	3.97B
Word-of-mouth	4.88A	4.96A	2.79B	3.39B	2.83B

3.3.5 Supplier Promotion Strategy

Respondents were asked to rate the importance of promotion strategies of suppliers when companies are purchasing wood products on a 5-point Likert scale (Figure 3.9). Respondents believed that *personal selling* was important for suppliers to use when selling wood products to retailer and manufacturers (Figure 3.9 and Table 3.7). Personal selling allows the salesperson to develop and maintain a relationship with the customer. The promotion strategies of lowest importance to suppliers were advertisements in *local newspapers* and *trade shows*. Promoting products at trade shows was found to be more important for Costa Rica than the other countries, possibly because the other countries have few trade shows to promote products. The reason why newspapers may be a poor promotion strategy is their readership continues to decline with the introduction of the internet and newspaper websites (Perez-Pena 2008).

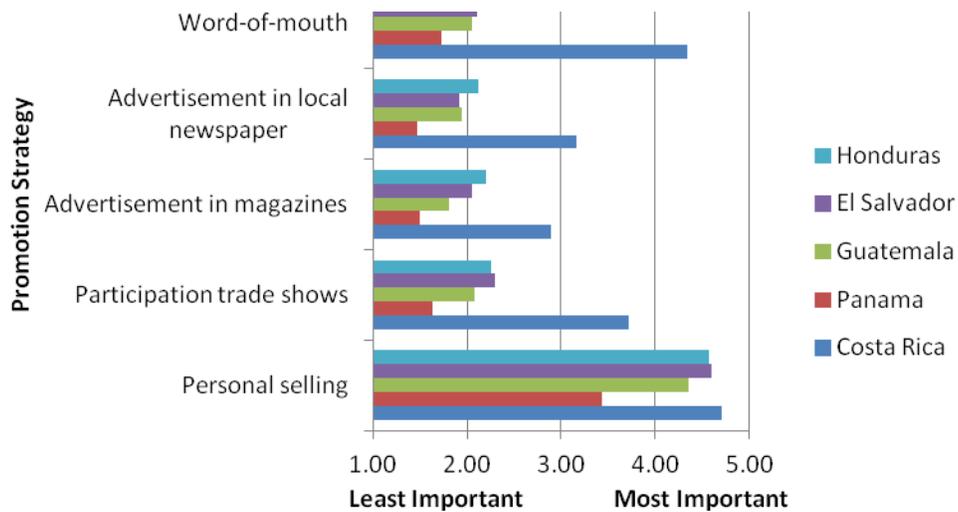


Figure 3.9 Importance of supplier promotion strategies (n=192)

Table 3.7 Mean responses to supplier promotion strategy items. Values within each item with the same letter were not significantly different ($P > 0.05$) based on Tukey’s multiple comparison tests.

Supplier Promotion Strategy	Costa Rica n=61	Panama n=38	Guatemala n=37	El Salvador n=39	Honduras n=35
Personal Selling	4.70A	3.44B	4.36A	4.60A	4.57A
Participation in trade shows	3.72A	1.63B	2.08B	2.29B	2.26B
Advertise in magazines	2.89A	1.50A	1.81A	2.05A	2.20A
Advertise in local newspaper	3.16A	1.47B	1.95B	1.92B	2.11B
Word-of-mouth	4.34A	1.73B	2.06B	2.11B	1.79B

3.3.6 Barriers

Respondents were asked to rate the importance of potential barriers to importing Appalachian forest products on a five-point Likert scale. Companies believed that most potential barriers were important when importing wood products (Figure 3.10, Table 3.8). All the Central American countries surveyed provided consistent responses for *transportation and logistics, price, delivery time, language, quality of Appalachian wood products, U.S. government and international policies, lack of agents and brokers*. Respondents from Panama indicated that past

experience of purchasing from the Appalachian region was more important to them than the other countries. The most important potential barriers to importing from the Appalachian region were *price*, *delivery on time*, *payment methods*, and *transportation and logistics*. Chapter 2 supports the finding that Appalachian companies need to be competitively priced with Chilean wood products companies when marketing wood products to Central America. The barrier of lowest importance was *language barrier*. Most large Central American wood products companies have employees that can speak English and translator services are available for companies expanding globally, so this barrier may seem less important to Central American companies.

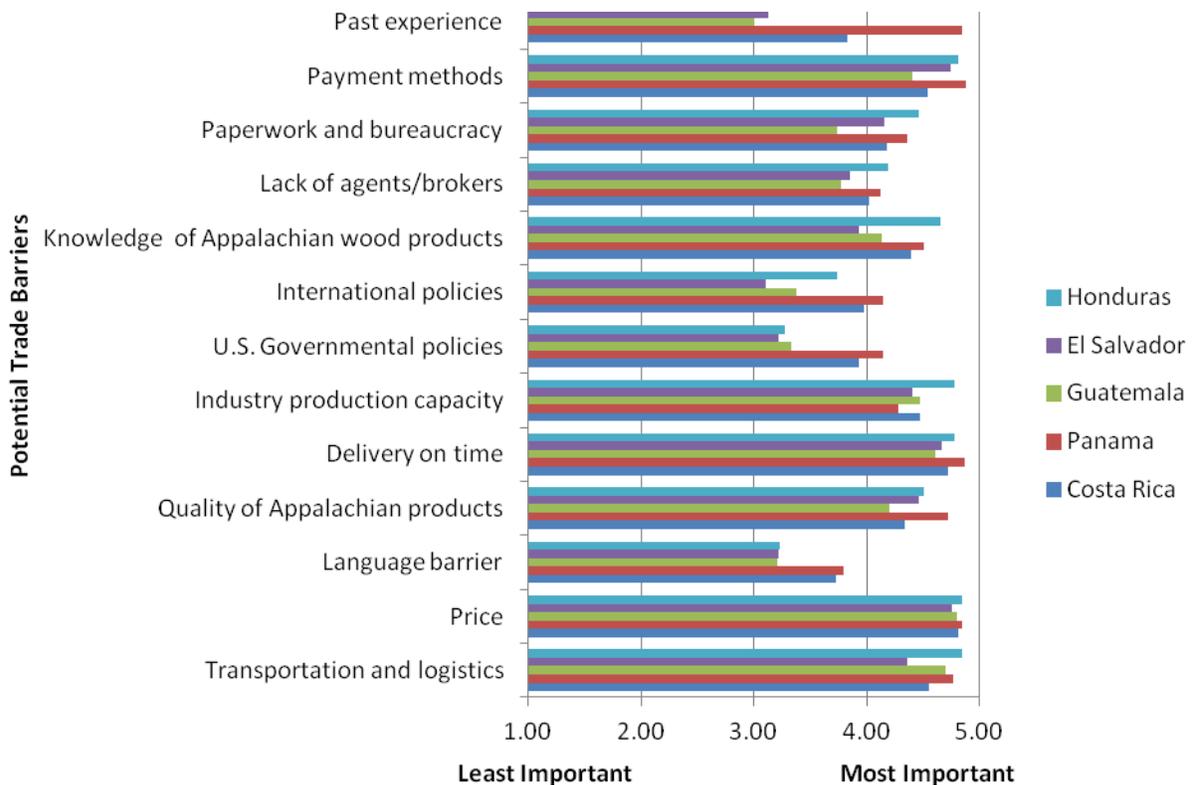


Figure 3.10 Importance of potential barriers for Appalachian forest products by respondents (n=168)

Table 3.8 Mean responses to barrier items. Values within each item with the same letter were not significantly different ($P > 0.05$) based on Tukey’s multiple comparison tests.

Barriers	Costa Rica n=74	Panama n=50	Guatemala n=30	El Salvador n=27	Honduras n=26
Transportation and logistics	4.55A	4.76A	4.70A	4.36A	4.85A
Price	4.81A	4.84A	4.80A	4.75A	4.85A
Language barrier	3.72A	3.80A	3.20A	3.21A	3.23A
Quality of Appalachian products	4.33A	4.72A	4.20A	4.46A	4.50A
Delivery on-time	4.72A	4.86A	4.60A	4.67A	4.77A
Industry production capacity	4.47A	4.28A	4.47A	4.41A	4.77A
U.S. Government policies	3.93A	4.14A	3.33B	3.21B	3.27B
International policies	3.97AB	4.14A	3.38AB	3.11B	3.73AB
Knowledge of Appalachian wood products	4.39A	4.50A	4.13A	3.93A	4.65A
Lack of agents/brokers	4.01A	4.12A	3.77A	3.85A	4.19A
Paperwork and bureaucracy	4.18A	4.36A	3.73A	4.15A	4.46A
Payment methods	4.54A	4.88A	4.40A	4.74A	4.81A
Past experience	3.83A	4.84B	3.00A	3.13A	3.31A

3.3.7 Company Performance

Respondents were asked to rate how well their company performed within the last 5 years on a 5-point Likert scale. Respondents believed their companies performed well in the last 5 years (Figure 3.11, Table 3.9). The top measures for company performance were *product quality, customer satisfaction, and competitive price*. All the Central American countries surveyed provided consistent responses for *number of orders received, profits, sales, competitive price, costs, customer satisfaction, product quality, and supplier relationship*. These measures were high because companies aim to purchase quality products at a competitive price to meet the needs of their customers. Companies felt the lowest performance attribute was in the *employee*

turnover rate. Employee turnover rate may be higher than desired because of the global economic crisis and the amount of employees laid off due to a decrease in product demand. Respondents from Panama and Costa Rica agree slightly more that their companies performed better in employee turnover and employee satisfaction than the other countries over the past 5 years.

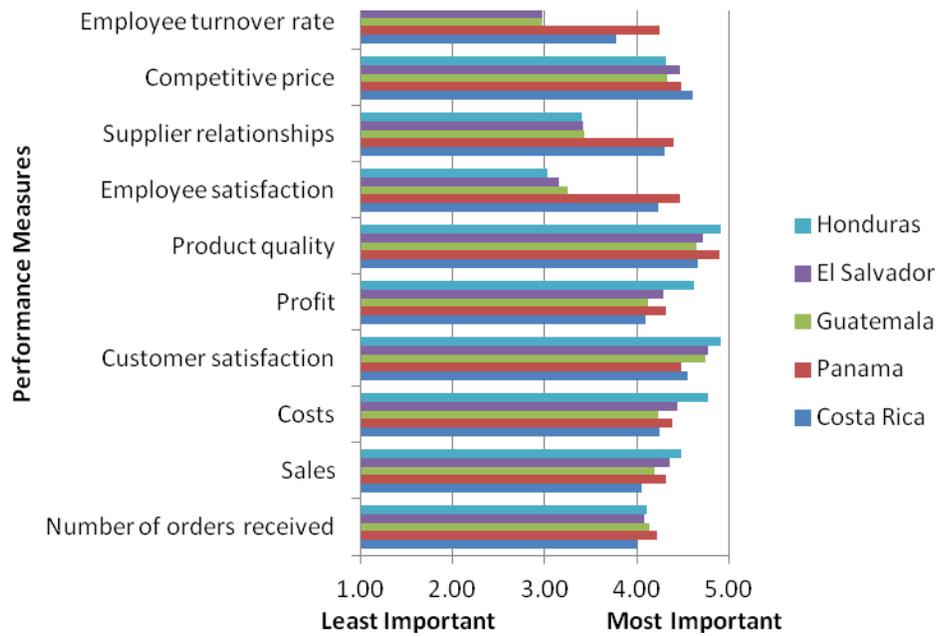


Figure 3.11 Company performance in the last 5 years by respondents (n=228)

Table 3.9 Mean responses to company performance items. Values within each item with the same letter were not significantly different ($P > 0.05$) based on Tukey's multiple comparison tests.

Company Performance	Costa Rica n=78	Panama n=50	Guatemala n=39	El Salvador n=39	Honduras n=35
Number of orders received	4.01A	4.22A	4.13A	4.08A	4.11A
Sales	4.05A	4.32A	4.18A	4.36A	4.49A
Costs	4.24A	4.38A	4.24A	4.44A	4.77A
Customer satisfaction	4.55A	4.48A	4.74A	4.77A	4.91A
Profit	4.09A	4.32A	4.13A	4.29A	4.62A
Product quality	4.66A	4.90A	4.64A	4.72A	4.91A
Employee satisfaction	4.23A	4.47A	3.26B	3.15B	3.03B
Suppliers relationship	4.30A	4.40A	3.44B	3.41B	3.40B
Competitive price	4.60A	4.48A	4.33A	4.46A	4.31A
Employee turnover rate	3.77A	4.24A	2.97B	2.97B	2.80B

3.3.8 Products

3.3.8.1 Hardwood Lumber Preferences

Companies were asked about the thickness of hardwood lumber they purchase. Thirty percent of respondents purchase 1 inch (4/4) thick hardwood lumber, 26% purchase hardwoods 2 inches (8/4) thick, 15% purchase hardwoods 1.25 inches (5/4) thick, 15% purchase hardwoods 1.5 inches (6/4) thick, and 14% purchase hardwoods 2.5 inches (10/4) thick (Figure 3.12). Some respondents stated the thickness of hardwood lumber purchased varied depending on the customer or desired end product. The purchased hardwood lumber thicknesses ranged from 1/2 inch up to 10 inches.

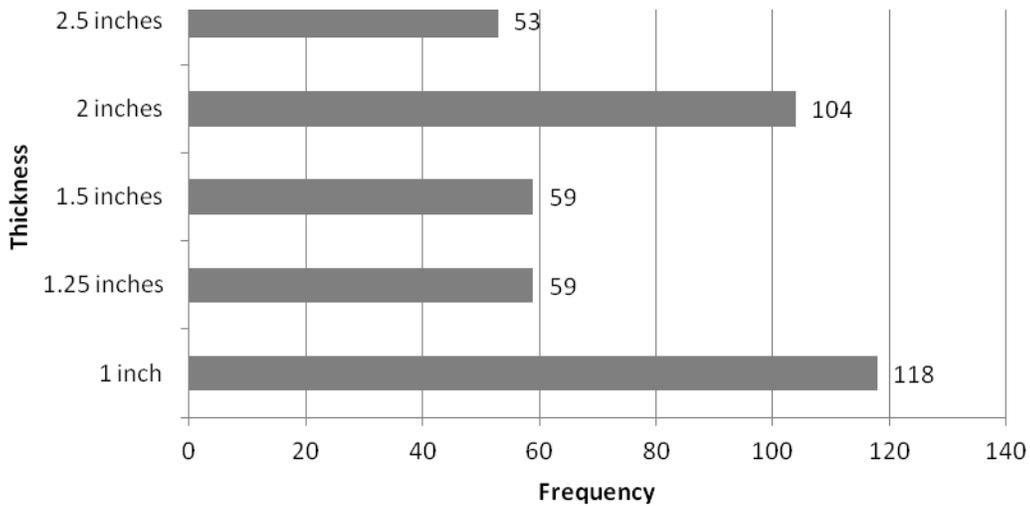


Figure 3.12 Purchased hardwood lumber thickness by respondents

Figure 3.13 shows respondents' color preferences for hardwood lumber. Dark brown (e.g. caobilla [*Swietenia humilis*], cenizaro [*Samanea saman*]) and white (e.g. gmelina [*Gmelina arborea*]) species were the most important hardwood color preferences identified by the respondents. In Chapter 2, the researchers found that most furniture, flooring, ceilings, and wall panels were made with dark colored species. Kitchen cabinets were mostly made with lighter colored species that match light kitchen appliances. Red and light brown colors were ranked neither important nor unimportant; the importance varied equally among these two color preferences. Therefore, Appalachian hardwood lumber companies may market darker and light colored Appalachian hardwood lumber species (i.e.: black walnut, black cherry, hard maple).

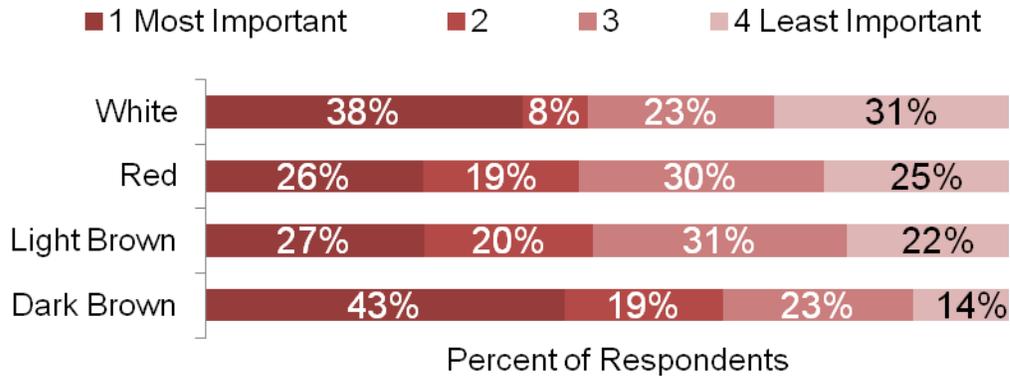


Figure 3.13 Purchased hardwood lumber color preferences by respondents (n=161)

3.3.8.2 Softwood Lumber and Board Dimensions

Companies were asked about what dimension of softwood lumber they purchased. The four most common sizes of softwood lumber purchased by companies were 2”x 4”-8’, 2”x4”-10’, 2”x 4”-12’, and 2”x 6”-12’. Typically these sizes are mainly used for frame building construction (Smith and Wood 1964). The companies typically purchased boards in the following dimensions: 1”x3”-10’, 1”x4”-12’, 1”x6”-10’, 1”x8”-12’, and 1”x10”-12’. From Chapter 2, the researchers found that softwood boards are typically used for furniture production in Central America.

3.3.8.3 Panel Dimensions

Companies were asked what thickness of panels they purchase. Twenty percent of respondents stated their companies primarily purchase panels ¼” (6mm) thick, 15% purchase panels 3/8” (9.5mm) thick, 13% purchase panels ¾” (19mm) thick, and 12% purchase panels ½” (12.5mm) thick (Figure 3.14). Fifty percent of the respondents purchase panels 4’ x 8’ (1220 mm x 2440 mm) thick and 25% purchase panels 4’ x 10’ (1220 mm x 3050 mm) thick (Figure 3.15). The dimensions indicated by respondents tend to be the most common panel thicknesses purchased globally (Truini and Ingersoll 1984).

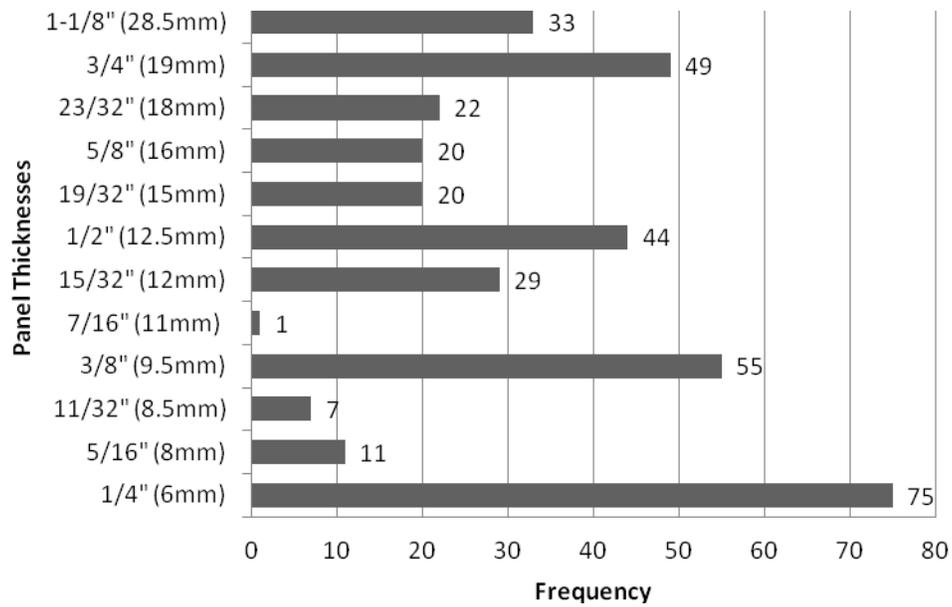


Figure 3.14 Panel thicknesses by respondents

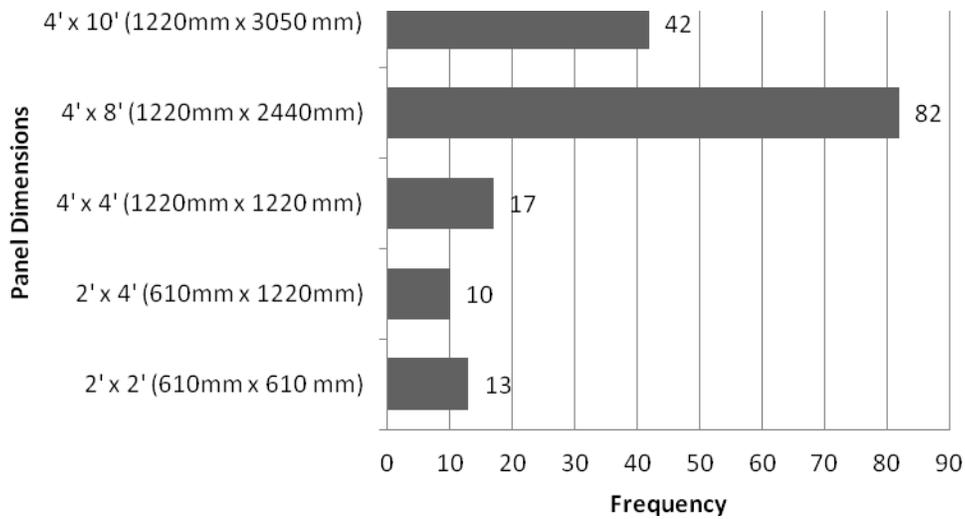


Figure 3.15 Panel dimensions by respondents

3.3.8.4 Demand of Future Appalachian Wood Products

Respondents were given a list of Appalachian wood products and a map of the Appalachian region. Respondents were asked to predict the future demand for wood products

from the Appalachian region. The respondents stated the three main products needed within the next 5 years were composite wood products, termite resistant lumber/panels, and certified forest products (Figure 3.16). Composite wood products may be needed for building construction and furniture production. For this reason, Appalachian companies may try to market composite wood products such as medium density fiberboard, oriented strand board, particle board, and plywood. Due to the high insect populations and humid climate conditions in Central America, respondents from Panama and Costa Rica believed that the use of termite resistant building materials will be needed in the future if wood frame construction increases over concrete and steel building construction.

Environmental concerns have sparked interest in certified forest products in Central America. Respondents from Panama and Costa Rica feel that the demand for these products will increase in the near future as the environmental regulations and forest protection increases. Therefore, Appalachian wood products companies may want to market certified forest products to Panama and Costa Rica. Engineered wood products had the lowest predicted future demand. This predicted demand may have been low because the respondents are unaware of these products and their uses. The research found that most interviewees had low awareness and knowledge of engineered wood products. Therefore, effort needs to be made to educate Central American wood products companies on the use and benefits of using engineered wood products.

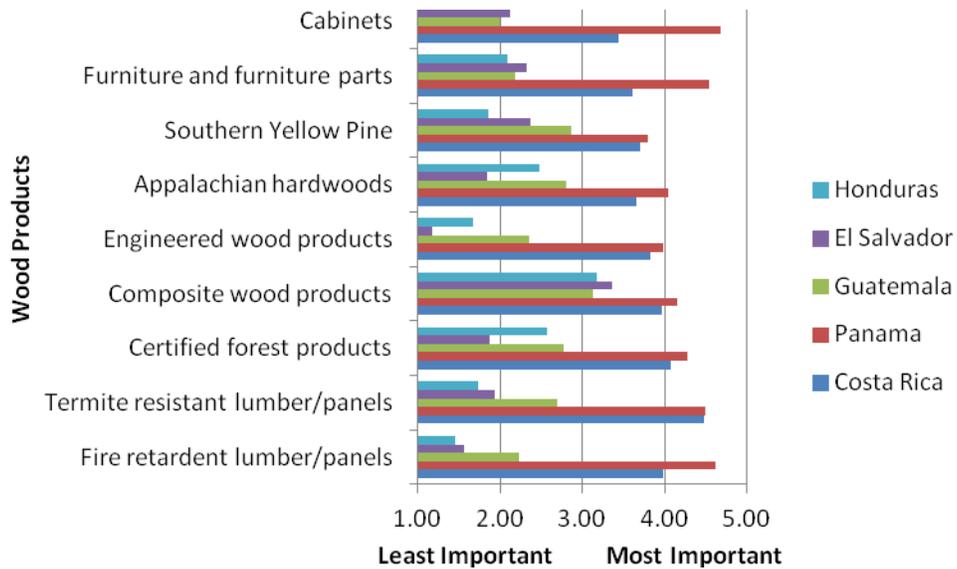


Figure 3.16 The predicted demand of Appalachian wood products within the next 5 years (n=203)

3.3.8.5 Information Gaining of New Imported Wood Products

Figure 3.17 shows the media forms that respondents' companies use to access information about new products imported to their country. Respondents reported that they generally obtained information on new products directly from the supplier. Internet websites and emails were also very useful for gaining knowledge on new imported wood products. The least useful method identified by respondents was advertising new products in newsletters. This lack of interest in newsletters may be due to the small number of customers reached by newsletters. Therefore, Appalachian wood products companies may want to provide their website and product literature in Spanish to reach the end-users.

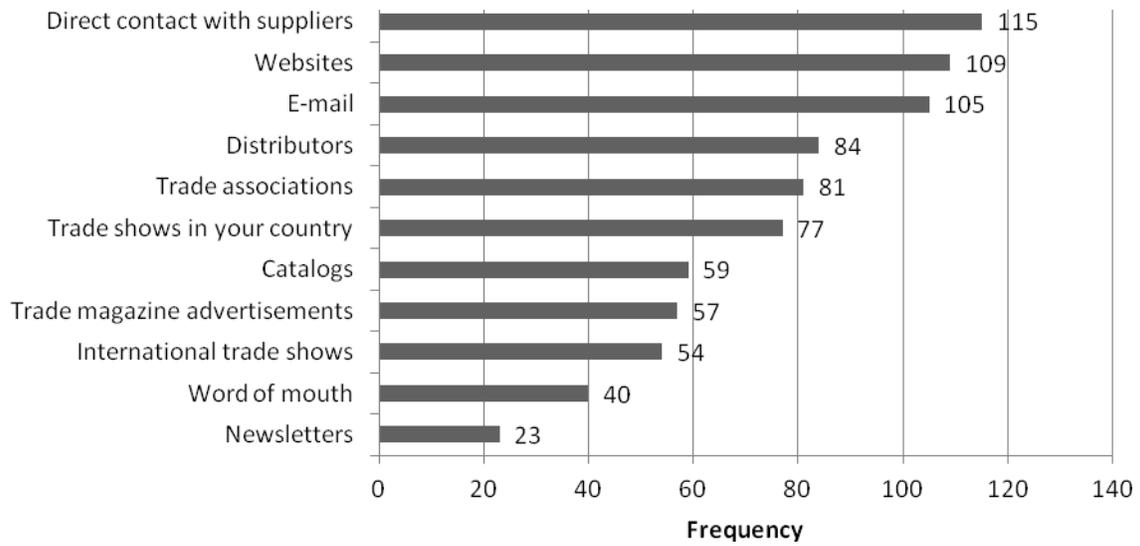


Figure 3.17 Information on new imported wood products by respondents

3.3.8.6 Frequency of Wood Product Orders Placed with Suppliers

Respondents declared they mainly buy wood products directly from the manufacturers and wholesalers (Figure 3.18). Governments and states were ranked last; this is an interesting finding since most of the forests are owned by the governments (Chapter 2).

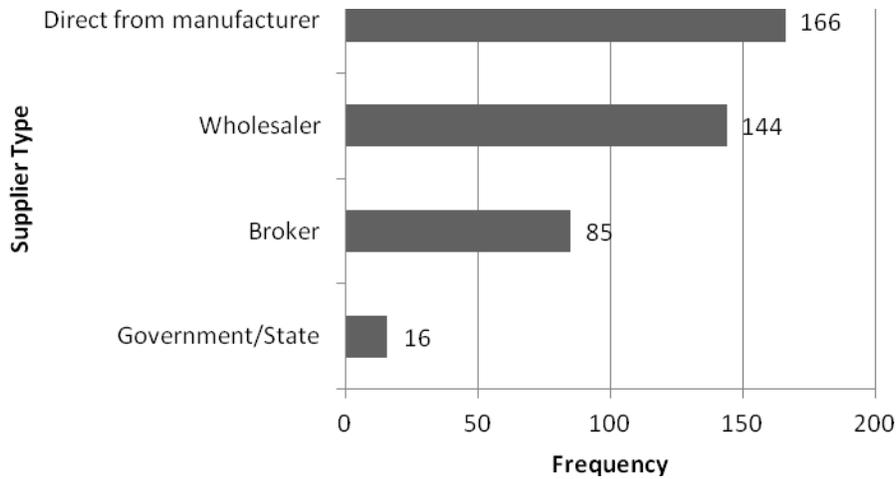


Figure 3.18 Supplier type by respondents

Primarily, orders for wood products are placed monthly by companies (Figure 3.19). Larger companies may order more frequently than smaller companies based on product demands. For that reason, Appalachian companies may want to partner with Central American wholesalers in order to have the product there in a timely manner and also to provide products to smaller wood products firms purchasing less than truckload amounts.

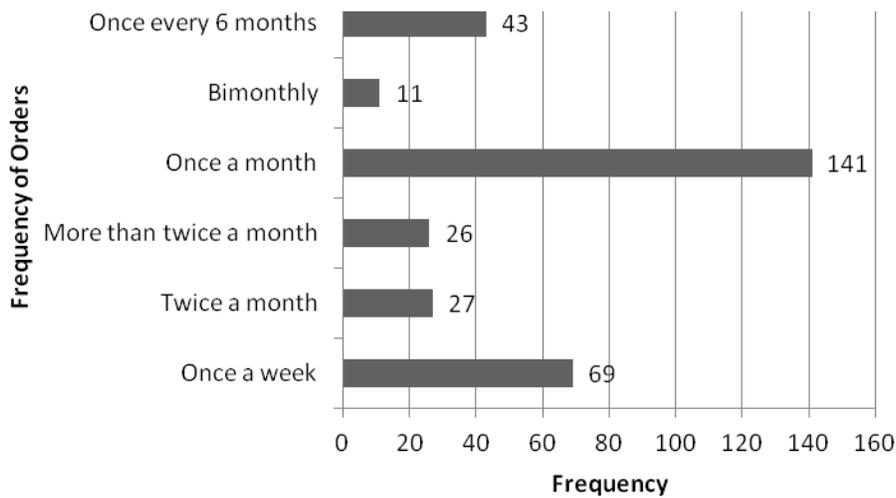


Figure 3.19 Frequency of orders placed by respondents

3.3.8.7 Purchased Wood Products

Thirty-five percent of companies that responded purchased 1-5 containers of wood products in 2009 (Figure 3.20). Of those that purchased 1-5 containers, forty-eight companies purchased hardwood lumber, forty-six companies purchased softwood lumber and twenty-six companies purchased panels. Smaller companies, which represented the majority of respondents, tend to purchase fewer wood products than larger companies, which may explain the relatively high frequency of companies that purchased zero containers. These smaller companies primarily purchase products through a wholesaler that imports wood products. For

that reason, Appalachian wood products companies may want to partner with wholesalers to help distribute products to consumers. Some respondents indicated that they purchased multiple containers of different product types (e.g. softwood lumber and panels).

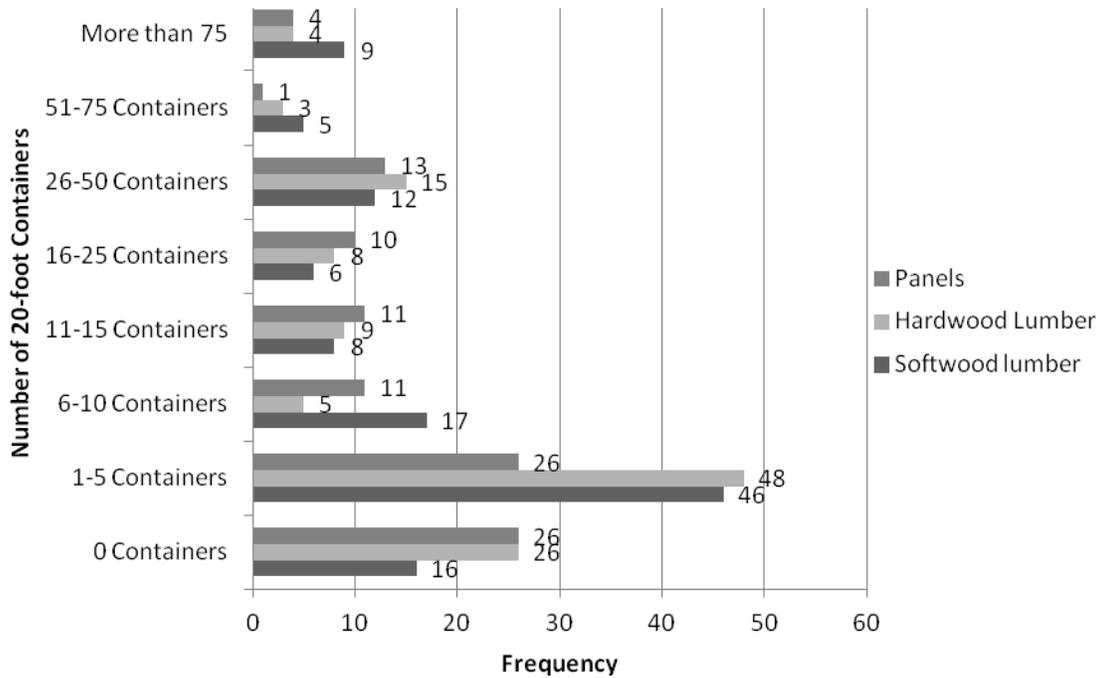


Figure 3.20 Number of 20-foot containers of hardwood, softwood lumber, and panels purchased in 2009 by respondents (n=102)

Respondents were asked about the wood products their company imported at the time of the questionnaire (Figure 3.21). Respondents stated the most frequently imported panels are plywood (12%), medium density fiberboard (10%), particle board (9%), and oriented strand board (8%). Ten percent of respondents import softwood lumber and 7% import hardwood lumber. Since the majority of manufacturers that responded are door manufacturers, there appears to be a high percentage of doors imported, as well as a high volume of veneer, lumber and panels used in the production of doors.

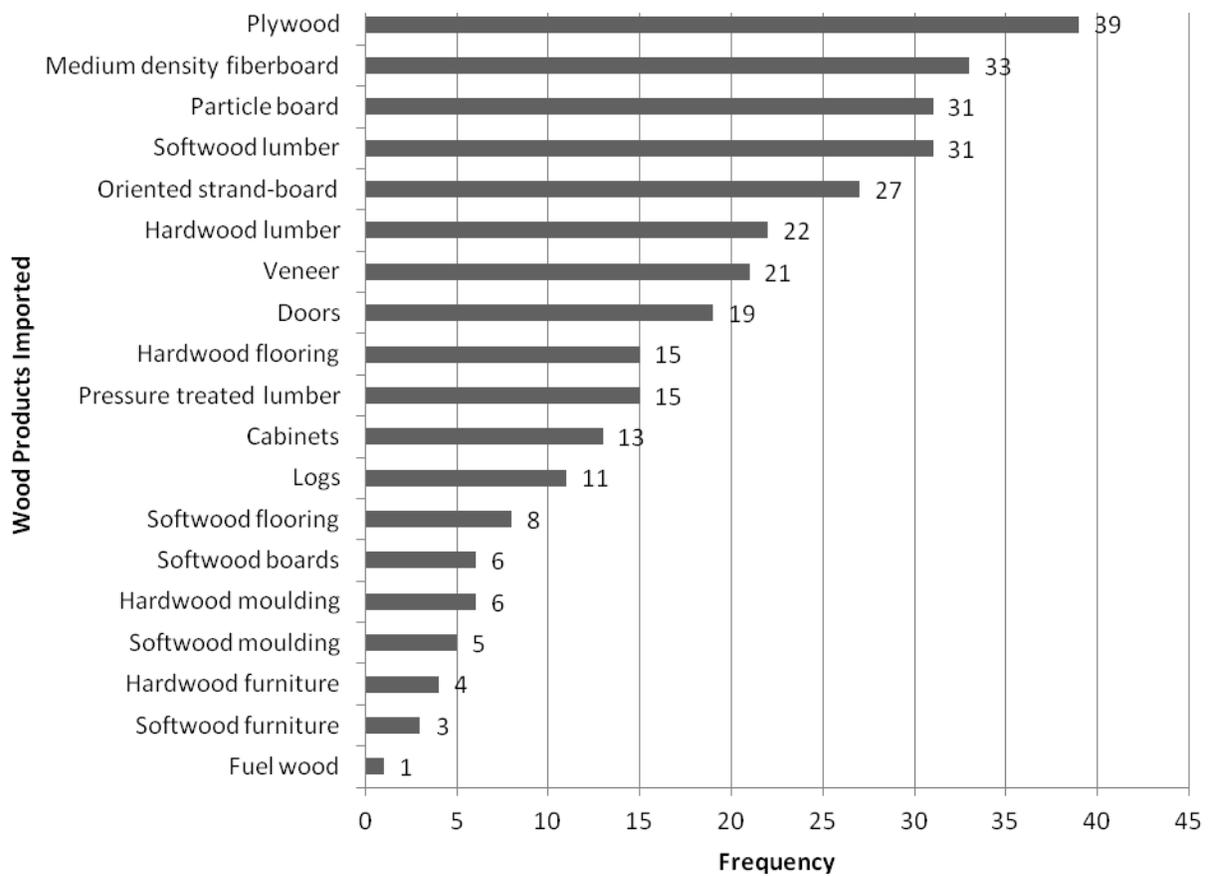


Figure 3.21 Number of imported wood products by respondents

Companies use the raw materials they purchase (i.e. panels, hardwood lumber, softwood lumber, logs, veneer) to produce doors, furniture, cabinets, flooring, moulding, and plywood (Figure 3.22). Some respondents reported that their company sells a variety of products in their mix.

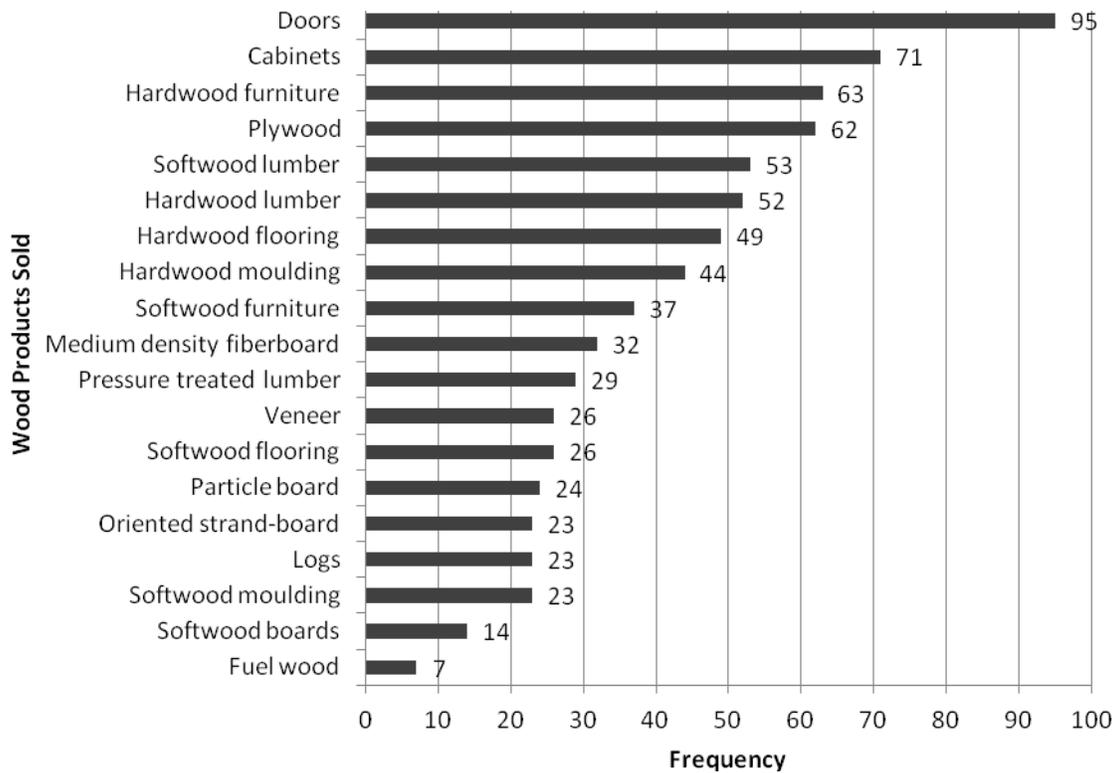


Figure 3.22 Products sold by respondents

3.3.9 Price

Companies were asked how much they were willing to pay for Appalachian and certified forest products (Figure 3.23). Eighty-eight percent of the companies were not willing to pay an increased price on top of their current wood products. Only 7 companies (9 %) would pay a maximum of 10% more for Appalachian and certified forest products. Some respondents reported that their companies in El Salvador and Guatemala would pay up to 10% more for Appalachian wood products. One company in El Salvador would pay up to 15% for wood products; this high percentage of price may be a result of the shortage of a raw material to meet the growing demand for wood products in El Salvador. Therefore, Appalachian companies may want to set prices similar to wood products being imported to Central America.

Respondents' companies are not willing to pay more for certified forest products such as Forest Stewardship Council (FSC) and/or Programme for the Endorsement of Forest Certification (PEFC). Eighty-four percent of respondents were not willing to pay more for wood products than their current prices. Only 7 companies would pay a maximum of 10% more for certified forest products. Some companies in Costa Rica, Guatemala, and El Salvador were willing to pay up to 10% more for certified forest products. This increased willingness to pay may be due to strict environmental forest regulations in these countries.

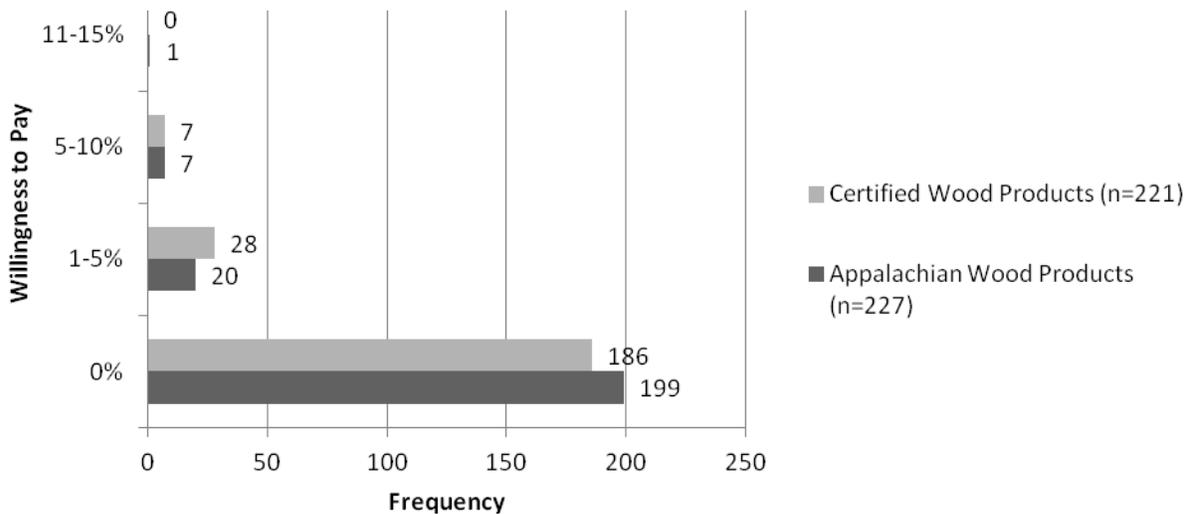


Figure 3.23 Willingness of respondents to pay for Appalachian and certified wood products

3.4 Success Factors in Marketing Appalachian Forest Products to Central America

To better understand the factors that affect marketing of Appalachian wood products to Central America, a conceptual model was proposed and tested through the use of statistical tools, including Cronbach's alpha, factor analysis, ANOVA, and multiple regression analysis. Barriers were found to positively affect company performance and supplier attributes. These constructs may be important to consider when Appalachian wood products companies are interested in

exporting to Central American countries. Appalachian wood products companies need to invest resources and work to overcome barriers in order to be successful exporters to Central America.

The first hypothesized model suggested that supplier attributes would be predicted by supplier promotion and barriers (Figure 3.24). Although supplier promotion did not appear to be driving supplier attributes (Hypothesis 6), barriers (i.e., language barrier, quality of Appalachian wood products, transportation and logistics) was found to be a significant predictor (Hypothesis 5).

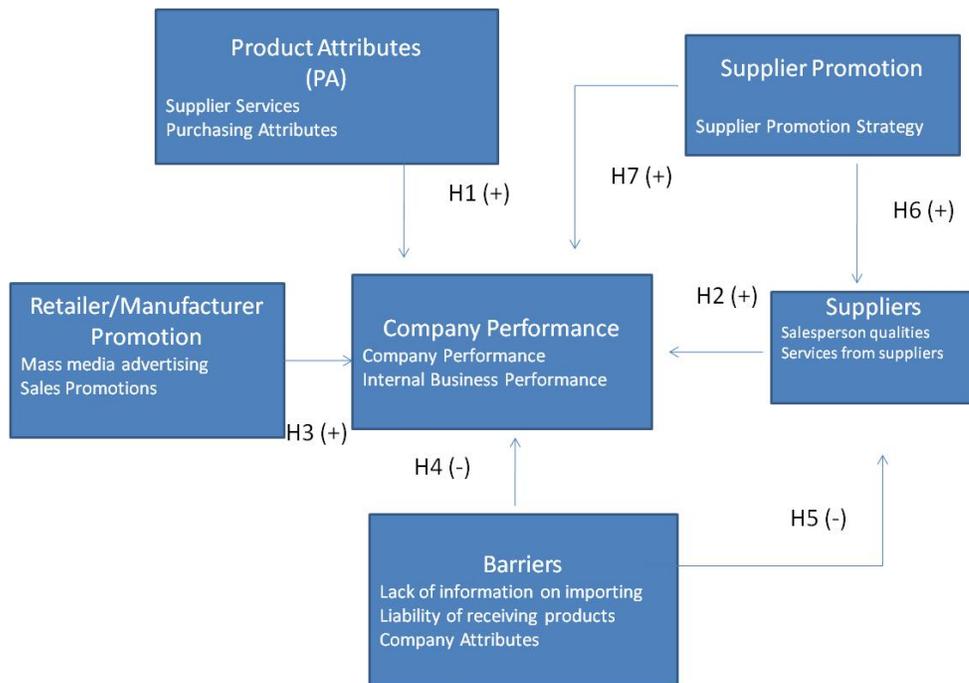


Figure 3.24 Conceptual research model developed from the literature

These findings of supplier promotions contradict other studies that find promotion such as personal selling to be an important supplier's attributes (Szymanski 1988). Barriers were found to be a significant predictor of supplier attributes (Hypothesis 5). While literature suggests a negative relationship of barriers to supplier attributes, this model suggests that the relationship

with barriers is positive. It is possible that suppliers may have to work harder to overcome the barriers, which, in turn, provides a positive impact on the supplier attributes. Some studies have found that companies entering a new export market need to overcome barriers (i.e. specific product design and promotion strategy). These companies have an advantage over their competition and their company performance improves by the increase of sales (Douglas and Wind 1987; Jain 1989; Cavusgil et al.1993; Cavusgil and Zhou 1994). For instance, if Appalachian wood products companies produce lumber in the dimensions required by Central American customers, then they may have a competitive advantage over companies that do not produce to the desired product attributes.

The second hypothesized model suggested that company performance of Central American retailers/manufacturers was predicted by Product Attributes (Hypothesis 1), Supplier Attributes (Hypothesis 2), Retailer/manufacturer promotion (Hypothesis 3), Barriers (Hypothesis 4) and Supplier Promotion (Hypothesis 7).

Retailer/manufacturer promotion and barriers were the only constructs that significantly contributed to company performance of Central American wood products retailers/manufacturers (Hypothesis 3 and 4). Company performance was measured through a series of Likert Scale questions in the retailer/manufacturer survey. Retailer/manufacturer promotion had a positive relationship with company performance. These findings support previous research that suggests retailer/manufacturer promotion is important when marketing products to increase company sales and performance (Walters and MacKenzie 1988). Appalachian wood products companies need to adjust their promotion strategy in order to help increase the promotion strategy for Central American retailers/manufacturers and to increase their company performance. Appalachian wood products companies should provide point-of-purchase product literature, display racks,

offer sales and product discounts in-order for Central American retailers/manufacturers to be successful in selling or using Appalachian wood products. Product literature and display racks from the Appalachian region should be in Spanish since this is the native language of the majority of consumers.

Barriers were found to be a significant predictor of supplier attributes (Hypothesis 4). While literature suggests it is a negative relationship with company performance, this model suggests that barriers have positive impact with company performance (Parhizkar 2008). It may be the challenge of breaking down barriers that improves company performance. Product attributes (Hypothesis 1), supplier promotion (Hypothesis 7), and supplier attributes (Hypothesis 2) did not predict company performance. These findings seem to be contradictory to other research in the field (Swan and Combs 1976; Anderson and Weitz 1992; Abad 2003).

Barriers preventing trade of products (e.g., governmental policies) were significant independent variables in both models (Hypothesis 4 and Hypothesis 5). This suggests that companies may need to invest more time and resources focusing on barriers to increase company performance and supplier attributes.

More research is needed to develop models that identify other factors predicting company performance and supplier attributes. It is possible that other items may be better predictors of company performance and supplier attributes that were not covered in this questionnaire. Models that explain a greater proportion of the variability would help individuals and companies in the wood products industry and research sectors understand the important driving factors predicting company performance and supplier attributes. If these drivers are known, then companies in the wood products industry can develop strategies to address the areas that would improve their company performance. For example, a friendly salesperson who

maintains a relationship with the customer may be an important driver for positive company performance. If companies are aware of this relationship, they can focus on this area in their strategic marketing plan. Companies may need to focus on breaking the barriers to better conduct international business.

3.5 Central American Free Trade Agreement and Wood Products Exporting

Objective 5 of the study was to identify the advantages and disadvantages of the CAFTA-DR (Central American Free Trade Agreement) for Virginia wood products producers. The process of establishing the Dominican Republic-Central American Free Trade Agreement (CAFTA-DR) began in 2006 in El Salvador, Guatemala, Honduras and Nicaragua, Dominican Republic in 2007 and in Costa Rica in 2009. This region is the 14th largest export market for U.S. products (USEAC 2011). CAFTA-DR will phase out tariffs between the U.S. and Central American countries within 15-20 years (USDA FAS 2009). Some tariffs were immediately duty free after the trade agreement went into effect (USDA FAS 2009). The trade agreements help to expand market opportunities and allow companies to compete in the global market (USEAC 2011).

The CAFTA-DR may help to increase the opportunity for exports of wood products from the Appalachian region. In a 1996 study on the North American Free Trade Agreement (NAFTA), Prestemon and Buongiorno (1996) found that lumber and plywood may gain the most from free trade out of all wood products exported. Hardwood lumber exports were expected to increase from 45-120% as a result of NAFTA (Prestemon 1998). Immediately after the establishment of CAFTA-DR, 79% of wood products (including panels and composite wood products) were duty-free. After the first 5 years, an additional 6% more will be duty free and the remaining 15% will become duty free in the last 10 years (USDC 2010). This means all wood products included in the CAFTA-DR will be duty free within 10 years of establishing the free

trade agreement. Each country involved in CAFTA has set up their own tariff schedule as to when products will become duty-free (USEAC 2011). It is important for Appalachian forest products companies to identify Central America as a potential export market

3.6 Lessons learned and conclusions

The results indicate that Appalachian wood products may be suitable alternatives for wood products currently used in Central America. Generally, responding companies purchased a small amount of wood products in 2009, usually less than 5 containers. Companies predicted that there will be neither a high nor low demand for Appalachian wood products in the future. Since the signing of CAFTA, it is most likely the demand for Appalachian wood products will increase. Respondents from the survey indicated that darker colored hardwood species are preferred for use in furniture and interior applications within the home. Therefore, Appalachian hardwood companies may try to market darker colored hardwood species such as black cherry (*Prunus serotina*) and black walnut (*Juglans nigra*).

White colored hardwood species were found to be desirable in kitchen applications. Appalachian light colored species such as maples (*Acer spp.*) and oaks (*Quercus spp.*) may be a substitute for the species currently being used in Central America. In Chapter 2, the researchers found that most furniture, flooring, ceilings, and wall panels were made with dark colored species. In a previous market study of Mexican forest products, it was found that lighter color species such as red oak, white oak, hard maple, poplar and ash from the Appalachian region are used in solid furniture production (Parhizkar 2008). The high volume of light colored hardwood species imported to Mexico from the U.S. is mainly because Mexico is one of the top exporters of wood furniture to the U.S., and U.S. customers tend to prefer light colored wood species (Schuler et al. 2001).

Parhizkar (2008) found that one of the largest barriers for U.S. forest products companies exporting to Mexico is the lack of knowledge Mexican customers had of U.S. wood products. U.S. companies may feel that, due to their geographic closeness to Mexico, they do not have to be as aggressive in marketing and strengthening their relationships with Mexican companies. However, competition from other countries such as Chile, Brazil, and China have penetrated the market and are successful in marketing wood products to Mexican consumers from a further distance. This situation may also be occurring with U.S. wood products companies; they may not be exerting enough marketing effort to successfully enter the Central American market.

Although all supplier attributes were believed to be important, the attribute rated the least important was culture sensitivity. This attribute may be of less concern because most of the suppliers are from other Latin American countries with similar cultures. Panama and Costa Rica believe suppliers that are sensitive to their culture were more important than other countries. Appalachian wood products companies trying to enter these countries may need to take time and learn the culture in order to be successful in marketing.

Within the next five years, the need for certified forest products and composite wood products may increase with new laws enforcing environmental regulations. Composite wood products are generally manufactured from recycled or recovered wood waste, which decreases the need for harvesting additional forests. Also, termite resistant lumber/panels may be needed now and in the future in Central America because of the high population of wood deteriorating insects.

3.7 How to benefit from the project: Strategy for Appalachian Forest Products Firms Exporting to Central America.

Because company responses were not significantly different among countries, these recommendations can be applied generally to all 5 countries, unless noted below. In order to market products to Central American companies, the most successful promotional strategy identified by respondents was personal selling (Table 3.10). Appalachian wood product companies need to take time and personally visit companies to promote products with potential customers in Central America. This will give buyers in Central America a better understanding of Appalachian wood products and their applications. To be successful in marketing Appalachian wood products to retailers in Central America, companies also may need to offer point-of-purchase product literature in Spanish to help market products to end-use customers. Sales and volume discounts also may be important when offering products to end-consumers in Panama and Costa Rica (Table 3.10).

Table 3.10 Recommended market strategy by country for Appalachian wood products companies

	Costa Rica	Panama	Guatemala	El Salvador	Honduras
Product	Quality				
	Brand				
	Environmental Certified				
	Kiln Dried				
	Availability of Sizes				
	Availability of Grades				
	Availability of Species				
Promotion	Personal Selling				
	Point of Purchase Product Information				
	Warranty on Products				
	Attractive in Store Display Racks				
	Sales and Products Discounts				
	Trade Shows				
	Word-of-mouth				
Place	Wholesalers				
	Direct to Manufacturer				
Price	Competitive with Current Imports				

Wood products from Chile have been found to be very competitive with regard to price and quality as reported by Central American wood products importers. Over the last decade, Chilean wood products imports have increased to Mexico because of better price and quality over competitors such as the U.S. and Canada (Parhizkar 2008). Currently, Central American

wood products companies primarily purchase wood products from Chile. Appalachian wood products exporters can be competitive by offering products that are priced similarly to products currently purchased by Central American countries.

The recommended strategies for Appalachian wood products companies entering the Central American market are shown in Figure 3.25. Appalachian companies trying to market to Central American countries must define their marketing need. Marketing intelligence from the study supports a high demand for an outside source of wood products. But the main threats affecting the sale of Appalachian wood products are price, product dimensions, Central American buyers' lack knowledge of Appalachian wood products, and the language barrier. Appalachian companies need to determine a value proposition when trying to sell to Central America and the products must be priced competitively with current imports. Quality of products was important; products need to meet the required dimensions, colors and grades. In Costa Rica and Panama, buyers reported that they prefer to purchase kiln dried lumber. Appalachian companies may want to educate the other Central American countries about the benefits and advantages of using kiln dried lumber in order to penetrate the other markets. Respondents from Costa Rica and Panama believed certified wood products were more important, while other countries did not find certified wood products to be as important. To be successful in Central America, Appalachian companies may attempt to promote certified forest products to Costa Rica and Panama.

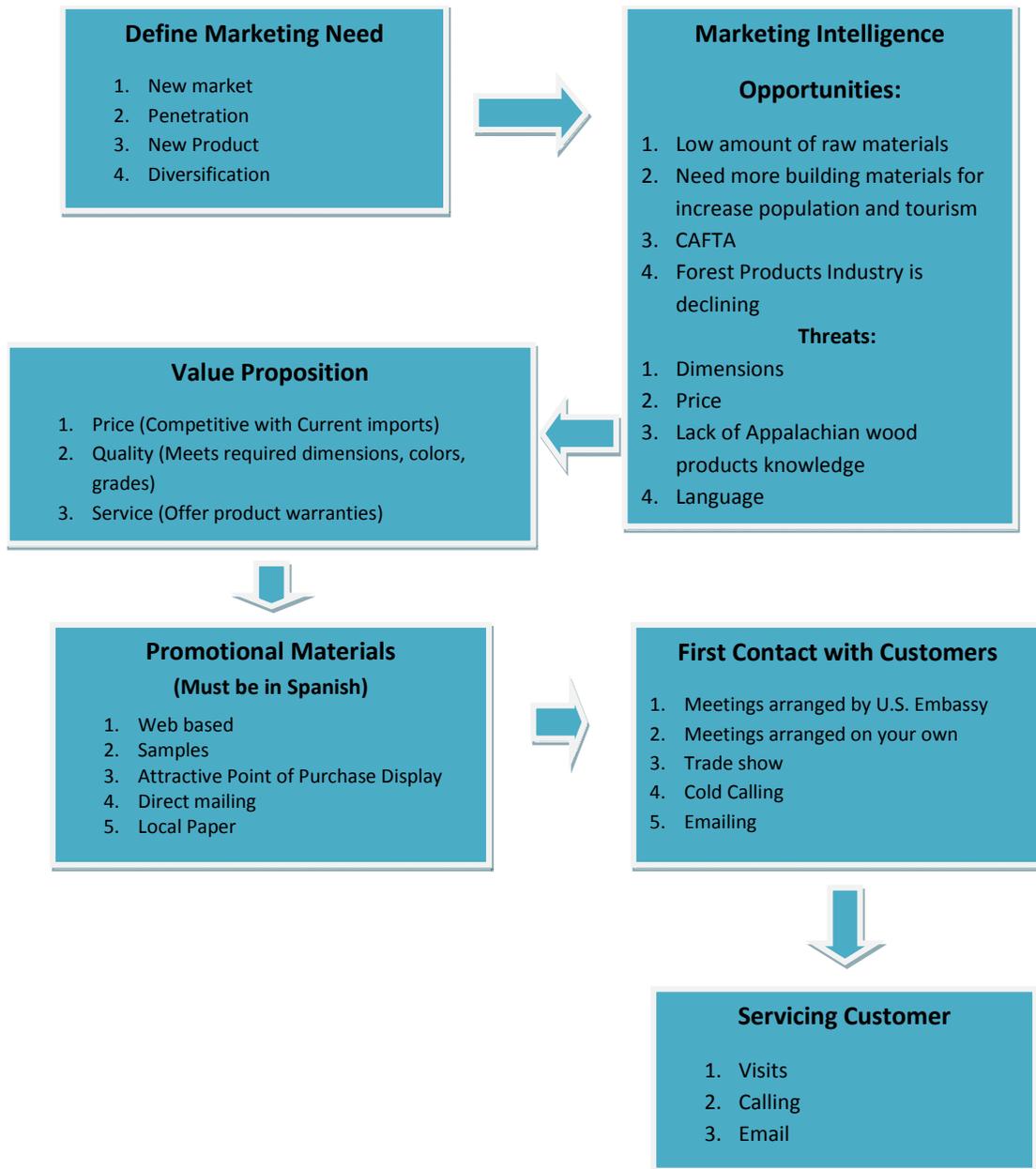


Figure 3.25 Overall marketing strategy for Appalachian into Central America

The best strategy for Appalachian companies to contact potential customers for the first time is through the U.S. Commercial Service in their state, as well as in the country to whom they are interested in selling (Appendix C). The U.S. Commercial Service provides the Gold Key Matching Service, which provides companies a chance to meet with potential buyers to promote products (Appendix D). States within the Appalachian region may also have an

international marketing service that may provide trade leads and market information regarding targeted buyers (Appendix C). Port authorities in the Appalachian region may be able to assist exporters with logistics domestically and internationally. A list of ports is available in (Appendix E).

Appalachian wood products firms may need to partner with local distributors in order to successfully market products to Central American customers (Table 3.10). By partnering with local wholesalers, small wood products firms in Central America may be able to purchase smaller amounts of wood products from the Appalachian region. Below is a list of potential partners/customers in Central America.

Because the forest products industry in the Appalachian region offers products that are similar to those currently used in Guatemala, El Salvador, Nicaragua, Honduras, Costa Rica, and Panama, they have a unique opportunity to expand their markets into Central America.

3.8 Potential Partners/Customers for Appalachian Wood Products

Guatemala

Famex Exports

Boulevard los Proceres 23-30 Zone
10 Postal number: 01010
Guatemala City, Guatemala
Phone: (502) 5510-8924
Web: www.famexexports.com
Description: Furniture manufacturer

Famesa

1 Calle, 2-85 Zone 8 El Campanero
Ciudad San Cristobal, Mixco, Guatemala
Phone: (502) 232-09100
Web: <http://www.famesa.com.gt/>
Description: Furniture manufacturer

Maderas El Alto

2a. Calle "A" 6-15, Zone 10,
Guatemala City, Guatemala
Phone: (502) 2415-9300
Web: <http://www.maderaselalto.com.gt/>
Description: Panel manufacturer

El Salvador

Aserradero El Triunfo

Venezuela Blvd.
San Salvador, El Salvador
Phone: (503) 2224-2000
Fax: (503) 2224-0453
Web: www.aserraderoeltrunfo.com
Description: Wood product importer and distributor

Aserradero Los Abetos

Venezuela Blvd.
San Salvador, El Salvador
Phone: (503) 2271-4757
Description: Wood product importer and distributor

Saiselgi, S.A. de C.V.

Calle Ayagualo #26 A, Jardines de Merliot, La Libertad,
San Salvador, El Salvador
Phone: (503) 7398-2630
Description: Wood product importer and distributor

Proture

91 aav. Norte y 7a calle poniente #4642. Col Escalon
San Salvador, El Salvador
Phone: (503) 2210-4020
Description: Manufacturer of wood houses

Panama**Cochez y Cia**

Via Tocumenm frente a DHL-Logistica
Panama City, Panama
Phone: (507) 300-9264
Web: www.cochezycia.com
Description: Hardware store and distributor of building materials

Melo y Cia

Via Espana
Panama City, Panama
Phone: (507) 323-6003
Web: www.grupomelo.com
Description: Hardware store and distributor of building materials

Komex International

Calle Jorge Zarak, Vista Hermosa
Panama City, Panama
Phone: (507) 305-5635
Web: www.komexpma.com
Description: Hardware store and distributor of building materials.

Costa Rica**Probosque**

Forestales Latinoamericanos
Guayabos de Curridabat, de la entrada a la Urb. San Angel 300 m sur.
San Jose, Costa Rica
Phone: (506) 2272-4448
Description: Hardware store and distributor of building materials

Abonos Agro

25 metros este del Cementerio de Desamplarados
San Jose, Costa Rica
Phone: (506) 2217-9562
Web: <http://www.abonosagro.com>
Description: Hardware store and distributor of building materials.

Workshops, Presentations, Publications, and Planned Publications

Workshops

International Marketing for Forest Products Industries. Attendance 33.

Instructor: Quesada-Pineda, H.J. (co-organizer), Haviarova, E. (co-organizer), Smith, R., Bumgardner, M., Seidl, M., and Cooper, M.

Location: Jasper, IN.

Dates: October 8, 2009.

International Marketing for Forest Products Industries. Attendance 16.

Instructor: Quesada-Pineda, H.J. (organizer), Smith, B., Schuler, A., Stopha, J. and Fellhofer, J.

Location: Princeton, WV.

Dates: October 20, 2009.

International Marketing for the Kentucky Wood Products Industry. Sponsored by WERC, and University of Kentucky. Attendance 16. .

Instructor: Quesada Pineda, H.J. (organizer), Fackler, C. (organizer), Lowe, L. (organizer), Smith, B. and others. .

Location: London, KY.

Dates: April 1, 2010.

The Wood Products Industry in Costa Rica: Opportunities and Challenges towards the New Millennium. Sponsored by USDA/FSMIP, Ministry of Science and Technology of Costa Rica and Rainforest Alliance. Attendance 65.

Instructor: Quesada, H.J. (organizer), Moya Roque, R. (organizer), Smith, R., Bond, B., Lyon, S. and others.

Location: San Jose, Costa Rica. .

Dates: March 4-5, 2010.

International Marketing for Forest Products Industries.

Instructor: Quesada-Pineda, H.J. (Organizer and speaker), Smith, R., Lyon, S., Snow, M., Stopha, J., and Strayhorn, J.

Location: Virginia Department of Forestry. Charlottesville, VA. Attendance 16.

Dates: June 14, 2011.

Presentations

Lyon, S. and H.J. Quesada-Pineda. 2010. Market Opportunities for U.S. Forest Products in Central America. The Future of the Wood Products Industry in Costa Rica Workshop. San Jose, Costa Rica. March 4-5.

- Lyon, S. and H.J. Quesada-Pineda. 2010. Market Opportunities for U.S. Hardwoods in Central American. Forest Products Society 64th International Convention. Madison, WI. June 20-22. Session 20.
- Lyon, S. and H.J. Quesada-Pineda. 2010. Market Opportunities for U.S. Forest Products in Central America. Graduate Student Symposium. Blacksburg, VA. November 12.
- Lyon, S. 2011 and H.J. Quesada-Pineda. Market Opportunities for Appalachian Wood Products in Central America. Annual Meeting of the Center of Forest Products Business. Blacksburg, VA. March 31.
- Lyon, S. and H.J. Quesada-Pineda. 2011. A Case Study of the Forest Products Industry in Central America. Presented at the Forest Products Society 65th International Convention. Portland, OR. June 18-19. Session 11.
- Lyon, S. and H.J. Quesada-Pineda. 2011. Research Update: Exporting Opportunities for Appalachian Forest Products in Central America. Workshop International Marketing for Forest Products Industries. Charlottesville, VA. June 14.
- Lyon, S. and H.J. Quesada-Pineda. 2011. Breaking Down Barriers: Opportunities for Appalachian Forest Products in Central America. Poster Presentation at the Forest Products Society 65th International Convention. Portland, OR. June 18-19. Poster 19.
- Lyon, S. and H.J. Quesada-Pineda. 2011. Breaking Down Barriers: A Survey of Central American Forest Products Retailers and Manufacturers. Poster Presentation at 1st Virginia Tech Interdisciplinary Research Symposium. Blacksburg, VA. November 4, 2011.

Extension Publications

- Quesada-Pineda, H.J. and Lyon, S. 2012. Perfil de mercado para importación de productos forestales en América Central (Market profile of imported wood products in Central America). *Investiga Tec*. Vol. 13. Expected publication January.
- Lyon, S., H.J. Quesada-Pineda, and R.L. Smith. 2010. Opportunities for Virginia Forest Products Companies in Central America. Research Update. *Center for Forest Products Business*. July 2010.
- Lyon, S. and H.J. Quesada-Pineda. 2011. Opportunities for Appalachian Forest Products in Guatemala and El Salvador. Center Focus. *Center of Forest Products Business*. Spring 2011. Available at <http://www.woodinnovation.org/?p=603> . Accessed December 15, 2011.
- Lyon, S. 2011. Opportunities for Appalachian Forest Products in Guatemala and El Salvador: A Case Study. Research Brief. *Sustainable Innovation Management*. January 13.

- Lyon, S. 2011. Central American Free Trade Agreement and Wood Products Exporting. Research Update. *Sustainable Innovation Management*. April 6. Available at <http://www.woodinnovation.org/?p=684>. Accessed December 15, 2011.
- Lyon, S. 2011. Success Factors in Marketing Appalachian Forest Products to Central America. Research Update. *Sustainable Innovation Management*. September 16. Available at <http://www.woodinnovation.org/?p=774>. Accessed December 15, 2011.
- Lyon, S., H. J. Quesada-Pineda, and R. L. Smith. 2011. Fostering relationships between Central American and Appalachian forest products companies. Research Update. *Center of Forest Products Business*. Fall 2011.
- L Lyon, S., H. J. Quesada-Pineda, H.J. 2010. RESEARCH BRIEF: Analysis of Exports from Eastern Forest Products Companies at the 2010 International Woodworking Fair. *Sustainable Innovation Management*. October 18. Available at <http://www.woodinnovation.org/?p=497>. Accessed December 15, 2011.
- Lyon, S. 2010. Opportunities for Virginia Forest Products Companies in Central America. Research Brief. *Sustainable Innovation Management*. June 16. Available at <http://www.woodinnovation.org/?p=253>. Accessed December 15, 2011.

Planned Peer-Reviewed Publications

- Lyon, S., H. J. Quesada-Pineda, and R.L. Smith, In progress. A Case Study to Determine Drivers and Barriers of Appalachian Forest Products in Central America. *Kurú: Revista Forestal* (Costa Rica). Accepted in December 2011.
- Lyon, S., H. J. Quesada-Pineda, R.L. Smith, and D.E. Kline. Working paper. Market Opportunities for Appalachian Forest Products Companies in Central America. *Southern Journal of Applied Forestry*. Submitted for peer-review in November 2011.
- Lyon, S. and H. J. Quesada-Pineda. Working paper. Success Factors in Marketing U.S. Forest Products to Central America. *Forest Products Journal*. Submission will be during January 2012.

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Appendix A

Forest Agencies in Central America

Guatemala

Rainforest Alliance

8ª Avenida 15-62 Zona 10

Guatemala Ciudad, Guatemala C.A.

Phone: (502) 2383-5757

Web: <http://www.rainforest-alliance.org/>

Instituto Nacional de Bosque

7 av. 6-80 zona 13

Guatemala Ciudad, Guatemala C.A.

Phone: (502) 2321-4646

El Salvador

Ministerio de Agricultura y Ganaderia (MAG)

General Directorate of Forestry, Watershed and Irrigation (DGFCR).

Canton El Matazano, Resume, Depto.

San Salvador, El Salvador

Phone: (503) 2202-8200

Web: <http://www.mag.gob.sv/>

Costa Rica

Fondo Nacional de Financiamiento Forestal (Fonafifo)

Avenida 7 entre Calles 3 y 5

San Jose, Costa Rica

Phone: (506) 2257-8475

Web: <http://www.fonafifo.com/>

Panama

Autoridad Nacional del Ambiente

Sede Principle Edif. 804 Albrook,

Panama Apartado C-0843-00793

Balboa, Panama

Phone: (507) 500-0855

Appendix B

Export Market Information and Assistance

Federal Agencies	Overview	Contact Information
The U.S. Department of Agriculture's Foreign Agricultural Service (FAS)	Helps companies to develop, maintains, and expand markets globally for U.S. agricultural products including wood products.	Field Crops and Forest Products Branch Office of Trade Programs Foreign Agricultural Service, USDA Telephone: 202-690-4783 http://www.fas.usda.gov/default.asp
The U.S. Commercial Service's Gold Key Service	Helps companies find overseas customers and business partners by setting up meetings and performs market research.	Telephone: 800-872-8723 http://export.gov/salesandmarketing/eg_main_018195.asp
State Agencies	Contact Information	Websites
Alabama International Trade Center	Box 870396 Tuscaloosa, AL 35487-0396 Telephone: 205-348-7621	www.aitc.ua.edu
Georgia Forestry Commission Forest Products Utilization & Marketing	15133 GA Hwy 129 North Claxton, GA 30417 Telephone: 912-739-4734	www.gatrees.org
Kentucky Department of Agriculture Office of Agriculture Marketing and Product Promotion	100 Fair Oak Lane, Fifth Floor Frankfort, KY 40601 Telephone: 502-564-0290 Ext. 242	www.kyagr.com
Mississippi Development Authority - Global Business Division	PO Box 849 Jackson, MS 39205 Telephone: 601-359-3155	www.mississippi.org

New York State Forest Products Utilization and Marketing	625 Broadway Albany, NY 12233-4253 Telephone: 518-402-9422	http://www.dec.ny.gov/lands/4963.html
North Carolina Department of Agriculture & Consumer Services	2 West Edenton Street, Suite 413A Raleigh, NC 27699 Telephone: 919-707-3122	www.agr.state.nc.us
Ohio Department of Development Global Markets Division	PO Box 1001 Columbus, OH 43216 Telephone: 614-466-0262	http://www.development.ohio.gov/
Pennsylvania Hardwood Development Council	2301 N. Cameron St., Room 308 Harrisburg, PA 17110-9408 Telephone: 717-787-3699	www.agriculture.state.pa.us
Tennessee Department of Agriculture	PO Box 40627 Melrose Station Nashville, TN 37204 Telephone: 615-837-5322	www.state.tn.us/agriculture/forestry/
Virginia Department of Agriculture and Consumer Services	102 Governor St., Room 330 Richmond, VA 23219 Telephone: 804-371-8991	http://www.vdacs.virginia.gov/international/index.shtml
West Virginia Development Office	1900 Kanawha Blvd., East Charleston, WV 25305 Telephone: 304-558-2234	www.wvdo.org
Wood Products Trade Associations	Overview	Contact Information
American Hardwood Export Council	An international trade association for the American hardwood industry. Helps U.S. companies with promotional assistance and technical assistances overseas.	1825 Michael Faraday Dr. Reston, VA 20190 Phone: 703 435-2900 Web: http://www.ahec.org/
Southern Pine Council	Provides market research and export assistance with trade leads and foreign language product literature.	2900 Indiana Avenue Kenner, LA 70065 Phone: 504-443-4464 http://www.southernpineglobal.com/index.asp

Softwood Export Council	Provides market research and trade leads for the U.S. softwood product manufacturers.	PO Box 80517 Portland, OR 97280 Phone: 1-503-620-5946 Web: http://www.softwood.org
The Engineered Wood Association (APA)	Provides members domestic and international product promotion and marketing.	7011 S. 19th Street Tacoma, WA 98466-5333 Phone: (253) 565-6600 Web: http://www.apawood.org/

Appendix C

U.S. Embassy and U.S. Commercial Service Contact Information by Country

Country	Physical Address	U.S. Mailing Address
Panama	U.S. Commercial Service U.S. Embassy Building 783, Basilio Lakas Street, Clayton Panama City, Panama Phone: (507) 207-7000 Fax: (507) 317-5573 Email: Daniel.Crocker@trade.gov	U.S. Commercial Service 9100 Panama City PL Washington, D.C. 20521-9100
Costa Rica	U.S. Commercial Service U.S. Embassy Calle 120 Avenida 0, Pavas, San José, Costa Rica Phone: (506) 2519-2000 Fax: (506) 2519-2305 Email: Bryan.Smith@trade.gov	US Embassy San Jose, APO AA 34020
Guatemala	U.S. Commercial Service U.S. Embassy Avenida Reforma 7-01, Zona 10 01010 Guatemala Phone: (502) 2326-4000 Fax: (502) 2331-7373 Email: Office.Guatemala@trade.gov	Commercial Officer U.S. Commercial Service 3190 Guatemala Place Washington, D.C. 20521-3190
Nicaragua	Economic/Commercial Section U.S. Embassy Km. 5 1/2 Carretera Sur, Managua, Nicaragua Phone: (505) 2252-7100, ext: 7371 Fax: (505) 2252-7229 Email: managuaecon@state.gov	Commercial Center DPO AA 34021-0049 Unit 3240 Box 49
Honduras	U.S. Commercial Service U.S. Embassy Avenida La Paz Tegucigalpa M.D.C. Honduras Telephone Numbers: 504-2236-9320 Fax Number: 504-2236-9037 Email: Rossana.Lobo@trade.gov	American Embassy - Tegucigalpa Unit 3480 Box 205 APO AA 34022-0205
El Salvador	U.S. Commercial Service U.S. Embassy Boulevard y Urbanización Santa Elena, Antiguo Cuscatlán, El Salvador Phone: (503) 2501-3211 Fax: (503) 2501-3067 Email: office.sansalvador@trade.gov	US Commercial Service 3450 San Salvador Place Washington DC 20521-3450

Appendix D

Appalachian Regional Port Authorities

The Port Authority of New York and New Jersey
225 Park Avenue South
New York, NY 10003
Ph: (212) 435-7000
Web: www.panynj.gov/

Maryland Port Authority, Port of Baltimore
401 East Pratt Street
Baltimore, MD 21202
Ph: 1-800-638-7519
Web: <http://www.mpa.maryland.gov/>

Virginia Port Authority, Norfolk International Terminals
600 World Trade Center
Norfolk, VA 23510
Ph: (757) 683-8000
Web: www.vaports.com

North Carolina State Port Authority
2202 Burnett Boulevard
P.O. Box 9002
Wilmington, NC 28402
Ph: 1-800-334-0682
Web: www.ncports.com/

South Carolina State Port Authority
176 Concord Street,
Charleston, SC 29401
Ph: 1-800-845-7106
Web: <http://www.port-of-charleston.com/>

Georgia Port Authority
1100 Bay Street
Brunswick, GA 31520
(912) 262-3044
Web: <http://www.gaports.com/>

Alabama State Port Authority
250 N. Water Street
Mobile, AL 36602
Ph: 251-441-7234
Web: www.asdd.com/

Mississippi State Port Authority
2510 14th Street Suite 1450
Gulfport, Mississippi 39501
Ph: 228-865-4300
Web: www.shipmspa.com

Tennessee International Port of Memphis
1115 Riverside Blvd.
Memphis, TN 38106-2504
Ph: 901-948-4422
Web: <http://www.portofmemphis.com/>

Cleveland-Cuyahoga County Port Authority
One Cleveland Center
1375 East Ninth St., #2300
Cleveland, Ohio 44114
Ph: 216-241-8004
Web: <http://www.portofcleveland.com/>

Appendix E

Interview Questionnaire for Central American Forest Products Companies

Marketing Opportunities In Central America Survey

Company: _____ Location: _____

Date: _____

1. From what countries do you import wood products? Please specify country, state, and city.

2. If currently not importing forest products, Why not?

3. Now I'd like to ask you about the products you import. Do you currently import the following products? Please answer "yes" or "no."

	Yes	No
Logs	<input type="checkbox"/>	<input type="checkbox"/>
Treated lumber	<input type="checkbox"/>	<input type="checkbox"/>
Hardwood Lumber	<input type="checkbox"/>	<input type="checkbox"/>
Sothern Yellow Pine Lumber	<input type="checkbox"/>	<input type="checkbox"/>
Panels	<input type="checkbox"/>	<input type="checkbox"/>
Pallets	<input type="checkbox"/>	<input type="checkbox"/>
Flooring	<input type="checkbox"/>	<input type="checkbox"/>
Veneer	<input type="checkbox"/>	<input type="checkbox"/>
Furniture/Furniture Parts	<input type="checkbox"/>	<input type="checkbox"/>
Moulding (Hardwood)	<input type="checkbox"/>	<input type="checkbox"/>
Moulding (Softwood)	<input type="checkbox"/>	<input type="checkbox"/>
Fuel Wood	<input type="checkbox"/>	<input type="checkbox"/>
Other _____	<input type="checkbox"/>	<input type="checkbox"/>

4. When purchasing from suppliers what qualities do you consider the most? Please rank the following options from 1 to 4, with 1 being the "most important" and 4 being the "least important".

Cost

Service

Quality of Products

Variety of Products

5. On a scale of 1 to 5, where 5 is very high quality and 1 is very low quality, how would you rate the quality of wood products that you currently import?

1 Low 2 3 4 5 High

6. What are the criteria taken into account when selecting a wood supplier?

7. What would increase imports of hardwoods or softwoods to your country?

8. How many cubic meters of wood do you import? _____

9. As an importer, what are the main physical properties that hardwood lumber must have in order for you to consider it "good quality"?

10. Where do you purchase your hardwood lumber coming from? Please specify country and state.

11. Are you familiar with Appalachian Hardwoods?

Yes Uncertain No

12. Would you be willing to import Appalachian Hardwoods (red oak, white oak, yellow-poplar, black cherry, and maple) if prices for these products were economically competitive?

Yes No

13. In your opinion, what will be a competitive price for hardwood lumber? _____

14. Are you familiar with Southern Yellow Pine?

Yes Uncertain No

15. *Kiln drying lumber reduces the moisture content in wood to a target point by controlling air circulation, relative humidity, and temperature in a controlled chamber. This process reduces shipping costs, kills insects, increases strength, allows better usability, easier to finish, and adds value to a product. As an importer would you be willing to import either hardwood or softwoods that have been kiln dried?*

Yes Uncertain No

16. Does your company import certified forest products?

Yes Uncertain No

17. If yes, what certified forest products do you import?

18. Where is most of the wood for construction/building products coming from?

19. There are many specialized wood products that may be useful for building projects in Central America now or in the future. Please indicate on a scale from 1 to 5, where 5= strongly agree, 1= strongly disagree, and 3 = neutral, your opinion regarding the need for increased use of the following specialized products for building projects in Central America.

	Low	High
Fire-Treated Lumber	1	2 3 4 5
TermiteTreated Lumber	1	2 3 4 5
Certified Forest Products	1	2 3 4 5
Composite Wood Products (medium density fiberboard, plywood, oriented strand board)	1	2 3 4 5
Engineered Wood Products (I-joist beams, laminated veneer lumber, glu-lam beams)	1	2 3 4 5
Appalachian Hardwoods	1	2 3 4 5
Southern Yellow Pine	1	2 3 4 5

20. Who in the government do you go for help for importing or exporting?

21. Is your company currently exporting? Where to and what products?

TRANSPORTATION

22. How does the wood product supply chain work in your country?

23. What logistical issues does your company encounter when importing wood products?

24. What credit and payment terms are used when purchasing wood products from exporters?

25. What trade barriers has your company been encountering when importing forest products?

CULTURAL OPINIONS

Please indicate your opinion on a scale from 1 to 5, where 5= strongly agree, 1= strongly disagree, and 3 = neutral.

26. In my country, sustainability is an important consideration for the wood products industry.

- 1 Low 2 3 4 5 High

27. I think my country would benefit from increasing wood-frame construction.

- 1 Low 2 3 4 5 High
-

COMPANY DEMOGRAPHICS

28. What type of customers does your company currently sell to? Check all that apply.

- Retailers (e.g. Home Depot, Lowes) Contractors
 Homeowners Other _____

29. The number of employees in your firm is:

- Less than 50 100-250 500-1000 1500-2000
 50-100 250-500 1000-1500 Over 2000

30. What is your company's main product line? Please check one.

- Cabinetry Home Improvement
 Flooring Millwork
 Furniture Other _____

31. What current product lines does your company sell? Please check all that apply.

- Cabinetry Home Improvement
 Flooring Millwork
 Furniture Other _____

32. The Average annual sales (in U.S. \$ millions) of your firm in the last year is

- Less than 10 10-49 50-99 100-249 250-499 500-999 1000 and above

33. What Percentage of your firm's total monthly business transactions with your **customers** are conducted electronically?

- Less than 10% 10-30% 30-50% 50-80% Over 80%

34. What percentage of your firm's total monthly business transactions with your **suppliers** are conducted electronically?

- Less than 10% 10-30% 30-50% 50-80% Over 80%

35. What are the major trade associations promoting forestry/wood in your country?

36. Who are your major competitors? Please provide company names.

Appendix F

Interview Questionnaire for Central American Forest Agencies

*Forest Product Marketing Opportunities in CA
Government Official Survey*

Country: _____ Location _____

Agency _____ Date _____

1. How does your government promote the use of forest products?

2. Does your country have trade association(s) for forest products? Yes No

3. If yes, please explain what the trade associations are:

4. What current forestry management practices are being used on Natural Forests?

5. Who manages forestlands in your country?

6. How many hectares of forestland are harvested a year? _____

7. If replanting on Natural Forests, what species of trees are being planted and how often?

8. What current forestry management practices are being used on plantations?

9. What species of trees are being grown on plantations?

10. How many hectares are planted annually on plantations in your country? _____

11. Please tell us the state of the forest product industry in your country.

12. Does your country have a sustainable forest certification process? If so, what is it and how does it work?

13. Please name your country's major forest product companies.

14. What forest products do you think will be important to your country in the future?

15. What trade barriers might new exporters have when exporting to your country?

Please indicate your opinion on a scale from 1 to 5, where 5 = strongly agree, 1 = strongly disagree, and 3 = neutral.

16. In my country, sustainability is an important consideration for wood products industry:

1 Low 2 3 4 5 High

17. I think my country would benefit from increasing wood-frame construction:

1 Low 2 3 4 5 High

18. What type of marketing is done by U.S. forest product companies in your country?

19. What are the most frequent problems that companies face when importing to your country?

20. What adjustments can U.S. forest product companies make to improve shipping to your country?

Appendix G

Surveys for Central American Wood Products Retailers and Manufacturers



Opportunities for Appalachian Wood Products Companies in Central America and Panama

- The purpose of this questionnaire is to identify incentives and barriers to exporting Appalachian wood products to Central America.

- **Appalachian wood products** are found in the eastern the United States (see map below). These products include: **hardwood lumber** (red oak, white oak, black cherry, maple, yellow-poplar, American beech, American basswood, birch, and black walnut), **softwood lumber** (southern yellow pine and eastern white pine), panels (oriented strand board, plywood, medium density fiberboard), and **secondary wood products** such as cabinets, doors, flooring, mouldings, furniture and/or furniture parts.



- The collection and analysis of data from this study will be conducted with absolute confidentiality and will only be used in this study and related reports.

-This research is being conducted by Dr. Henry Quesada, assistant professor, and Scott Lyon, graduate research assistant, from the Department of Wood Science and Forest Products at Virginia Tech. (Virginia, United States)

- This survey is voluntary and there is no more than minimal risks associated with your participation. If you are not sure of an answer to a question, please provide your best estimate.

- If you have any questions, please contact Scott Lyon by email at swlyon@vt.edu or by phone at 1-540-231-5219

1. Does your company import forest products? Yes No (Go to Question 3)

2. If yes, what products does your company **import**? Please check all that apply.

- | | | | |
|--|--|---|---|
| <input type="checkbox"/> Logs | <input type="checkbox"/> Oriented Strand-board | <input type="checkbox"/> Veneer | <input type="checkbox"/> Hardwood furniture |
| <input type="checkbox"/> Softwood Lumber | <input type="checkbox"/> Medium density fiberboard | <input type="checkbox"/> Hardwood moulding | <input type="checkbox"/> Softwood boards |
| <input type="checkbox"/> Hardwood Lumber | <input type="checkbox"/> Particle board | <input type="checkbox"/> Softwood moulding | <input type="checkbox"/> Cabinets |
| <input type="checkbox"/> Pressure Treated Lumber | <input type="checkbox"/> Hardwood flooring | <input type="checkbox"/> Fuel wood | <input type="checkbox"/> Doors |
| <input type="checkbox"/> Plywood | <input type="checkbox"/> Softwood flooring | <input type="checkbox"/> Softwood furniture | |
| <input type="checkbox"/> Other: _____ | | | |

3. What products does your company **sell**? Please check all that apply.

- | | | | |
|--|--|---|---|
| <input type="checkbox"/> Logs | <input type="checkbox"/> Oriented Strand-board | <input type="checkbox"/> Veneer | <input type="checkbox"/> Hardwood furniture |
| <input type="checkbox"/> Softwood Lumber | <input type="checkbox"/> Medium density fiberboard | <input type="checkbox"/> Hardwood moulding | <input type="checkbox"/> Softwood boards |
| <input type="checkbox"/> Hardwood Lumber | <input type="checkbox"/> Particle board | <input type="checkbox"/> Softwood moulding | <input type="checkbox"/> Cabinets |
| <input type="checkbox"/> Pressure Treated Lumber | <input type="checkbox"/> Hardwood flooring | <input type="checkbox"/> Fuel wood | <input type="checkbox"/> Doors |
| <input type="checkbox"/> Plywood | <input type="checkbox"/> Softwood flooring | <input type="checkbox"/> Softwood furniture | |
| <input type="checkbox"/> Other: _____ | | | |

A. Suppliers

4. Please rate the importance of the following attributes of your **current primary suppliers**.

	<div style="display: flex; justify-content: space-between; width: 100%;"> Low Importance High Importance </div>
Honesty	1 2 3 4 5
Patience	1 2 3 4 5
Commitment	1 2 3 4 5
Compromise	1 2 3 4 5
Cultural Sensitivity	1 2 3 4 5
Visits	1 2 3 4 5
Communication	1 2 3 4 5
Information Sharing	1 2 3 4 5
Offer Quality Products	1 2 3 4 5
Other _____	1 2 3 4 5

B. Product Attributes

5. Please rate the importance of the following attributes when purchasing wood and/or wood products.

	Low Importance			High Importance	
	1	2	3	4	5
Machinability	1	2	3	4	5
Availability of a range of species	1	2	3	4	5
Availability of a range of grades	1	2	3	4	5
Availability of a range of sizes	1	2	3	4	5
Color	1	2	3	4	5
Density (Specific Gravity)	1	2	3	4	5
Kiln-dried	1	2	3	4	5
Environmentally certified	1	2	3	4	5
Price	1	2	3	4	5
Volume Discounts	1	2	3	4	5
Product Quality	1	2	3	4	5
Reputable Supplier	1	2	3	4	5
Geographic closeness to supplier	1	2	3	4	5
Warranty on product	1	2	3	4	5
Brand	1	2	3	4	5
Packaging	1	2	3	4	5
Delivery on time	1	2	3	4	5
Other (Please Specify) _____	1	2	3	4	5

C. Retailer/Manufacturer Promotion Strategy

6. Please rate how important to you the following promotional strategies for selling wood products.

	Low Importance					High Importance				
	1	2	3	4	5	1	2	3	4	5
Personal Selling	1	2	3	4	5					
Trade Shows	1	2	3	4	5					
Magazines	1	2	3	4	5					
Radio Commercials	1	2	3	4	5					
TV Commercials	1	2	3	4	5					
Advertisement in local newspaper	1	2	3	4	5					
Advertisement in store flyer	1	2	3	4	5					
Store Web site	1	2	3	4	5					
Attractive Display rack	1	2	3	4	5					
Point of purchase product literature	1	2	3	4	5					
Sales and products discounts	1	2	3	4	5					
Word-of-mouth	1	2	3	4	5					
Other _____	1	2	3	4	5					

D. Supplier Promotion Strategy

7. Please rate how important are the following promotional strategies when your company is purchasing wood and wood products from suppliers.

	Low Importance					High Importance				
	1	2	3	4	5	1	2	3	4	5
Personal selling	1	2	3	4	5					
Participation in trade shows	1	2	3	4	5					
Advertisement in magazines	1	2	3	4	5					
Advertisement in local newspaper	1	2	3	4	5					
Word-of-mouth	1	2	3	4	5					
Other _____	1	2	3	4	5					

E. Barriers

8. Please rate the importance of the potential barriers to importing Appalachian forest products? (see below map)

	Low Importance					High Importance				
	1	2	3	4	5	1	2	3	4	5
Transportation and logistics										
Price										
Language Barrier										
Quality of Appalachian products										
Delivery on time										
Industry production capacity										
U.S. Governmental policies										
International policies										
Knowledge of Appalachian wood products										
Lack of agents/brokers										
Paperwork and bureaucracy										
Payment methods										
Past experience										
Other _____										



F. Company Performance

9. Companies measure performance in many different areas. Below is a list of performance measures. Please rate from high to low how well your company performed within the last 5 years on each measure.

	Low Performance					High Performance				
	1	2	3	4	5	1	2	3	4	5
Number of orders received	1	2	3	4	5	1	2	3	4	5
Sales	1	2	3	4	5	1	2	3	4	5
Costs	1	2	3	4	5	1	2	3	4	5
Customer satisfaction	1	2	3	4	5	1	2	3	4	5
Profit	1	2	3	4	5	1	2	3	4	5
Product quality	1	2	3	4	5	1	2	3	4	5
Employee satisfaction	1	2	3	4	5	1	2	3	4	5
Suppliers relationship	1	2	3	4	5	1	2	3	4	5
Competitive price	1	2	3	4	5	1	2	3	4	5
Employee turnover rate	1	2	3	4	5	1	2	3	4	5
Other _____	1	2	3	4	5	1	2	3	4	5

G. Products

10. If your company purchases hardwood lumber please check which thicknesses are purchased. Please check all that apply.

- 1 inch
 1.25 inches
 1.5 inches
 2 inches
 2.5 inches
 Other: _____

11. If your company purchases softwood lumber, please check which dimensions are purchased. Please check all that apply.

- 2" x 4"-8'
 2" x 4"-16'
 2" x 6"-14'
 2" x 8"-12'
 4" x 4"-10'
 6" x 6"-8'
 6" x 6"-16'
 2" x 4"-10'
 2" x 6"-8'
 2" x 6"-16'
 2" x 8"-14'
 4" x 4"-12'
 6" x 6"-10'
 2" x 4"-12'
 2" x 6"-10'
 2" x 8"-8'
 2" x 8"-16'
 4" x 4"-14'
 6" x 6"-12'
 2" x 4"-14'
 2" x 6"-12'
 2" x 8"-10'
 4" x 4"-8'
 4" x 4"-16'
 6" x 6"-14'
 Other: _____

12. If your company purchases softwood boards, please check which dimensions are purchased. Please check all that apply.

- | | | | | | |
|-------------------------------------|--------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|
| <input type="checkbox"/> 1" x 2"-4' | <input type="checkbox"/> 1" x 3"-10' | <input type="checkbox"/> 1" x 4"-14' | <input type="checkbox"/> 1" x 6"-14' | <input type="checkbox"/> 1" x 8"-14' | <input type="checkbox"/> 1" x 10"-14" |
| <input type="checkbox"/> 1" x 2"-6' | <input type="checkbox"/> 1" x 2"-10' | <input type="checkbox"/> 1" x 4"-16' | <input type="checkbox"/> 1" x 6"-16' | <input type="checkbox"/> 1" x 8"-16' | <input type="checkbox"/> 1" x 10"-16" |
| <input type="checkbox"/> 1" x 2"-8' | <input type="checkbox"/> 1" x 4"-6' | <input type="checkbox"/> 1" x 6"-6' | <input type="checkbox"/> 1" x 8"-6' | <input type="checkbox"/> 1" x 10"-6' | |
| <input type="checkbox"/> 1" x 3"-4' | <input type="checkbox"/> 1" x 4"-8' | <input type="checkbox"/> 1" x 6"-8' | <input type="checkbox"/> 1" x 8"-8' | <input type="checkbox"/> 1" x 10"-8' | |
| <input type="checkbox"/> 1" x 3"-6' | <input type="checkbox"/> 1" x 4"-10' | <input type="checkbox"/> 1" x 6"-10' | <input type="checkbox"/> 1" x 8"-10' | <input type="checkbox"/> 1" x 10"-10" | |
| <input type="checkbox"/> 1" x 3"-8' | <input type="checkbox"/> 1" x 4"-12' | <input type="checkbox"/> 1" x 6"-12' | <input type="checkbox"/> 1" x 8"-12' | <input type="checkbox"/> 1" x 10"-12" | |
- Other: _____

13. If your company purchases panels, what thickness do you purchase? Please check all that apply.

- | | | | |
|--|---|---|---|
| <input type="checkbox"/> 1/4" (6 mm) | <input type="checkbox"/> 3/8" (9.5 mm) | <input type="checkbox"/> 1/2" (12.5 mm) | <input type="checkbox"/> 23/32" (18 mm) |
| <input type="checkbox"/> 5/16" (8 mm) | <input type="checkbox"/> 7/16" (11 mm) | <input type="checkbox"/> 19/32" (15 mm) | <input type="checkbox"/> 3/4" (19 mm) |
| <input type="checkbox"/> 11/32" (8.5 mm) | <input type="checkbox"/> 15/32" (12 mm) | <input type="checkbox"/> 5/8" (16 mm) | <input type="checkbox"/> 1-1/8" (28.5 mm) |
- Other: _____

14. If your company purchases panels, what dimensions do you purchase? Please check all that apply.

- | | | |
|---|--|---|
| <input type="checkbox"/> 2' x 2' (610 mm x 610 mm) | <input type="checkbox"/> 4' x 4' (1220 mm x 1220 mm) | <input type="checkbox"/> 4' x 10' (1220 mm x 3050 mm) |
| <input type="checkbox"/> 2' x 4' (610 mm x 1220 mm) | <input type="checkbox"/> 4' x 8' (1220 mm x 2440 mm) | |
- Other: _____

15. If your company purchases hardwood lumber, please rank the following color preference options from 1=most preferred to 4=least preferred. (If your company does not purchase hardwoods, continue to question 16).

Dark brown (example: Teca, Caobilla, Cenizaro)

Light brown (example: Pinillo, Cedro macho)

Red (example: Santa maria, Roble Coral)

White (example: Gmelina)

16. Please predict the future demand for the following wood products within the next 5 years.

	Low Demand				High Demand
	1	2	3	4	5
Fire retardant lumber/panels	1	2	3	4	5
Termite resistant lumber/panels	1	2	3	4	5
Certified forest products (FSC or PEFC)	1	2	3	4	5
Composite wood products (medium density fiberboard, plywood, oriented strand board)	1	2	3	4	5
Engineered wood products (I-joist beams, laminated veneer lumber, glu-lam beams)	1	2	3	4	5
Appalachian hardwoods (black cherry, oak, maple, walnut)	1	2	3	4	5
Southern Yellow Pine	1	2	3	4	5
Furniture and furniture parts	1	2	3	4	5
Cabinets	1	2	3	4	5

17. Where do you get information on new imported wood products? Check all that apply.

- | | | |
|--|--|--|
| <input type="checkbox"/> Trade associations | <input type="checkbox"/> Direct Contact with Suppliers | <input type="checkbox"/> Catalogs |
| <input type="checkbox"/> Web sites | <input type="checkbox"/> Trade Magazine advertisements | <input type="checkbox"/> Word of mouth |
| <input type="checkbox"/> International Trade Shows | <input type="checkbox"/> Newsletters | <input type="checkbox"/> Distributors |
| <input type="checkbox"/> Trade Shows in your country | | <input type="checkbox"/> E-mail |
| <input type="checkbox"/> Other: _____ | | |

18. What type of supplier do you purchase wood products from? Check all that apply.

- | | |
|---|---|
| <input type="checkbox"/> Wholesaler | <input type="checkbox"/> Broker |
| <input type="checkbox"/> Direct from manufacturer | <input type="checkbox"/> Government/State |
| <input type="checkbox"/> Other: _____ | |

19. How often does your company place orders with wood products suppliers?

- | | | |
|--|--|--|
| <input type="checkbox"/> Once a week | <input type="checkbox"/> More than twice a month | <input type="checkbox"/> Bimonthly |
| <input type="checkbox"/> Twice a month | <input type="checkbox"/> Once a month | <input type="checkbox"/> Once every 6 months |
| <input type="checkbox"/> Other: _____ | | |

20. Please estimate the number of 20-foot containers of hardwood lumber that your company purchased in 2009. (Check one)

- 0 6-10 16-25 51-75
 1-5 11-15 26-50 More than 75
 Other: _____

21. Please estimate the number of 20-foot containers of softwood lumber that your company purchased in 2009. (Check one)

- 0 6-10 16-25 51-75
 1-5 11-15 26-50 More than 75
 Other: _____

22. Please estimate the number of 20-foot containers of panels (plywood, osb, mdf) that your company purchased in 2009. (Check one)

- 0 6-10 16-25 51-75
 1-5 11-15 26-50 More than 75
 Other: _____

23. Please list the top 5 countries from where you purchase wood products in decending order.

1. _____
2. _____
3. _____
4. _____
5. _____

H. Price

24. If Appalachian wood products were available in your country that were good substitutes for products you currently purchase, how much more would you be willing to pay for that product? (check one)

- 0% (do not pay more) 5-10% more 16-20% more
 1-5% more 11-15% more > 20%

25. If certified wood products were available in your country that was a good substitute for a product you currently purchase, how much more would you pay for that product? (check one)

- 0% (do not pay more) 5-10% more 16-20% more
 1-5% more 11-15% more > 20%

I. Demographics

Please tell us a little more about your company. Your responses are strictly confidential.

26. What type of business best describes your company? (check one)

- Retailer Manufacturer Distributor
 Other: _____

27. If your company is a manufacturer, which of the following manufacturing processes best describe your operation? (Please choose only one, which constitutes the majority of your operation!)

- Door Manufacturer Dimension Flooring
 Window Manufacturer Furniture Pallet
 Molding / Millwork Cabinets Retailer
 Other: _____

28. What type of customers does your company sell to? Please check all that apply.

- Homeowners Retailers Contractors Manufacturers
 Other: _____

29. Please indicate your company's number of locations. (Please Check One)

- 1 Location 2-5 6-15 16-30 31-50

30. On average how many full-time employees did you have in 2009? Include all company locations (check one).

- Fewer than 25 25-50 51-75 76-100 101-150 151-200 Greater than 200

31. What were your wood products total sales in 2009? (Check one)

- Less than \$500,000 \$5,000,001 - \$10,000,000 \$30,000,001 - \$40,000,000
 \$500,000 - \$1,000,000 \$10,000,001 - \$20,000,000 \$40,000,001 - \$50,000,000
 \$1,000,001 - \$5,000,000 \$20,000,001 - \$30,000,000 Great than \$50,000,000

What is your title/position _____

City _____ Country _____

Thank you for completing this survey! Your opinions are valuable to us and will help us better understand opportunities for wood products from the Appalachian Region of the United States. If you have any questions please, email Scott Lyon at swlyon@vt.edu or call Scott at 1-540-231-5219

Please write any comments here: