



How to Find Potential Customers in Southeast United States Skidder Markets?

Nokian Heavy Tyres Ltd

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ABSTRACT

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This study was created in order to provide Nokian Heavy Tyres Ltd a better understanding of the overall markets in the United States, the skidder markets in Southeast states and to find different channels that lead to the end-users.

This work aims to determine whether the different data collection methods and channels possess the minimum requirements or even potential opportunities that would allow Nokian Heavy Tyres Ltd, a Finnish special tyre manufacturer, to successfully use them in a purpose of definition the sales channels.

The methodology used was qualitative research due to the exploratory nature of this thesis as it intended to provide fundamental insights and uncover trends. The data were gathered from official organizations, articles, professional magazines and governmental websites as well as with direct contact by email and phone.

The element of strategic management is analysing strategic position and that is why theoretical structure for this research lies in PESTEL analysis. The macro-level section of external market environment includes economic, political and legal, technological, environmental and socio-cultural aspects. The empirical part of this research consists of micro-level analysis which investigates skidder tyre markets in the United States and its main players.

The findings indicate that there are skidder markets in the United States. The overall market conditions are stable and forest industry has signs of improvements. Harvesting methods and markets are predicted to remain much the same in future. However different trade agreements and duties can have critical outcomes for logging business. Situation in the Southern states looks promising with rising demand for lumber and logs and markets are seen as worth investing.

With qualitative research, the information about the markets, channels, customers and competitors was gathered. Potential customer were found and based on the results, the best channels were easy to determine according to content and usage.

Keywords: United States, forest industry, skidder markets, logging.

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ABBREVIATIONS AND TERMS / TERMINOLOGY

NHT	Nokian Heavy Tyres Ltd
OTR	Off-The-Road
OEM	Original Equipment Manufacturer
CTL	<i>Cut-to-length</i> method In this method, the tree trunk is delimbed and cut in various log assortments into sorted piles at the stump by a harvester. A forwarder makes the transport of the logs to the roadside.
TL	<i>Tree-length</i> method A feller buncher fells the tree and a skidder pulls whole trunk to the roadside. The tree trunk is transported to the mill whole or almost whole and at the mill, logs are assorted according to their use.
Delimiting	<i>Detopping and debranching</i> Cutting off the unusable tree crown and the branches.
Debarking	Removing the bark from the trunk.
Skidding	Moving the trunk or log from the stump to a place close to a forest road where they can be sorted, piled and stored temporarily for transport.

1 INTRODUCTION

1.1 Background

The forest industry is now recovering in North America and the future looks promising. In 2011 a half of the global wood harvesting was done by mechanized methods and it has been growing all the time (Timber West 2013; Ponsse 2015).

Nokian Heavy Tyres Ltd has manufactured forestry tyres for decades and their products are known for their extremely high quality. Nokian Heavy Tyres is a clear global market leader in *cut-to-length* (CTL) machine forestry tyres. For a couple of years, their product range includes tyres to *full-tree* (FT) / *Tree-length* (TL) machines, such as skidders.

In the end of 2013, Nokian Heavy Tyres introduced new Nokian Forest King TRS LS-2 tyre for Skidders (Heavy Tyre eNews 2013). Tyre 35.5L-32 is a common size in skidders in North America. Tyre weights almost 600 kg and has 2010 mm diameter. Project Manager Teemu Vainionpää from Nokian Heavy Tyres Product Development designed this tyre to meet today's standards with wide tread and high traction lugs with special cut and crack resistant compound and steel fortification against punctures.

The bachelor's thesis by Lahtinen (2011) focused on the global challenges that harvesting is facing now and in the future. In his thesis Lahtinen claims that the CTL method is the most competitive method to harvest. However, especially in North America the long history with TL method grows deep in people and that's why it is seen as a difficult market area for CTL machines. According to the International Journal of Forest Engineering (2001), rubber tyre skidders and feller bunchers are the most popular timber harvesting systems especially in the Southern United States.

Harvesting methods in the United States has remained mostly unchanged but are becoming more efficient. The skidder markets are dominated by John Deere, Tigercat and Caterpillar. These manufacturers are investing forestry equipment innovations to increase productivity and are constantly looking for opportunities to reduce owning and operating costs of their equipment with new features and advanced technology.

With these arguments it is only natural that Nokian Heavy Tyres has designed new tyre family and is searching new markets in North America which is one of the largest countries using skidders.

1.2 Objectives

This study was created in order to provide Nokian Heavy Tyres a better understanding of the overall markets in the United States, the skidder markets in Southeast states and to find different channels that lead to the end-users. This market research is intended to bring clarification to existing knowledge, provide fundamental insights and uncover trends.

There have not been previous researches on markets and the information in the company was based quite much on assumptions and approved methods. The goal was to solve some open questions about the target market and to provide Nokian Heavy Tyres reliable and accurate information which would aid them in their decision-making process.

1.3 Research Questions

Focus of the thesis was to find different channels that lead to the end-users. Requirements for the end-users were that they would own a skidder machine and would be located in the Southeast part of the North America. The main research question is:

How to find potential customers in the Southeast United States skidder markets?

In this study end-users are considered as customers, loggers that make the buying decision. Even though they are not direct customers to Nokian Heavy Tyres as the company do not sell tyres directly to the end-users but uses different distribution channels such as tyre shops and dealers.

The emphasis on finding end-users is highly important and especially stresses the fact that end-users can have various channels to purchase tyres, not only through tyre shops and dealers.

Sub-questions:

- What are the different approaches, channels and data collection methods that can be used?
- What are the markets alike?
- What are the trends in this competitive environment?

1.4 Methodology

This work aims to determine whether the different data collection methods and channels possess minimum requirements or even potential opportunities that would allow Nokian Heavy Tyres to successfully use them in a purpose to define the sales channels.

In order to get the answer to the sub-questions, study will investigate what is the current opinion of the United States markets and what kind of image market gives itself through the different indicators and reports. Methodology to be used is qualitative research due to the exploratory nature of this thesis as it intends to provide fundamental insights and uncover trends. According to Alasuutari (2011, 24) the qualitative research process is always unique to some extent and consists of observations and clues. In the research, observations are reviewed mostly as clues because they are studied through explicitly defined point of view (ibid. 79).

Analysing and interpreting the possibilities of qualitative data is not limited to one or two perspectives on what data reflects or evidence (ibid. 88). Research data was gathered from official organizations, articles, professional magazines, governmental websites and a variety of internet sites, online publications as well as with direct contacts by email and phone. According to Alasuutari (2011, 24) qualitative analysis always deals with the cultural concepts.

The sources and data that already exist regardless of the research will perform as indicators. When collecting naturally occurring data the term unobtrusive measures is used. This refers to the observation and data collection in a way that the target group is not disturbed by the execution of the study (Webb et al. 1966, according to Alasuutari 2011, 84).

Research process (figure 1) is formed from four different phases and the process image depicts the continuum. However, different parts of the research process are linked with each other. Such research requires revisions, rejections and confirmations as the work progresses.



FIGURE 1. Research Process

Phase 1 consisted topic selection, planning, problem layout with research method and theory to support the study. In phase 2, data collecting started with observations and clues. Phase 3 formed from analysing the data using qualitative content analysis. In phase 3 besides writing, the theory and questions were reviewed. Phase 4 contains findings with recommendations and conclusions.

The informative approach will be conducted at both macro and micro levels. In macro-level, markets in the United States will be analysed with the outcome of understanding the overall picture around the company (Oxford Learning Lab Ltd 2015). Element of strategic management is analysing strategic position. That is why theoretical structure of this research lies in PESTEL analysis. PESTEL model is used to investigate the external factors that may effect on company's operations. External market environment which organizations operate include factors such as economic, political and legal, technological, environmental and socio-cultural aspects (Strategic Management Insight website 2015).

The empirical part of this research consist micro-level analysis. Factors in micro-level environment are close to the company or in the same industry and the influence or direct impact can be on a daily basis. Companies should ensure that they have identified all the environmental factors correctly and manage such information for their benefit (Strategic Management Insight website 2015). In micro-level, the main target was to investigate skidder tyre markets in the United States and its main players and trends through articles, publications and reports.

1.5 Limitation and Structure

The theory and findings will be given to the company as recommendations to reach tyre end-users. Information found as a result about the loggers and their businesses, such as contact and company information, machinery, tyres, purchase channels, experiences and future prospects, will be given only to the Nokian Heavy Tyres and will not be published here. Nokian Heavy Tyres as a company will not be presented in this thesis nor their actions in a target country.

In **chapter one**, the introduction of the research with information about the thesis, its objectives, research questions and methodology is given. The mechanical forestry equipment is introduced in **chapter two** in more detail and different harvesting chains are compared. History of skidders and rubber tyres takes us 50 years back from where we return to the present day and future technology.

In **chapter three**, markets in the United States will be analysed in macro-level. In addition to PESTEL analysis, the Southern forest industry will be examined including the trends and issues in logging business. After macro-level analysis it is natural to go to **chapter four**, where micro-level analysis is done for the tyre markets and its main players. Customers and competitors will be investigated as well as the impact of dealers and country organizations.

The different channels, sources and findings are presented in **chapter five** and in appendix 2. Information that has been considered sensitive has been edited from the thesis. Field research has been started with the data received from this research. Field research is not part of the thesis and results are not published.

Finally, recommendations and conclusions are presented in **chapter six**. Key issues are pointed out about the data collection methods and problems, from the overall market situation with forest industry and Southern states, followed by competitors' strategic focus.

2 MECHANICAL FORESTRY EQUIPMENT

Ponsse Plc, a Finnish forest machine manufacturer, claims that still around 50% of the world's wood harvest is harvested manually, for example using a chainsaw. The remaining half is harvested mechanically and those markets are predominated by the tree-length method TL (60 %) and by the cut-to-length method CTL (40%) (Ponsse 2015).

In this thesis, the focus will be on heavy forest machinery used in logging operations that runs with rubber tyres, such as skidders, feller bunchers, forwarders and harvesters. Below are descriptions in more detail of these harvesting machines.



PICTURE 1. Skidders and Feller Bunchers (John Deere)

2.1 Machinery

2.1.1 Skidders and Feller Bunchers

In *Tree-Length* (TL) method, trunks are delimited and transported to the mill whole or almost whole. At the mill, trunks are separated according to usage, for example sawlogs and pulpwood (Ponsse 2015). For this performance, feller bunchers and skidders are required.

A felling machine such as feller buncher fells the tree and a skidder pulls whole trunk to the side of the road. A delimitter delimits and tops the trunks. If trunks must be cut for

long-distance transport, a slasher will be needed at the roadside. With a crane or separate loading machine the trunks or logs are loaded to a timber truck (Ponsse 2015).

The first skidder was introduced in 1951 in the United States (Šušnjar, Horvat, Pandur & Zorić 2015). Today the market is dominated by John Deere, Tigercat and Caterpillar. John Deere introduced their 440 Cable Skidder in 1965 and now, in 2015 they celebrate their 50 years of skidders by launching a whole new L-Series wheeled feller bunchers and L-series skidders (John Deere 2015).

Cable Skidder

The cable skidder (picture 2) uses a winch. The cable is reeled out and attached to the timber (by the operator or a second person), then the winch pulls the load to the skidder and the winch holds the trees while the skidder drags them to a landing area (VanNatta Logging and Forestry site).

One cause that cable skidders are less popular nowadays might be the reason that it requires tremendous amount of manpower with dragging the cable and hooking it up. Cable skidders are used especially in steep hills and places where it is not possible to drive the machine close to the log (Creighton 1997, according to RitchieWiki 2003).



PICTURE 2. Cable Skidder (Global Machinery Network Inc.)

Grapple Skidder

As the name implies, grapple skidders use a hydraulic claw-like attachment to grasp logs. Grapple skidders are usually used when distances are longer. This is more popular and faster way of working as hydraulic grapple bucket grabs and lifts the timber. However, with grapple skidder the operator must be able to back up to a log to pinch up the log/s (VanNatta Logging and Forestry site).



PICTURE 3. Grapple Skidder (Loggin On)

Wheeled Feller Bunchers

Feller bunchers (picture 4) are dual-function machines that fell a tree and can also move it into a pile, while single-function machines are only capable felling a tree. This way feller bunchers can make optimum load-sized bunches for grapple skidders. The first feller buncher was introduced in Canada in 1957 (Šušnjar et al. 2015).

Wheeled feller bunchers are much more practical with rubber tyres and operate much inexpensively than tracked machines. These machines have evolved slowly but remained quite the same from 1950 (VanNatta Logging and Forestry site).



PICTURE 4. Feller Buncher (Agricultural and Biological Engineering)

2.1.2 Forwarders and Harvesters

The corresponding harvesting equipment for the TL method is *cut-to-length* (CTL) method which can be used both thinning and final felling. With the CTL method, the trunks are cut to the end user's requirements already in the forest, for example sawlogs, pulpwood, lathe logs and bolts. With CTL method, wood handling in total is minimized (Ponsse 2015).

The harvesting equipment in CTL method consists of a harvester and forwarder chain. The harvester fells, delimits, measures and bucks the trunks according to the wishes of wood user. The forwarder transports logs to the side of the forest road, keeping each type in a separate pile. Then a timber truck equipped with a crane for loading transports the logs to the mill (Ponsse 2015).

Manufacturers for harvesters and/or forwarders in today's markets are for example John Deere, Komatsu, Ponsse, Logset, Eco Log, Rottne and HSM. Ponsse Plc is a Finnish company that manufactures a range of forest machines. Company was founded in 1970 and demand for forest machines has been its highest in 2014. This year (2015) Ponsse is celebrating their 45th anniversary and has launched a record of new products (Ponsse 2015).

Forwarders

A forwarder is used for transporting CTL logs to the forest road. A forwarder is equipped with rubber tyres and with a grapple loader for loading and unloading. This machine is very suitable for soft soil and steep slopes (Ponsse 2015).



PICTURE 5. Forwarder (Direct Industry)

Harvesters

Harvesters (picture 6) are machines that integrate all felling operations. Harvesters are the dominant technology in large scale harvesting in northern Europe. Their importance is likely to grow fast because of the forestation and plantations are becoming more important source of raw material (Ponsse 2015).

Harvesters used in Nordic Countries usually have four, six or eight wheels. Harvesters can handle both energy wood and larger diameter trunks in all terrains efficiently (Ponsse 2015).



PICTURE 6. Harvester (John Deere)

The first single-grip harvester was introduced in Sweden in 1980. Today's harvesters can fell, delimb, buck and place the processed pieces where needed. The first forwarder was made also in Sweden in 1961 (Šušnjar et al. 2015). The goal with all these mechanized machinery was to increase productivity and workers safety (Forest Encyclopedia Network).

Dual Harwarder

Dual harwarder (picture 7) is a combination of harvester and forwarder. A machine that can be transformed from one to another in a matter of minutes claims Ponsse Ltd (2015). This versatile machine offers a solution for the contractor, who doesn't need to bring several machines on the site. When dual can handle the necessary work, the total work cost efficiency is improved (Ponsse 2015).



PICTURE 7. Dual Harwarder (Ponsse)

2.2 History of Skidders and Tyres

In the 19th and 20th century logging became an industry in itself. Early skidders were pulled by a team of animals for example oxes, horses or mules that were best suited for hot and hard conditions (Creighton 1997, according to RitchieWiki 2003).

A skidder is a heavy vehicle used in a logging operation. Term “skidding” comes when cut trees or logs are pulled out of a forest or from the cutting site with skidders (Van-Natta Logging and Forestry site). However, the first mechanical skidders were steam powered and linked to railroads as the felled trees were pulled to the railroad cars of flumes. The first “Steam Donkey” appeared in 1881 and was a stationary logging machine used skidding (Creighton 1997, according to RitchieWiki 2003).



PICTURE 8. A Steam Donkey (The VanNatta Logging and Forestry site)

Railroad logging faded quickly after World War II because the steel tracks were expensive, machines were big and the use was very constricted (VanNatta Logging and Forestry site). When distances grew the need for new innovations were needed. In the middle of the 1900's many forest professionals developed more mechanized forest technologies in Europe, particularly in Finland and in the mid 1950's the first rubber tyre equipments was invented for logging (John Deere 2015; VanNatta Logging and Forestry site). Rubber tyres or tracks made possible for skidders to go longer distances on challenging terrain.

In the United States, Paul Westfall from Portland, Oregon was said to have his hand in the production of some of the fist rubber tyre skidders in 1951 (RitchieWiki 2003; VanNatta Logging and Forestry site). The Wagner Brothers from Portland, Oregon made several early prototypes of rubber tyre skidders in the 1950's but because of the tyre problems, these machines were not success. At the time, when large low pressure tyres had not been invented yet, only tyres available was high pressure tyres used by large mining trucks. Tyres were so tough that the original tyres (first with 14x24-20 ply Rock service tyres and other had 18x25-20 ply Rock service tyres) were still on the machines after 30 years of use when retired. Of course the tyres did not operated in the soft forest ground and failed to provide necessary flotation (VanNatta Logging and Forestry site 2015).

Like it is said in John Deere Timeline (2015): “From the horse to the skidder, the skidder to the Full Tree team, to the advent of Cut-to-Length – logging equipment has come a long way”. Current skidders are tracked or four wheels drive tractors and are used also for pulling tree stumps, pushing over small trees and for making a preliminary logging paths; ‘skid roads’.

2.3 TL versus CTL

There have been CTL machines in the markets for a long time but adopting them in the North America has been slow. It is understandable when it comes to logging equipment, many prefer to see the machine approve itself before making expensive purchase. With CTL equipment, harvesting and processing functions can be done in one place at the same time and this eliminates the need to change the equipment (or have more personnel) and creates more efficient process.

Fuel consumption per harvested cubic metre can be seen lower with the CTL method than with the TL method because fewer machines are needed (Ponsse 2015). The cost of harvesting and delivery to the roadside can be compared in some parts but depends so much on the logging conditions and the country. On the other hand, the need for TL machines in North America has been always higher since the mills and their equipment have been designed to use tree-length trunks.

In the International Journal of Forest Engineering: ‘Productivity of harvesters and forwarders in CTL operation’, Eriksson & Lindroos (2014) are saying that the productivity of harvesters have been increasing quite rapidly over recent decades. The study based on the samples of harvesters and forwarders working in thinning and final felling.

Usually cut-to-length are technically more advanced than tree-length forest machines and therefore they also cost more argues Ponsse (2015). Nowadays, more follow-up data can be gathered from the operations. However, some factors such as changes in operators’ skills can effect on the accuracy of operational planning, costs and work performance. It seems that lack of the talented operators for both forest machines chains (in TL or CTL method) is a global phenomenon and several countries are suffering from it. To get well-trained operator for CTL machine will take time. Nowadays, there are more

forestry schools specialised teaching operators for harvesters and forwarders. Education costs and time used for training are high compared to TL method.

Salary costs are hard to compare since in some cases CTL harvesting costs can be seen slightly lower because fewer operators are needed but in some countries the labour is cheap. In the cost model for calculation of forest operations costs, the International Journal of Forest Engineering (2014) pointed out that the operational costs includes operator salaries, social charges, other benefits and overtime work, which may vary from country to country. The number of religious holidays and vacations makes it difficult to compare globally the maximum number of work days per year.

Tree-length method is a traditional way of harvesting in the United States since the mills and their equipment are suited for TL trees. Other factors that have slowed down the arrival of the CTL method in the United States can be the amount of financial investment that CTL machines requires and training CTL operators takes longer time.

3 MACRO-LEVEL MARKET ANALYSIS: THE UNITED STATES

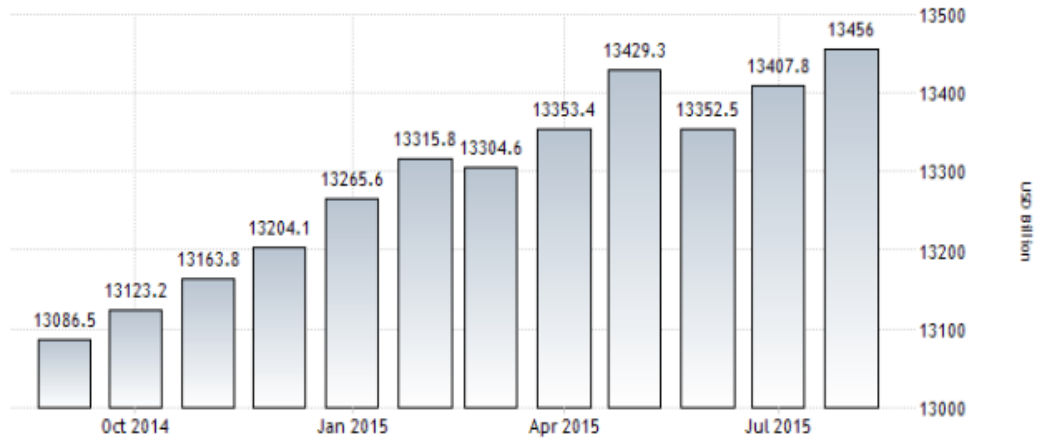
This chapter of the exploration of international market will focus on the United States overall conditions. The external environmental factors which can affect company's performance and activities will be analysed on macro-level using PESTEL analysis. This includes target country's economic, political and legal, technological, environmental and socio-cultural environmental factors (Strategic Management Insight website 2015). In addition to PESTEL analysis, the Southern forest industry will be examined with trends and issues in logging business.

When identifying external factors in macro environment, the aim is to find out the current factors affecting the company, identify the factors that may change in the future and to exploit the opportunities and threats. The evaluation of a foreign market environment will start with economic variables related to the size and nature of the markets.

3.1 The Economic Environment

The last recession in the United States ended in 2009. The country has the largest economy in the world, with GDP of 17,419 trillion U.S. dollars (2014). GDP has been growing at 3,9% rate during 2015. While GDP growing, the unemployment rate has been dropping 10,0% from October 2009 to 5,1% in September 2015. According to Bureau of Labour Statistics job gains were on the health care and information fields, while employment in mining sector has declined by 102,000 since its peak at December 2014 (Bureau of Labor Statistics 2015).

Disposable personal income (figure 2) has also reached all time high on August 2015: 13,456 billion U.S. dollars (Trading Economics 2015).



Actual	Previous	Highest	Lowest	Dates	Unit
13456.00	13407.80	13456.00	351.90	1959 - 2015	USD Billion

Forecast	Actual	Q4/15	Q1/16	Q2/16	Q3/16	2020	2030	2050	Unit
Disposable Personal Income	13456	13456	13681	13778	13874	18154	24154	26276	USD Billion

FIGURE 2. Disposable Personal Income with Forecast (Trading Economics 2015)

The largest trading partners of the United States in both export and import are Canada, Mexico and China (U.S. Department of Commerce, Census Bureau and Economic Indicators Division, Trade Partners year to date Jul. 2015).

During the second quarter of 2015 labour costs (figure 3) have dropped 1,4%. Still being higher than EU average, but almost 4% lower than Finland’s labour costs (Trading Economics 2015).



Actual	Previous	Highest	Lowest	Dates	Unit
107.26	107.13	107.26	17.12	1950 - 2015	Index Points

Forecast	Actual	Q4/15	Q1/16	Q2/16	Q3/16	2020	2030	2050	Unit
Labour Costs	107	106	108	108	109	107	110	113	Index Points

FIGURE 3. Labour Costs with Forecast (Trading Economics 2015)

In the United States the national corporate tax is 35% which is very high compared to the European average of 18,7% or to Finland's 20% (Deloitte 2015).

On the 5th of October 2015 signed Trans-Pacific Partnership (TPP) reduces trade tariffs between the United States, Canada, Australia, Vietnam, Japan, Chile, Brunei, Malaysia, Mexico, Singapore, Peru and New Zealand (The Trans-Pacific Partnership 2015).

According to the authors of 'The Trans-Pacific Partnership and Asia-Pacific Integration: A Quantitative Assessment 2012', the TPP would benefit the United States by estimated income raise of 0.4% by 2025, which would be equivalent of 77 billion U.S. dollars in 2007. EU has given estimates of a similar gain for the U.S. from possible Transatlantic Trade and investment Partnership (TTIP). Agreement between EU and U.S. has not yet been agreed on (Furman 2015). Next negotiations are held 19th of October 2015 (European Commission, TTIP).

The forestry sector is global, capital-intensive market sector which is influenced by fluctuations of the housing market, ideals of the paperless society, machine developments, as well as the availability of labour. After the recession, the current market situation in the construction industry and in the housing markets has signs of improvement. The paper industry however continues to decline in the United States. Different regulations and limitations affect the industry in many countries but in countries such as China, Brazil and Russia, the paper production is more beneficial with lower level regulations. It has been estimated that the competition from wood products will intensify in the future when even fewer people derive their livelihood from the forest industry (Ponsse 2014).

According to Global Forest Resources Assessment 2010 (FRA 2010) the world's total forest area is around 4 billion hectares which means 31% of the total land area. A fifth of the world's forest area, a total of 809 million hectares is located in Russia, followed by Brazil, Canada, the United States and China. These five countries have the half of the total forest area. In European Union countries, the total forest area is estimated as 157 million hectares. Within the EU most of the forest land area is in Sweden (28,6 million hectares).

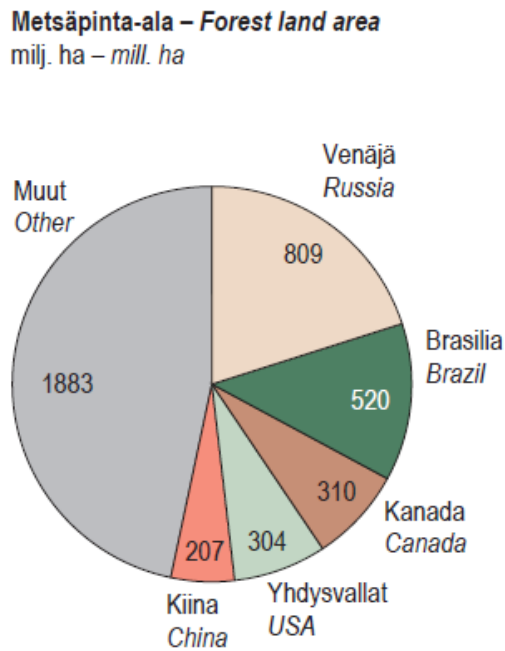


FIGURE 4. Forest Land Area (Metla; FRA 2010)

The rate of deforestation is still alarmingly high in most tropical and sub-tropical countries state Global Forest Resources Assessment report (2010). The deforestations process has stopped in the industrialized countries and in other areas it shows signs of decreasing due to the large-scale planting of trees. During 2000-2010 around 13 million hectares of forest were converted to use of agriculture, other uses or lost because of the natural disasters (FRA 2010).

Rubber plantations are found mainly in Southeast Asia and Africa. The area of rubber plantations has been increasing from the 1990s but now in some countries it is decreasing and covers around 10 million hectares (FRA 2010).

A FRA (2010) estimate in their report that the world's growing stock volume per hectare is 527 billion cubic meters. One-third (177 billion m³) is located in South America. In Europe the growing stock volume is 112 billion m³, which includes Russia (82 billion m³). In Germany the growing stock volume is biggest from the EU countries, a total of 3,5 billion cubic meters.

Puuston tilavuus – Growing stock volume
mrd. m³ – bill. m³

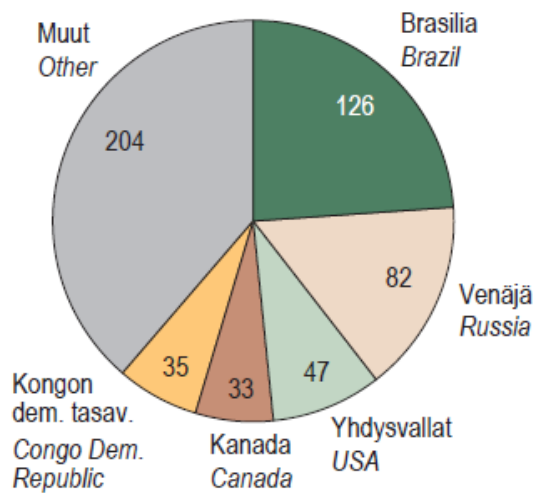


FIGURE 5. Growing Stock Volume (Metla; FRA 2010)

As a conclusion FRA (2010) do not forecast any major changes to either way in the overall trend of forest areas. However, they point out their concern about uncontrolled conversion of forest land to agricultural land.

3.1.1 The Southeast Forest Industry

The United States made most roundwood felling in 2012, a total of 377 million cubic meters from which 336 million m³ were used for forest industry raw material. The largest lumber producer countries were the United States (64 million m³), China (56 million m³) and Canada (41 million m³). China has become the leading country importing sawn timber with total of 22 million cubic meters (FRA 2010).

The forest product industry is around 4 percent of the United States manufacturing GDP. The industry is among the top 10 employers in 47 states (American Forest & Paper Association 2015).

Depending on the source, the region of Southern or Southeast states consist different amount of states. In this study the focus was on the following seven states: Tennessee, North Carolina, South Carolina, Mississippi, Alabama, Georgia and Florida.

According to the American Forest & Paper Association's fact sheet (2015) these seven states employs approximately 42'035 men and women in the field of forestry and logging. Adding wood product and pulp & paper industry, the amount is already over 220'000 persons.

In appendix 1, an Excel sheet with more information about the State Industry Economic Impact will be found. Information is gathered from the American Forest & Paper Association's fact sheets. In this Excel sheet, state by state the number of manufacturing facilities from different segments can be seen. Industry shipments, annual payroll income, tax payments and land area in thousands of acres. Forest ownership and management rights of timberland between different states will be found in the end of Excel sheet.

Some factors indicate a bright future for the Southern forest industry. China's strong demand for lumber has risen as the population is shifting to slightly more suburban way of life. China has continued seeking more Southern yellow pine and even interested importing whole logs. Also the housing sector in the United States has been rising since the Great Recession and together these two should increase the United States lumber production by 13 billion board feet by 2017-2018 (Albany Herald news 2014).

According to Lynn Michaelis, the president of Strategic Economic Analysis, other timber producing regions are not able to meet the growing demand. In fact, the Canadian lumber industry is claimed to shrink down from a peak of 39 billion board-feet in 2005 to under 31 billion board-feet in few years. One reason for this is a beetle infestation (a pine bug) which has caused problems for several years and has destroyed about half of the commercial pine forest in British Columbia (Albany Herald news 2014).

There are also agreements between the United States and Canada that can have critical outcomes. The softwood lumber agreement is due to expire in October 2015 and a concern of Canadian mills coming to U.S. markets the same way than 10 years ago worries

the mills. Factors such as trade agreements and duties on U.S. timber at the border by the Canadian government may change the markets considerably (Albany Herald news 2014).

The growth of the wood pellet industry in Georgia has grown from zero to 9 mills in the last 5 years. By 2017, the estimation for production is 11 million tons. Biggest customers are the European electrical generating plants. Georgia has 24,3 million acres of timberland and room to grow with strong infrastructure. These will create opportunities to 50'000 forest industry employees and experienced foresters (Albany Herald news 2014).

The forest industry and situation in Southern states looks bright with rising demand for lumber and logs. Existing sawmills have announced about expansions and companies such as Interfor from Canada and Klausner from Europe have been investing in Southern sawmills (Albany Herald news 2014).

3.2 The Political and Legal Environment

The United States is a democratic country with effective rule of law and high political stability. The country is considered to have rather low corruption rate and with Transparency International ranking it is on a place 17th (with three other countries/territories) on the list of countries with least perceived corruption (Transparency International, 2014).

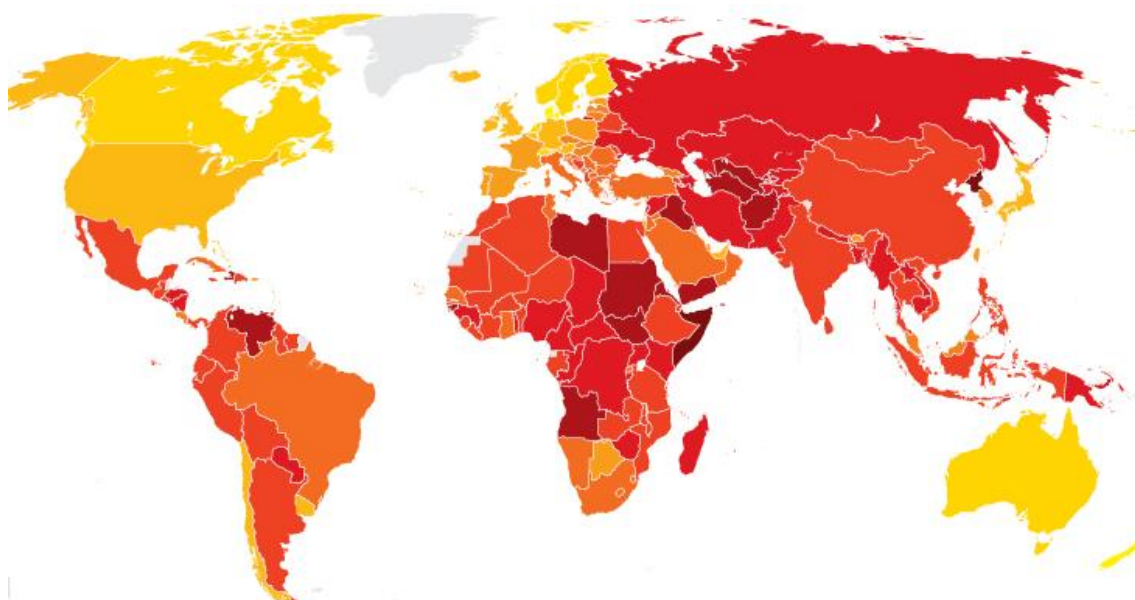


FIGURE 6. Corruption Perceptions Index (Transparency International 2014)

Although highly influential country in western world, the United States campaign so called ‘War on terror’ and leaked information from NSA about spying other countries has damaged its foreign relations. The United States now faces increased tension with Russia because of the Ukrainian crisis and as EU and U.S. led economic sanctions against Russia as a repercussion of annexation Crimea (and Russian counter sanctions against the U.S.). The United States have also imposed export restrictions to goods used in production and exploration of oil against Russia (Reed Smith LLP 2014).

3.3 Technological Environment

Technology and innovations play major role in the United States economy. Large portion of the United States exports consist on highly technical goods involving advanced and sophisticated processes such as pharmaceuticals, medical technology, air and space crafts and organic chemicals (World’s Top Exports 2015).

The United States is ranked among top 5 of the most innovative countries according to the Global Innovation Index. Finland is at the 6th spots right behind the United States. The Global Innovation Index examines countries effective innovation policies for development (The Global Innovation Index 2015).

The United States government also encourages innovation by tax incentives for companies that invest in Research and Experimentation (R&E) which are part of Obama’s

three step strategy for American innovation (United States Department of the Treasury report 2011):

- 1) Investing in Building Blocks of American Innovation by investing in education, research and infrastructure.
- 2) Promoting Market-Based Innovation by aforementioned R&E tax credits, strengthening intellect property policies, encouraging high-growth and innovation based entrepreneurship and promoting open innovative and competitive markets.
- 3) Catalyze Breakthroughs for National Priorities focusing on clean energy with the goal of delivering 80% of the nations electricity from clean sources by the year 2035 and driving breakthroughs in biotech, nanotech, advanced manufacturing, education and healthcare technologies and in space applications (The White House, Executive Summary).

3.3.1 Trends and Issues in Logging Business

Timber West, the Journal of Logging & Sawmills interviewed the heads of the three main logging equipment companies in the summer 2013; Tony Larocci from Tigercat, Kevin Thieneman from Caterpillar, and Martin Wilkinson from John Deere. Topics for discussion were related to the recovery of the forest industry in North America and how to deal with current and future issues.

Key concerns among the loggers and the issues that clearly emerged from all three logging equipment manufacturers were increase diesel fuel costs and insurance rates and a shortage of skilled operators. Equipment companies focuses on finding solutions for the matters by better cost management and having new features and advanced technology in their machines. Especially during the difficult economic times, maintaining profitability is the most important thing. Innovations that will improve durability by keeping their equipment running longer, reduce fuel consumption by having skidders working more efficiently and increase production, are the key issues to meet customer's needs (Timber West 2013).

New innovations are telematics solution, new technology for engines to meet FT4 (Final Tier 4) emission requirements, remote control capability, up-to-date after-sales solutions and smooth operations with support and service to increase productivity and by lowering owning and operating costs (Timber West 2013).

In the future on a global basis, the remote control capability can help with operator shortage suggests Tony Larocci from Tigercat. Kevin Thieneman from Caterpillar estimates that autonomous machines operating in forestry applications can be seen over ten years. However, Thieneman points out that “manufacturers and distributors must continue developing ways to increase the ease of operation, as well as the machine diagnostics and repair.” (Timber West 2013).

Logging equipment is evolving and in the future even more efficient equipment is needed. Martin Wilkinson from John Deere state:

“We predict that harvesting methods will remain mostly unchanged but will become more efficient by the use of telematics and advanced operator training. In terms of trends, mainstream forestry equipment will follow government regulatory requirements and efficiency and cost needs. Most forestry equipment form changes will be driven by niche markets such as first thinning and biomass recovery” (Timber West 2013).

Nowadays, ergonomics and ease of use are more important than ever. Special attention is taken in the design of cabin structures and in the drivers working comfort. The comfort of the operator can be seen as a key factor in terms of productivity and quality (Ponsse Product News 2015, 5, 8). However, the development of technology can reduce small contractors from the forest sector who cannot afford more expensive equipment. Also the competition in the labour market is tough and skilled labour is harder to find because nowadays operators need to manage information technology (Ponsse 2014).

Customer-oriented product development is crucial when designing forestry equipment and harvesting technology. Users’ contributions to a product development are needed in order to respond to the customers’ needs. The PONSSE Scorpion harvester has won a several awards in automation, design and the novel structure. For example, The *Long Live the Automation!* award was granted for its new innovations concerning new leveling and stabilising system and digital features. This award is granted every second year of remarkable and innovative automation industry solutions. The *Fennia Prize Grand Prix* award for industrial design representing a new generation of harvesters. Scorpion harvester has 80% new technology (Ponsse 2014). The *Quality Innovation of the year 2013* award was granted for improved operator ergonomics and the machine’s working efficiency with visibility in all directions (Laatukeskus, Excellence Finland & Design Forum).

3.4 Environmental Factors

In the United States the forestry activities are regulated by the Environmental Protection Agency and by the Department of Environmental Quality. Felling areas are defined in the legislation and they are adjusted and controlled by Sustainable Forest Initiative (SFI) (Ponsse 2014).

There has been a lot of discussion on a global basis about reducing the terrain damages. When trees are being pulled, tree particles and seeds are cultivated into the soil and cause in a way a positive impact. However, this can have disadvantage when damaging remaining trees as branches are dragged against them and breaking the bark of living trees. Another concern in the topsoil is when skidders use tyres with chains and cause damages by increasing the costs of forest rehabilitation and reforestation (VanNatta Logging and Forestry site).

In Europe there are new regulations for engines to meet the EU emission requirements. Logging equipment manufacturers has to target for low emission, a cleaner environment and a better response for power usage and fuel economy (Ponsse 2015). Requirements for environmental issues usually begin in Europe and Americas will adopt them at a later time.

3.5 The Socio-Cultural Environment

The United States has low birth rate of 1,87 children per woman, which is not enough to keep the population stable (2,1 children per woman). In the future, the United States is facing problems with aging workforce which might lead to labour shortage and requires tax increases to compensate the needs of growing elder population (The Wall Street Journal 2015).

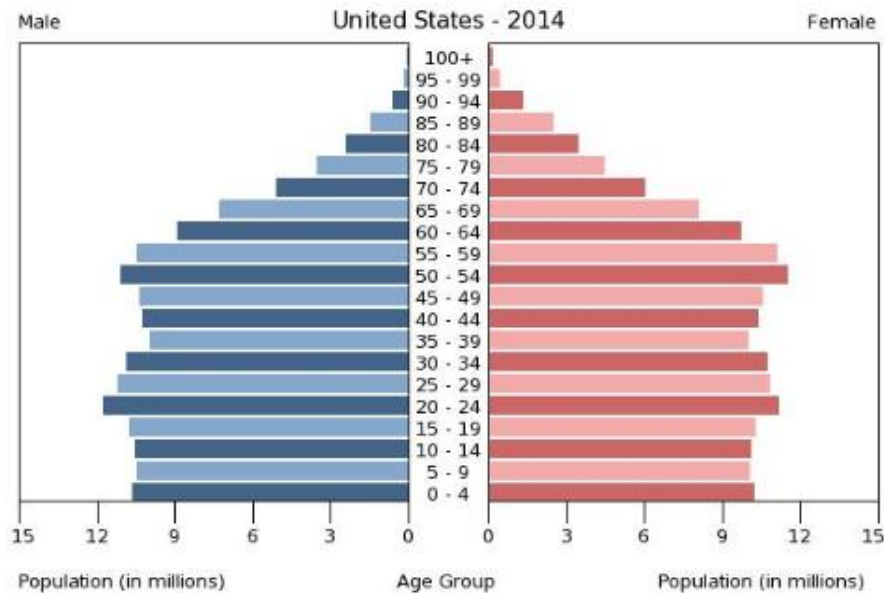


FIGURE 7. Population Pyramid (Central Intelligence Agency, People and Society 2015)

Estimated population in July 2015 was 321,368,864. Although because of immigration the population is still increasing by the rate of 0,78% (Central Intelligence Agency, People and Society 2015).

While public education is available to everyone in the United States and people in general are educated, according to PISA study done in 2012 the average of 15 years old U.S. citizens are ranked below average in mathematical skills. Same target group is ranked around average in reading and science compared to other OECD countries (PISA 2012).

Educational merits are strongly tied to the student's socio-economical status. Although the American Dream is a national ethos of the Americans, the social mobility in the country is low. People born in lower social class are more likely to stay there than to ascend (Economic Policy Institute 2012).

The patriotism in the U.S. started to rise after 9/11 terrorist attacks. According to Gallup Inc. 2005, such occurrences reflect on people's consuming habits. Patriotism seems to be unwavering among the whites but changes by race, age or gender (Gallup Inc. 2005).

According to a survey by Field Agent (The City Wire 2015), consumers favour American made goods but not as a top priority. American made products ranks in the fourth

place among quality, price, customer service experience and sustainability. If the price and quality are competitive, Field Agent CEO Rick West says that the consumer will likely chose the product that creates or supports jobs in America (The City Wire 2015). Considering the influence in the automotive industry such factor can reflect in the tyre markets as well.

Social factors such as population growth, health consciousness, buying habits and an emphasis on safety are cultural aspects and influence the demand for products and services. Companies should respond to this demand by employing local to gain cultural knowledge and adapt processes and products to local markets and build strong relationships (Czinkota & Ronkainen 2010, 121).

Learned behaviour patterns are constantly shaped for example by technology and education and that way the culture is one of the most challenging elements of the international markets. Hofstede's Cultural Dimension will provide insight of how these values will relate to behaviour.

Studying the United States culture through 6-D Model©, figure 8 shows an overview of the factors of American culture relative to other cultures. It is good to notice that in every country there are regional cultural differences. However, "social control ensures that most people will not deviate too much from the norm" (The Hofstede Centre 2015).

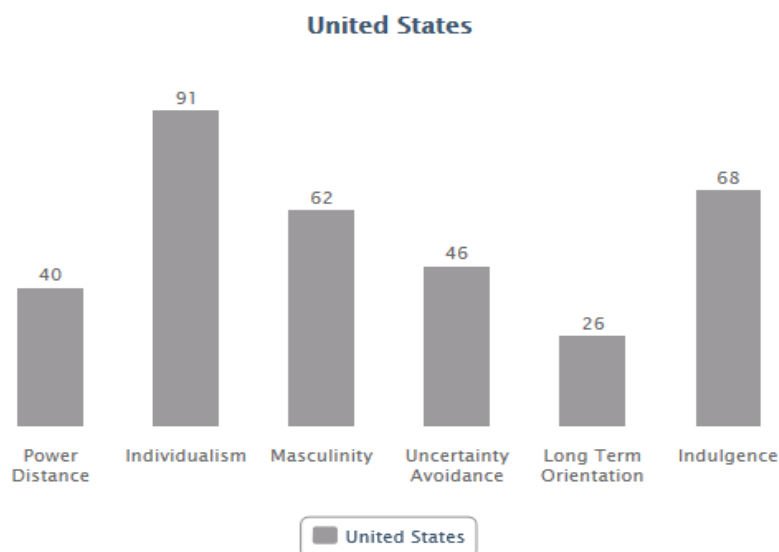


FIGURE 8. The Cultural Dimensions (The Hofstede Centre)

According to the Hofstede Centre (2015) we all are able to influence other people's ideas and behaviour. For how much depends on every unique person. In societies all individuals are not equal; some are more powerful members. For example in organisations some people are followers and others are leaders. The **Power Distance** dimension expresses "the attitude of the culture towards these power inequalities amongst us".

The **Individualism** dimension deals "the degree of interdependence a society maintains among its members". Societies where people think rather 'I' than 'we' are more individualist. The low score on the power distance and high score on the individualist dimension points out that the Americans hang onto equal rights and people look after themselves. They don't rely too much on authorities. Managers rely on their employees and information is shared frequently in organisations. Communication is informal. High degree of geographical mobility in the United States points, that the Americans are best joiners although they still find out difficult to develop deep friendship. Americans are not shy and it is not a problem doing business with people they don't know. Self-reliance and initiative are highly valued qualities.

Competition, achievements and success are important in societies which have a high score in the **Masculine** dimension. "The fundamental issue here is what motivates people, wanting to be the best (masculine) or liking what you do (feminine)". Americans show their Masculine drive individually. It is important to reach for better way to do jobs, show how well they did a job and which is more motivational, show the success. The 'winner takes it all' attitude has lead for example to polarisation and court cases.

The **Uncertainty Avoidance** dimension specifies "the way that a society deals with the fact that the future can never be known". Here the United States scores below average. Americans are relatively open to new ideas and allow the freedom of expression. At the same time they don't require a lot of rules and are not so emotionally expressive.

The dimension **Long Term Orientation** tells "how every society has to maintain some links with its own past while dealing with the challenges of the present and future". Normative societies view societal change with suspicion. Americans are very practical and like to analyse new information whether it is true. They have strong opinions of what is 'good' and 'evil'. American businesses prefer quick results and measure their performance (profit and loss) on a short-term basis.

The **Indulgence** dimension is defined as "the extent to which people try to control their desires and impulses based on the way they were raised." It is related to socialization. The American society culture can be called indulged not restrained. The phrase 'Work hard and play hard' with a normative score describes this indulgent society (The Hofstede Centre 2015).

4 MICRO-LEVEL ANALYSIS

Micro environmental factors such as customer markets, employees, competitors, media, shareholders, suppliers and marketing intermediaries are factors close to business and which have a direct impact on a company's business operation and success. Businesses cannot always control micro-level factors but company should endeavour to manage them and to ensure that they have correctly identified all of the factors in this competitive environment (Strategic Management Insight website 2015).

When a company moves into new markets or segments, it can create major potential for business growth. As Kotler & Keller (2012, 213) tells: "a company needs to identify which market segments it can serve effectively". It is vital to understand the market dynamics, consumer behaviour and the competitive environment of the specific markets.

Having a good information base of the market and building it to the knowledge is a very important for every company. Data gathering through research will usually provide an adequate understanding of the business environment to help managers in their decision making. In primary research, the company collects the data for the specific purpose and in secondary research, previously collected data are used. With secondary research, a company can quite easily and quickly have an access to information with limited manpower or resources (Czinkota & Ronkainen 2010, 240).

In global strategic planning processes, the underlying forces that determine business success are common regardless the country. Those tools will help allocate a company's resources, balance risks, to gain competitive advantage and stronger long-term position (ibis. 191). In this study, the markets and competitive analysis is done to understand the structure of the global industry in order to identify the most valuable opportunities and the most effective approaches to them as well as to determine profitability and what drives competition.

4.1 Overview of Skidder Tyre Markets

A global strategy does not imply that a company should serve the entire globe. Company must allocate their resources between different countries and segments (Czinkota & Ronkainen 2010, 194).

The Heavy-Duty off-the-road (OTR) tyre manufacturing industry manufactures tyres for industrial, construction, agricultural, mining vehicles and forestry machines such as skidders, feller bunchers, harvesters, forwarders.

Compared to year 2013, the replacement OTR tyre market in the United States has raised little but did suffer at the Original Equipment (OE) level. Coal mining segment has impacted mostly on these figures and the slowdown in global mining operations has affected North American mining tyre markets as well. Decline in oil prices can be a threat for the United States if taking place for a longer period. In the future the need for OTR tyres will increase due to the stronger construction activity, demand for agricultural machinery and tyre replacements (SteamFeed 2015).

2014 U.S. REPLACEMENT TIRE SALES (a \$37.4 billion industry)	
Passenger tires	\$24.8 billion
Light truck tires	\$4.9 billion
Truck tires	\$6.6 billion
Farm tires	\$ 538 million
OTR tires	\$ 580 million
In 2013, U.S. replacement tire sales totaled \$37.3 billion.	

FIGURE 9. 2014 U.S. Replacement Tire Sales (Modern Tire Dealer, Rubber Manufacturers Association)

Skidder markets in the United States are broad and diverse and the key is to understand consumer behaviour with distinct needs and wants for the strategic thinking. Effective target marketing focuses on the consumers they can satisfy the most (Kotler & Keller 2012, 213).

The International Journal of Forest Engineering online article: ‘Effect of Tire Size on Skidder Productivity Under Wet Conditions’ (2001), states that rubber tyre skidders and

feller bunchers are the most popular timber harvesting systems in the Southern United States. Terrain is favourable in the southern Piedmont and Coastal Plain areas but recent wet seasons have caused problems in flat and gently rolling terrains. As a result, loggers use wider skidder tyres (The International Journal of Forest Engineering online article 2001).

When examine the manufacturing materials, raw materials such as natural rubber and oil prices affect the pricing. Poor weather conditions have rise the value of natural rubber and caused increase in raw material costs. China's demand for natural rubber has also increased. Price elevations will continue and the pressure will be noticed in manufacturing companies and companies' profits. Higher oil prices affect on gas prices and utility costs which causes deceleration for the industry.

Malaysia, Indonesia and Thailand produce 70% of the world's rubber according to Fast Company & Inc. (2015). It takes five to six years before any harvesting can be done for a rubber tree and requires a lot of work. Trees need to be sapped every day until the end of the lifetime of the tree. Many rubber producers have to increase their prices because of the rising labour costs and land values or close their business. Guayule is easier to cultivate and harvest but the processing however is more complicated. Guayule rubber has been designed for heavy duty industry such as airplanes, rigs and mining vehicles (Fast Company & Inc. 2015).

Globally a green or environment friendly tyres in both on-highway and off-highway markets seem to be a part of every company's marketing strategy or in their practices. Most of the advertisement promises savings on fuel cost, less rolling resistance and tyres that last longer.

In the European Union, the high-aromatic (HA) oils were banned in 2010 and that pushed Europe towards 'green oils'. American markets are not quite there but the direction is right. Nokian Tyres was the first tyre manufacturer in the world that stopped using HA oils in their production in 2005 and started to use only purified, low-aromatic oils. Nokian Tyres has never used carcinogenic raw materials in their production (Nokian Tyres 2015).

4.2 The Role of County Organizations and Dealers

Czinkota & Ronkainen said that: “country organizations should be treated as a source of supply as much as they are considered a source of demand.” Understanding the core strategy in every level is vital for the successful business. Passing on the information between headquarter, global managers and country managers in a balance will improve a company’s possibilities to develop and implement global strategy (2010, 201, 226). Czinkota & Ronkainen (ibid. 207) recommend to include local marketers into different actions related organization structure, overall corporate culture, management processes and to develop strategic planning to gain mutual interaction.

Most of the tyre manufacturers do not sell tyres directly to end-users but they use distribution channels such as tyre shops and dealers which are essential linkages between the manufacturer and the customer. These distribution channels must be designed in a way that they cover a certain area and take into account requirements of the manufacturer and the customers.

4.3 Customers

To attract new customers and take market share from competitors is a challenge where company must understand consumer behaviour. In a book ‘Marketing Strategy & Competitive Positioning’, Graham Hooley et al. (2012, 88) point out: “information is the raw material of decision making”. A company has to have precise understanding for what the buying decisions is based on; what are the prime motivators for purchase and are there any de-motivators.

In this study end-users are considered as customers, loggers who make the buying decision. The question is who have the influence on this decision. To know how to market tyres, marketers need to consider loggers, operators and other initiators and influencers into consideration (ibid. 90). An operator may look for comfort, ease of operating and factors that can have promotive influence for work. A machine buyer may look for economical performances such as fuel consumption, rolling resistance, durability and price.

How the typical buying process in this segment will take place? Will there be a problem recognition, information search with evaluating the alternatives, dealer search and fi-

nally the purchase decision with other post purchase agreements (Kotler & Keller 2012, 167). The demand can come whenever and tyres are a critical part that the work gets done. The marketer has to realize how the buyer acts but also to be aware of unanticipated situational factors and services included.

With qualitative research the information about the markets, channels and customers are received. With the data available, the company can determine customer requirements, expectations and behaviour. Already this level of information provides data of market segmentation and determines customers' opinions and perceptions (Hooley et al. 2012, 100).

Typically qualitative research is followed by a quantitative research where the company can gather primary data from customers' direct feedback and can provide insights into problems (ibid. 100). Also primary data will help the company understand the secondary findings and evaluate the reliability and validity of the data.

In current tyre segment, in niche markets and with this target group marketers must create a strong relationship with their customers and it is crucial to point out what is the value they will provide (Kotler & Keller 2012, 207). Customers are trying to cope with higher fuel prices, tougher government regulations, increased environmental consciousness and with other economic realities. It is important to create mutually beneficial alliances where both parties' needs and values are brought closer together (Hooley et al. 2012, 90). Will customers' future needs and expectations change when factors such as social and economical changes affect their living standards?

In the United States there are approximately 29'000 - 30'000 independent tyre dealers. The primary decision makers on the tyre buying process are men with 61% share. The growth of buying online has increased among the 18 to 34 years old consumers in the United States. If women do the purchasing, it is most likely done online (Modern Tire Dealer 2015).

Modern Tire Dealer released 'Facts Issues 2015' in January and claims that consumers do not really care where the tyre is produced and 70% of consumers don't have brand preference. In most purchasing events, a tyre dealer is the person that consumers rely on. Dealer's recommendation about the brand is valued (2015).

4.4 Competitors

As Sun Tzu has said; “If you know your enemy as you know yourself, you need not fear the results of a hundred battles” (Clavell 1981, according to Hooley et al. 2012, 106). The same principle can be applied for today’s business. A company has to identify their relevant competitors and have the knowledge of competitors’ strengths and weaknesses. To know competitors future actions is important for every company’s marketing strategy (Hooley et al. 2012, 106).

To understand markets and competitive environment: company, competitors, customers, every company must have a clear definition of the industry’s structure they are operating in, know their competitors as well as to understand customers’ requirements and choices (ibid. 55).

An ongoing challenge between the competitors is to understand the trends in demand, the sources of profit and the structure of the industry regarding tyre manufacturers with their intermediaries (Czinkota & Ronkainen, 2010). If company wants to improve its position within the market or maintain it, the competitor analysis and monitoring is crucial.

There are several companies in the markets which manufacture tyres for a variety of heavy vehicles such as Goodyear, Bridgestone, Alliance, Michelin, Continental AG, Pirelli and Hankook. Based on the results received from the secondary interviews; Firestone, Primex and Goodyear are the most used tyre brands in the Southern U.S. skidder markets. Competitor analysis will be made by comparing these three skidder tyre manufacturers from which Firestone was clearly the most used tyre brand. Information for the analysis is presented here, in the chapter four, but the conclusions will be part of the chapter six.

A company must identify what aspects of business to benchmark in order to have relevant data which enables processes and operations to be compared (Hooley et al. 2012, 107). The focus on competitor analysis was not in a price or issues that can be old information in a couple of weeks. The goal was to investigate competitors’ actions and what they want to achieve.

First thing was to assess competitors' direction with current resources and future objectives: whether the company is expanding its operations in certain countries or building additional production facilities, hiring staff to a specific department or investing for Research and Development (R&D). These factors can be seen as a forecast of how competitors' see the future and also give other companies signals of competitors' strengths and weaknesses (ibid. 2012, 109, 117).

Second factors searched for competitor analysis are competitors' current and future strategies. The aim is to identify their goals, selection of a target market and strategic focus in a way which can be recognized as possible opportunities or threats for Nokian Tyres (ibid. 2012, 113, 119).

4.4.1 Bridgestone Tire Company, subsidiary Firestone



'Your Journey, Our Passion' (Bridgestone 2015).

The Bridgestone Tire Company Ltd was founded by Shojiro Ishibashi in Japan in 1931. Bridgestone Americas (BSAM) has its roots in two companies. In 1988 Bridgestone purchased Firestone Tire and Rubber Company, founded by Harvey Firestone in Akron, Ohio in August 1900. Their tyres are sold under the Bridgestone, Firestone, Dayton and other brand names. Bridgestone Corporation has its headquarter in Tokyo (Bridgestone 2015).

Firestones history with first rubber-tyre skidders and harvesters began in the late 1960s and the company continues working with the top equipment manufacturers in order to meet increasing demand of heavy tyres. According to Firestone, they were the first to adapt farm tyres for logging service (Bridgestone Americas Tire Operations LLC, 2011).

Firestone offers the wide range of tyres for the forest segment in North America and has one of the industry's best service networks to back this up. Company's rule for today's logging business is: "You can only make money when you keep the machines moving" (Bridgestone Americas Tire Operations LLC, 2011).

Brand Strategy

Bridgestone and Firestone have always had separate brands and slogans and they have been able to combine effectively marketing mix with product range. The corporation has announced (Bridgestone 2015) their wishes to clarify their brand strategy and to create awareness by global advertisement and by official worldwide Olympic partnering.

Bridgestone has sponsorship strategy to build brand awareness. Especially in the U.S. market Bridgestone has found the connection which settle well in American culture as they developed promotion and sponsorship strategy with professional sports leagues. In September 2015 the company started partnering with the National Football League (Bridgestone Americas, Inc). Advertisements during the big games has gained them brand recognition, consumer trust and growth in sales (Creative Guerrilla Marketing, 2015).

Nielsen is an American information and measurement company which measures and monitors what consumers watch and buy on a global and local basis. They have discovered that consumers can be reach through advertising showed during sport events for example in Super Bowl and Sunday Night Football (The Nielsen Company).

Bridgestone continues building brand power and global expansion with integrated brand strategy by partnering with sport properties such as: golf, skiing, football, hockey, soccer and motor sport. Firestone however has been more regional brand and the focus is to grow globally with brand management. The company assesses their strengths as a long history with forestry tyres and strong regional brand (Bridgestone 2015).

Locations in the United States

In the U.S. the company advertise their 'world-class customer service' and their dedication to 'serve society with superior quality' (Bridgestone 2015). Their new plant in Aiken, South Carolina was part of the company's global strategy which had influence

from the earthquake and tsunami in Japan 2011. Then the company realized how vulnerable their two off-the-road plants were. With the plant in the U.S., Bridgestone has been able to be closer to their customers who make a large percentage from their global revenue and have more dependable and cost effective deliveries (Strategic Insights, Bridgestone 2015).

In the figure 7, the locations of different plants in the U.S. have been marked with colours. The black circles are tyre plants or other tyre related plants, white circles are raw material plants and the rest are diversified product plants. For example in Bloomington, Illinois (3) and in Aiken, South Carolina (8) company produce off-the-road tyres.

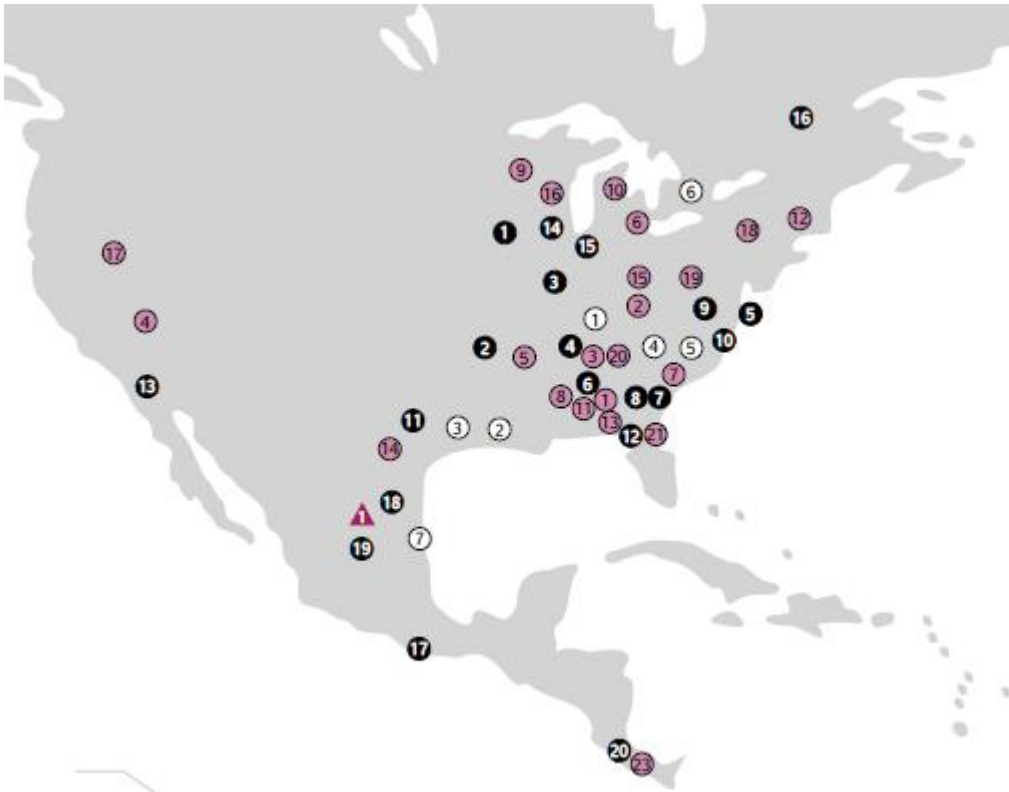


FIGURE 10. Locations in the U.S. (Bridgestone)

Strategy

Bridgestone has short-term ‘lean’ and mid to long term ‘strategic’ management measures that they wish to maintain in an optimum balance. Starting from year 2013, company’s mid-term management plan has focused on a “cultivating global corporate culture, developing human resources capable of global management and upgrading the global management structure” (Bridgestone 2015).

The highest priority in Bridgestone's strategy seems to be optimization of management reforms on a group and global basis. Midterm management plan for HR is to develop human resources capable of global management and for company's structure, upgrading the global management (Bridgestone 2015).

In Bridgestone's Annual Report (2014), their strategy was based on a highly competitive technological edge with the new and advanced technology. The company has set a growth strategy for years 2005-2015, where they plan to launch minimum of 10 new products successfully to the markets during the next ten years. Their goals include also improvements for the production, effectiveness to the existing products and services and increase their position gradually into developing and emerging markets. Bridgestone claims to create the need for tyres and brand loyalty in new areas while capitalizing the established ones (Creative Guerrilla Marketing 2015).

Bridgestone has announced in October 2015 that they will adopt new corporate governance structure to meet their goals of "becoming a truly global company" and becoming "Dan-Totsu in all aspects" (the Japanese term for 'the absolute and clear leader') of their business. With these values, the company wishes to have quality of its management and transparency of its decision making processes. The company seeks to further strengthen its internal control systems and have more effective strategic planning and decision making. These amendments will be presented to the shareholders in March 2016 for approval (Bridgestone 2015).

R&D

Bridgestone Corporation informed in October 2015 that their emphasis will be on accelerated "technology and business model innovations". The company's focus is on a quality and they announced to make continuous improvement in each and every area of business. Bridgestone Corporation wishes to create customer value by "infusing a culture of innovation throughout the enterprise, evolving the R&D structure, move from 'product' to 'solution'" by following trends and customer needs (Bridgestone 2015).

In Kodaira City, Tokyo the R&D and manufacturing will be reorganized and business design, research, manufacturing and testing will be strengthen. According to Bridge-

stone's latest news, they are expected to invest about 230 million Euros for this project and have opening of facilities in 2018 (Bridgestone 2015).

Environmental Mission

The Bridgestone group's environmental mission includes objectives such as; "be in harmony with nature, value natural resources, reducing CO₂ and other significant emissions". The Group has also long-term environmental vision of using 100% sustainable material in tyres by 2050 (Bridgestone 2015).

Bridgestone has been able to test a prototype tyre made entirely from alternative natural rubber called guayule. However, invention isn't new. During the World War II, guayule's barks and roots were turned into rubber and used as replacements when the Japanese cut supplying Asian rubber (Fast Company & Inc 2015).

In the future we should see more of guayule and understand its role in the tyre industry. Bridgestone's estimation is that guayule will be used in the 2020s tyres and solely by 2050 (Tire Review 1015).

According to Bridgestone (2015), the demand for tyres is expected to increase with the global population growth. That is why the company is investing highly to R&D. Natural rubber is the primary raw material in tyre production and estimation is that 90% of all natural rubber (*Hevea brasiliensis* rubber tree) is harvested from the Southeast Asia. However, guayule does not need the tropical environment. It grows in the Southwest U.S. and Northern Mexico in more dry regions. Bridgestone opened a research farm 2013 in Arizona which has all the needed equipment for R&D, experimental production and manufacturing to achieve their environmental vision (Bridgestone Americas Inc, 2015).

4.4.2 Alliance Tire Group (ATG)



”Application Specific - Purpose Built” (ATG 2015).

The Alliance Tire Company Ltd. has its roots in Israel from year 1950. The Group was founded in 2007 when a father and a son, Ashok Mahansaria and Yogesh Mahansaria bought an Israeli tyre company called Alliance Tire. Previously, Ashok and Yogesh had worked in a family business called Balkrishna Tyres (ATG 2015).

Alliance Tire Group (ATG) has three brands in the market: Alliance, Galaxy and Primex. Alliance was the first brand joint in 2007 and Galaxy and Primex were merged in year 2009. ATG is specialized in the sales of forestry, agricultural, industrial and OTR tyres worldwide. ATG’s corporate office is in India and has regional headquarters in the United States, Netherlands, Israel and South Africa (ATG 2015).

Strategy

In the off-highway tyre segment, the vision set for the group is to be among the top three global leaders in agriculture, forestry and construction tyre segments. Company’s intention is to ‘deliver superior value’ to their customers with lowest Total Cost of Ownership (TCO) which is their concept for the off-highway tyres decision-making process.

The group’s focus is on the “innovations, technology and cost efficient manufacturing and distribution practices”. ATG has invested in product mix availability and re-aligned their production capacities. Company puts a lot of effort on understanding customers’ (end-users, contractors and farmers) unique needs and claims that it has strengthen their position in the markets and helped improve brand image among OEM customers (ATG 2015).

ATG's sales globally are expected to double in less than 5 years to more than 940 million Euros and on the OE-side, Alliance has consolidated its position among global and regional farm equipment makers. The group has a new control for the farm and OTR tyre making with an increased product supply (ATG 2015).

Brand Strategy

Alliance and Primex are known from their history in the forestry markets serving Original Equipment Manufacturers (OEM) and aftermarkets with 'application-specific and purpose-built' tyres (ATG 2015). Their focus is on the work-tyre segment industry and they will continue investing in technology and in technical know-how. Both brands are considered as flagship brands in the same segment.

After the acquisition in 2010, the 'GAP brand strategy' (Galaxy-Alliance-Primex) has been focusing highly on modifying company's strengths in forestry, agriculture and construction tyre sectors. Alliance has hired a former Michelin North America Inc. Executive as their reinforcement (Tire Business 2014) and started to push flotation tyres to North American markets more aggressively since year 2014 (ATG 2015).

Plant Locations

The Group has three manufacturing facilities: two plants in India (one in Tirunelveli, Tamil Nadu made in 2009 and is now being expanded, and the new plant in Dahej, Gujarat) and the third plant in Hadera, Israel. Alliance is planning to increase manufacturing capacity in India and Israel. In Tirunelveli they manufacture 84'000 tons annually, producing radial tyres for the AG and construction segment as well as bias tires for AG, construction, OTR and forestry. Plant in Gujarat produces mix of radial agricultural and construction tires, including some all-steel designs (ATG 2015).

Apart from Alliance Tire Groups own manufacturing, they receive tyres from China and Taiwan from their contract manufacturers. The group invest heavily on strategic locations of their centres and warehouses which they say, have helped them with innovative service solutions they offer (ATG 2015).

The company claims to have a thorough network of dealers and distributors. Alliance has three warehouse distribution centres (figure 11) in the Southeast United States.

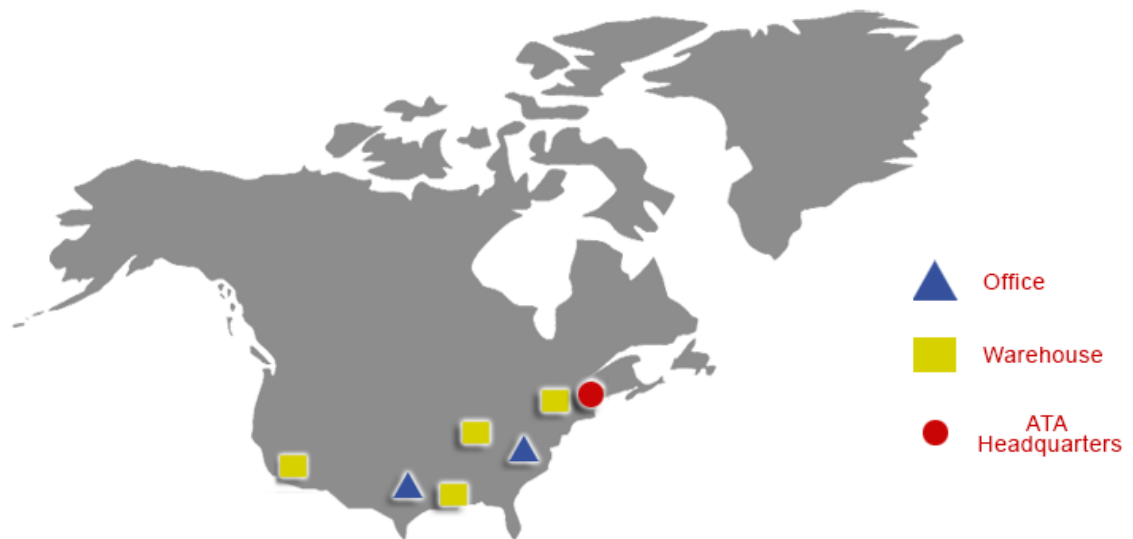


FIGURE 11. Locations in the U.S. (ATG)

In the United States, Alliance has a dealer support programs which focuses on fulfilling the needs of marketing support and training. They provide distributor and dealer conferences and in the future, training modules should be available as mobile applications (Tire Business 2014).

R&D

To have a thorough view of local and global markets, ATG has R&D centres in the United States, India, Israel and South Africa which is part of their strategic location thinking. Their focus is on constant product innovation, engineering, technology and product development. ATG strongly believes in minimizing the impact of its operations on the environment (ATG 2015).

End-users and OEMs are involved on a regular basis for product development and in field trials. ATG has been able to “reduce product development timelines with simulation software and prototyping technology”. One said to be as ‘*abacus finite element software*’ (ATG 2015).

4.4.3 The Goodyear Tire & Rubber Co



“Made to feel good” (Goodyear 2015).

The Goodyear Tire & Rubber Company was founded in 1898 by Frank Seiberling but was named after the inventor of vulcanized rubber, Charles Goodyear. In 1921 Goodyear made their first off-the-road tyre called ‘the Rut-Proof tire’ (Goodyear 2015).

In 2013 was the grand opening of company’s new headquarters in Akron, Ohio (global, North America, Dunlop Tires North America and innovation centre) (Goodyear 2015).

Plant Locations

Goodyear started manufacturing commercial tyres and OTR tyres in Topeka, Kansas in late 2010. OTR tyres are also produced in Brazil, Columbia, Luxemburg, South Africa, India, Japan, Indonesia and Malaysia (Goodyear 2015).

In October 2015, The Goodyear announced about the disbandment of its global alliance with Sumitomo Rubber Industries (SRI) Ltd. (Shareholder 2015). Another new is that Goodyear will start building a new factory in Mexico in the middle of 2017 with their focus on high-value added consumer tyres (Goodyear 2015). This has no effect on the OTR sector but indicates company’s strategic focus towards passenger car sector.

In a dealer meeting 2015, Goodyear announced that they will introduce low-cost radial tyres which have been manufactured in the United States. Goodyear points out that the timing is perfect because of the tariffs in consumer tyres which are from 30% to 109% when imported from China (Goodyear 2015; MTD Modern Tire Dealer 2015).

Brand Strategy

With Goodyear’s Blimp, the company has quite impressive way to advertise in America. Blimp is a non-rigid airship shaped as a vessel and the first blimp flew in 1925 (Goodyear 2015).



PICTURE 9. Goodyear Blimp “Mayflower” in 1970 (Don Boyd gallery)

The company has a very successful history with Formula Ones and now they are sponsoring sport events such as NASCAR auto racing (Goodyear 2015).

Goodyear has informed in their recent (2015) dealer meeting that they start selling tyres on goodyear.com website and their focus will be highly on internet. In their mission the company inform to be committed to continuous improvement and innovation and to work hard delivering the highest quality. The company is building a global platform of sales and marketing focusing on brand and value proposition. Goodyear’s goal is “One Goodyear Way” (Goodyear 2015).

Modern Tire Dealer article (2014) highlights the features of Goodyear’s website. Dealer Tire & Service Network (TSN) was launched in 2014 which offers dealers possibility to modify their individual company information (logo, history, photos, offers, promotions). The year 2014 was free of charge but from year 2015 onwards, dealers had to participate in certain Plus and Premium programs to maintain their websites active.

Strategy

Goodyear’s ‘One Strategy’ in North America includes consumer, commercial truck and off-highway segments. Part of the Goodyear’s overall strategy is to understand consumer purchasing habits. The company claims that especially the millennial in consumer tyres will be critical key for their success. The company’s focus is in the most profitable replacement tyre and OE market segments. Goodyear’s intention is to build capacity for the future and become more integrated company (Goodyear 2015).

Company's 'Strategy Roadmap' has a purpose of spotting "MegaTrends that are shaping the direction of the global tyre industry". Attention has been in increased consumer demand towards high value added tyres. These tyres have features such as saving fuel, driving comfort and wet traction (Annual Report 2014, 4).

Goodyear's key strategies have been concerning market-back product development, targeting profitable segments with more selective approach to gain competitive advantages and developing company's personnel. In manufacturing their focus has been improving efficiency and supply chain (Annual Report 2014, 7).

R&D

During 2014 Goodyear launched 21 new commercial tyres and 17 consumer tyres. The company will keep targeting on price and product mix to have lower cost materials where possible as well as finding other compensatory opportunities to reduce costs of raw materials (Annual Report 2014, 8).

Goodyear's concern is also in world resources and in responsible production. They invest in R&D, innovation and environmental friendly products. The company has manufactured tyres from renewable biomass (Goodyear 2015).

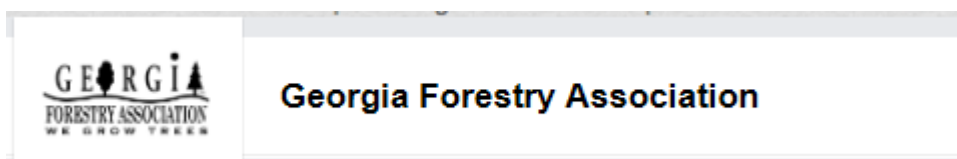
Goodyear manufactures and markets tyres and rubber-related chemicals. Goodyear distributes their tyres for most applications. In North America their business has been profitable and they forecast for sustainable growth (Goodyear 2015).

5 SOURCES AND CONTACTS

Search for the potential end-users started from different **Forestry and Logging Associations** in Southeast United States. A list of all forestry and logger associations in the U.S. from year 2015 will be found from appendix 2. Information for the appendix 2 was received from the Southern Loggin' Times Magazine, January-February release in 2015.

Most of the associations have functioning websites with contact information. Forestry and logger associations publish different kind of information and articles on their newsletters and magazines but also on their website, on LinkedIn and on Facebook. As an example, through the Tennessee Forestry Association (TFA), products and services can be advertised to their members (loggers, professional foresters, equipment dealers, landowners, sawmills, paper mills and trucking companies) in TFA's annual or quarterly publications (magazine, hardcopy, CD, email, online from their website) that reaches over 2200 members (TFA website 2015).

LinkedIn is one of the channels to find information from different associations. As an example, Georgia Forestry Association has 981 members on LinkedIn. There are lot of happenings, publications, public announcements and annual meetings informed on their site.



Source: LinkedIn www.linkedin.com

LinkedIn offers data and contact information from private people to companies. Personal profiles can be accessed though the title or job description (master logger, operator), companies and associations by their name, area or field. As an example couple of organizations: Southern Loggers Cooperative, Truck Loggers Association and American Forest & Paper Association.

Facebook has more forest and loggers associations than LinkedIn. Facebook also has a lot of information about different events with pictures. Some examples from associa-

tions: Louisiana Forestry Association, Georgia Forestry Association, Mississippi Forestry Association and South Carolina Forestry Association.



Source: Facebook www.facebook.com

From **the Southern Loggin' Times Magazine**, I was able to gather detailed information about 30 companies in Southeast United States that have skidders and/or feller bunchers just by reading their online magazines from years 2014 and 2015. Magazines provide very detailed interviews that suited research requirements.

An Excel file of 60 loggers based in Georgia was received from same source with loggers contact information (telephone and fax numbers, addresses, titles). Excel will not be published in the thesis.

In appendix 3, is a list of **trade events** that take place during the year 2015. The list was from January-February release of the Southern Loggin' Times Magazine. Associations have **event calendars** on their websites which would be a good source for meeting people and do marketing for specific target groups.

The American Loggers Council www.americanloggers.org does not keep a list of each logging business in their database, only the officers and directors for the State and Regional Associations. Below is a list of those State and Regional Logging Associations

that are members of the American Logger Council. American Loggers website also provides a membership page.

FIGURE 12, State and Regional Associations (The American Loggers Council)

Alabama Loggers Council
Independent Logging Contractors of Alabama, Inc.
Northern Arizona Loggers Association
Arkansas Timber Producers Association
Associated California Loggers
Southeastern Wood Producers Association
Great Lakes Timber Professionals Association
Associated Logging Contractors, Inc.
Green River Loggers Council
Louisiana Loggers Association
Louisiana Logging Council
Professional Logging Contractors of Maine
Michigan Association of Timbermen
Mississippi Loggers Association
Missouri Logging Council
Montana Logging Association
New Hampshire Timber Harvesting Council
Carolina Loggers Association
Northeastern Loggers Association
Associated Oregon Loggers, Inc.
South Carolina Timber Producers Association
Texas Logging Council
Virginia Loggers Association
Washington Contract Loggers Association

From different State and Regional logging associations one should be able to find a link or list of the companies and individual loggers who have participated in logger training and educational programs such as ‘Master Logger’. Some information and participant lists were found directly with Google search.

Some of the sources and contacts did not produce any results. In some cases, the reason was that the timing was very busy for example for the loggers. Schools and official organizations had the summer holiday. In most places the problem was that there were no systems build for this kind of data gathering and such information simply was not available.

6 RECOMMENDATIONS AND CONCLUSION

The **objective** of this study was to find different channels that lead to the potential customers. Based on the **results**, the best channel finding end-users was easy to determine: the Southern Loggin' Times Magazine. Naturally the results can be considered in many ways. If the need is purely quantitative, one channel over the others was clearly the best. In situations where more detailed content is requested this could be laborious, but one surprising source was found for that as well. Thus the results can be viewed from many different perspectives.

For the company, the researcher's personal suggestion is to create good relationships for the associations. To advertise tyres in associations' magazine, publish an article of a satisfied customer or about a successful tyre testing. This is based on the fact that the loggers exchange important information with each other and trust each other's word. This way the end-users can demand tyres they want from tyre shops and dealers. The effect of demand radiates to the definition of sales channels in that area.

Findings from LinkedIn and Facebook may not be accurate or might be even misleading information. Obviously this applies to all websites. However, the researcher's proposition is that these channels should be used for information search and detect the trends, events, topicalities and for example for drastic changes in user numbers. Social media is important source for feedback from products, services and customer satisfaction. It is an easy way to pass on the information when received good or bad experience and for companies to pick up hints.

In the future new channels parallel to Facebook will appear to the market for changing information. People usually are social by nature; it would be good to know what kind of forums or applications loggers use. In this way the companies could also connect easier with the end-users and to market their products through these channels. Trade events are good places to meet the end-users and others related to the business. This channel could be utilized much more.

Data collection problems appeared when certain websites were not specific enough and the information was left inadequate. These organizations may be lacking the skills,

personnel or functioning system. Some of the websites looked quite old and without the dates, the outdated data could be more misleading than helpful.

Every company must find their own sources and methods which approved best from the variety of possible contact groups and different channels. The researcher's recommendation for the company is to continue with international market researches since new information was found relatively easy and in some cases, an outside view of the markets can open up new channels that locals do not necessarily even think about. However, most of these activities and recommendations will work locally as well.

Based on the **key findings** a comprehensive picture of the end-users were obtained; owner information, logging operations, list of equipment, equipment dealers, tyres, current challenges, future prospects, as well other numbers and figures about their business. The practical benefit of the results is important for the company and for the sales manager of this region.

The **research data** has been given to the company to identify and compare alternatives. To gain benefits in decision-making process, follow-up or in further research, the findings must be evaluated in company level as well. Since the data was collected from the secondary sources, findings are given forward for testing.

In some areas of the Southern United States, Nokian Tyres Inc has a working network of tyre and equipment dealers. Company must determine if these distribution channels can serve the skidder customers. With the information received from this study a search for potential dealers in areas with large potential of users has started. Results from the study have provided contacts to the dealer network and Nokian Tyres representatives. Results will also help store managers targeting new potential customers.

Tyre shops and dealers must decide which channels to use in order to reach their customers. It is recommended that they use multiple channels and try new ones as well. In addition, would be interesting to find out how equipment dealers fit in the picture of finding new customers. Maintaining close relationships to the customers seems to be an effective way to remain competitive in the United States.

The **overall market conditions in the United States** are stable and the country has the largest economy in the world. Canada, Mexico and China are the largest trading partners with the United States in both export and import. The current market situation in the construction industry and in the housing market has signs of improvement. Mining sector has declined but that is also a global phenomenon. The paper industry in the United States continues to decline.

In the United States, the forest land area covers 304 million hectares and growing stock volume is 47 billion cubic meters. The country makes most roundwood felling and is among the largest lumber producers in the world. The forest product industry is impressive employer in most of the states.

The **forest industry and situation in Southern states** looks promising with rising demand for lumber and logs (especially from China), the huge appearance of wood pellet industry in Georgia and because of the expansions and investments made in Southern sawmills. Canadian lumber industry is claimed to shrink down and the effects of ‘pine bug’ has been increasing. This indicates heavy positive pressure towards Southern states. However, the different trade agreements and duties between the United States and Canada can have critical outcomes for the future which can be seen as huge threat for the industry.

Logging equipment manufacturers predict more efficient equipment into the markets but mostly the harvesting methods and markets are predicted to remain fairly the same. **Key concerns** among the loggers are increased diesel fuel costs and insurance rates, shortage of skilled operators and wet conditions in the logging areas which creates different kind of challenges.

Tyres are necessity, not an industry with much of excitement. Tyres are used on a daily basis but still it is a challenge to make tyres interesting and relevant. Mostly the vehicle owners will buy the same brand they have or buy ones recommended by the dealer, tyre shop or they rely on the recommendations of other operators, loggers.

In a competitive environment, the **competitor analysis** and monitoring is crucial. When searching different types of advantages companies try to achieve and their likely actions, evaluating the credibility of the information can be difficult. Some information is

obviously confidential and some leaves too much room for interpretation. However, researcher's conclusions about competitors are following.

Each brand; Firestone, Primex and Goodyear have been in forestry markets for a long time. Based on the findings, Firestone and Primex stands out quite clearly in off-the-road (OTR) sector with their investments, while Goodyear seem to be targeting more towards consumer markets.

Globally new manufacturing facilities and expansions are reported from all three brands. In the United States, Firestone and Primex have heavily invested in the South-east area where their plants, centres or warehouses can be found. Their strengths are clearly in the dealer and distribution networks and offered services networks.

Primex seems to have a desire to conquer the United States markets and the effort is significant. The group has invested on strategic locations, product mix availability, hired key players into their company, re-aligned their production capacities and are pushing for sale expansion. Group's vision for OTR segment is to be among the top three in global leaders and their focus is to deliver superior value with lowest total cost of ownership.

Firestone is a strong regional brand and their focus is to grow globally. The company has invested in a new plant in South Carolina to be closer to their customers highlighting customer service and quality in their actions. Company centralize on competitive technological edge and innovations by investing highly on R&D.

Based on the findings, **Goodyear** manufactures OTR tyres globally in many places but the silence in the news or articles raises questions about their future. Company's focus towards internet sales, targeting only profitable segments and having more selective approach for the markets indicates about their orientation.

According to the competitors' actions, Firestone and Primex have similar trends and Nokian Heavy Tyres will be a challenger for them. Competitors do see the future in the United States markets good and worth investing.

Possible **upcoming research** could analyse the results and new business connections from the study. With qualitative research, the company could gather primary data from customers' direct feedback. Also primary data would help the company understand the secondary findings and will provide more accurate indications for decision making.

REFERENCES

Alasuutari, P. 2011. Laadullinen Tutkimus 2.0. 4th ed. Tampere: Vastapaino.

Albany Herald news. 2014. Forest business gives Georgia solid lead. Read 2.8.2015.
<http://www.albanyherald.com/news/2014/jul/30/lynn-michaelis-forest-business-gives-georgia/>

Alliance Tire Group (ATG). 2015. ATG website. Read 13.9.2015.

<http://www.atgtire.com/Default.aspx>

ATG. 2015. Advantage. Read 13.9.2015. <http://www.atgtire.com/AtgAdvantage.aspx>

ATG. 2015. Brochure. Read 13.9.2015.

<http://www.atgtire.com/images/brochures/GALAXY-PRIMEX-AGRI-FORESTRY-RANGE-2011.pdf>

ATG. 2015. Products. Read 13.9.2015. <http://www.atgtire.com/products-forestry.aspx>

ATG. 2015. Profile. Read 13.9.2015. <http://www.atgtire.com/ProfileWW.aspx>

ATG. 2015. Quality Policy. Read 13.9.2015. <http://www.atgtire.com/QualityPolicy.aspx>

ATG. 2015. Vision, Mission. Read 13.9.2015.

<http://www.atgtire.com/VisionMission.aspx>

Bridgestone Americas Inc. 2015. Press release. Read 10.10.2015.

<http://www.bridgestoneamericas.com/en/newsroom/press-releases/2015/-from-seed-to-tread--bridgestone-reveals-first-tires-made-entire#sthash.xdsGsh2h.dpuf>

Bridgestone Americas Inc. 2015. Press release. Read 26.9.2015.

<http://www.bridgestoneamericas.com/en/newsroom/press-releases/2015/bridgestone-supports-schools-with-contest-to-fund-athletic-and-w#sthash.pY3P2Q5o.dpuf>

Bridgestone. 2015. Annual report 2014. Read 26.9.2015.

<http://www.bridgestone.eu/~media/Files/Corporate/Central/Downloads/2014%20Annual%20Report%20Operational.ashx>

Bridgestone. 2011. Brochure. Read 12.9.2015.

<http://dealersupport.firestoneag.com/pdfs/brochures/Full-Line%20Forestry%20Brochure.pdf>

Bridgestone. 2015. Mid-term Management Plan. Read 26.9.2015.

http://www.bridgestone.com/corporate/library/mid_term/pdf/mid-term15.pdf

Bridgestone. 2015. News. Read 12.9.2015.

<http://www.bridgestone.com/corporate/news/2015101601.html>

Bridgestone. 2015. Strategic Insights. Read 12.9.2015.

<http://www.strategicdev.com/wp-content/uploads/2015/07/BridgestoneJune2015.pdf>

Bridgestone. 2015. Strategy. Read 26.9.2015.

<http://www.bridgestone.com/corporate/strategy/>

Bridgestone. 2015. Technology and Innovation. Read 10.10.2015.

<http://www.bridgestone.eu/corporate/corp/technology-and-innovation/>

Bridgestone. 2015. Who we are. Read 12.9.2015.

<http://www.bridgestonetire.com/about/who-we-are>

Bureau of Labor Statistics. 2015. United States Department of Labor. Read 25.7.2015.

<http://www.bls.gov/news.release/empsit.nr0.htm>

Creative Guerrilla Marketing. 2015. The Marketing & Branding Strategy Behind Bridgestone Tires. Read 12.9.2015.
<http://www.creativeguerrillamarketing.com/advertising/the-marketing-branding-strategy-behind-bridgestone-tires/>

Czinkota, M., Ronkainen, I. 2010. Principles of International Marketing. 9th ed. Australia: South-Western Cengage Learning.

Deloitte. Corporate Tax Rates 2015. Read 26.7.2015.
<http://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-corporate-tax-rates-2015.pdf>

Design Forum. 2014. Fennia Prize. Read 15.8.2015.
http://www.designforum.fi/prizes/fenniaprize/2014_en

Economic Policy Institute. 2012. U.S. lags behind peer countries in mobility. Read 22.8.2015. [http://www.epi.org/publication/United States-lags-peer-countries-mobility/](http://www.epi.org/publication/United%20States-lags-peer-countries-mobility/)

Eriksson, M. & Lindroos, O. 2014. Productivity of harvesters and forwarders in CTL operations in northern Sweden based on large follow-up datasets. The International Journal of Forest Engineering (Volume 25, Issue 3, 2014). Read 18.7.2015.
<http://www.tandfonline.com/doi/full/10.1080/14942119.2014.974309>

European Commission. 2015. The Transatlantic Trade Investment Partnership (TTIP). Read 1.8.2015. <http://ec.europa.eu/trade/policy/in-focus/ttip/>

Fast Company & Inc. 2014. How tire company Bridgestone is solving a tricky natural resource issue. Read 12.9.2015. <http://www.fastcompany.com/3033390/innovation-agents/how-tire-company-firestone-is-solving-a-tricky-natural-resource-issue>

Forest Resources Assessment (FRA). 2010. Main report. Read 1.8.2015
<http://www.fao.org/docrep/013/i1757e/i1757e.pdf>

Furman, J. 2015. Trade, Innovation, and Economic Growth. Read 1.8.2015.
https://www.whitehouse.gov/sites/default/files/docs/20150408_trade_innovation_growth_brookings.pdf

Gallup Inc. 2005. Post-9/11 Patriotism Remains Steadfast. Read 22.8.2015.
<http://www.gallup.com/poll/17401/post911-patriotism-remains-steadfast.aspx>

Goodyear. 2015. Annual report 2014. Read 27.9.2015.
https://corporate.goodyear.com/content/dam/goodyear-corp/documents/annualreports/GT2014_AR.pdf

Goodyear. 2015. Corporate history. Read 27.9.2015.
<https://corporate.goodyear.com/content/goodyear-corp/en-US/about/history.html>

Goodyear. 2015. History. Read 27.9.2015. http://www.goodyear.eu/home_en/about-us/our-history/

Goodyear. 2015. Mission. Read 27.9.2015.
<https://corporate.goodyear.com/content/goodyear-corp/en-US/about/mission.html>

Goodyear. 2015. Quality, Innovation. Read 27.9.2015.
http://www.goodyear.eu/home_en/goodyear-quality/innovation/

Goodyear. 2015. Shareholder report. Read 11.10.2015.

<http://apps.shareholder.com/sec/viewerContent.aspx?companyid=AMDA-1IFBEB&docid=10938016>

Hooley, G., Piercy, N.F., Nicoulaud, B. 2012. Marketing Strategy & Competitive Positioning, 5th ed. Harlow: Pearson.

International Mining (IM). 2012. Mining Tyres. Read 27.9.2015. <http://im-mining.com/2012/09/01/mining-tyres/>

John Deere. 2015. Company's website, 50 years. Read 5.7.2015.

https://www.deere.com/en_US/campaigns/skidders50.page?cid=VURL_Skidder50

John Deere. 2015. Forestry Timeline. Read 5.7.2015.

https://www.deere.com/en_US/industry/forestry/learn_more/about_construction_and_forestry/history/history.page

Journal of Forest Engineering. 2001. Effect of Tire Size on Skidder Productivity Under Wet Conditions. Klepac, J., Stokes, B., Roberson, J. Read 5.9.2015.

<https://journals.lib.unb.ca/index.php/ijfe/article/view/9926/10123>

Kotler, P., Keller, K.L. 2012. Marketing management. 14th ed. Harlow: Pearson.

Laatukeskus. 2013, Excellence Finland. Read 15.8.2015.

<http://www.laatukeskus.fi/palvelut-vuoden-laatuinnovaatio-kilpailu-2013/international-quality-award-year-prizes-have-been-awarded>

Lahtinen, M. 2011. The global challenges of harvesting and how the CTL method can respond to them. Metsätalouden koulutusohjelma. Mikkelin ammattikorkeakoulu. Bachelor's thesis.

Modern Tire Dealer (MTD). Facts Issues 2015. Research by BrightLine Marketing LLC. Read 5.9.2015. <http://www.moderntiredealer.com/uploads/stats/mtd-facts-issue-2015.pdf>

Modern Tire Dealer (MTD). 2015. Articles. Read 27.9.2015.

<http://www.moderntiredealer.com/article/312486/goodyear-tells-dealers-it-will-sell-tires-online>, <http://www.moderntiredealer.com/article/312302/get-ready-for-the-millennials>

Nielsen. 2015. Company website. Read 10.10.2015.

<http://www.nielsen.com/us/en/about-us.html>.

Nokian Heavy Tyres. 2015. Company's website. Read 27.6.2015.

<http://www.nokianheavytyres.us/area-of-se?kayttoalue=12607912>.

Nokian Heavy Tyres. 2015. Technical manual, Forestry tyres. Read 27.6.2015.

http://www.nokianheavytyres.us/files/nht/technical_manual/NokianHeavyTyres_Technical_manual_03_Forestry_20140609.pdf

Nokian Heavy Tyres. Heavy Tyre eNews 11/2013. Read 27.6.2015.

<http://newsletter.nokiantyres.com/heavy-tyres?issue=33780582>

Oxford Learning Lab Ltd 2015. Read 6.6.2015.

http://www.oxlearn.com/arg_Marketing-Resources-PESTLE--Macro-Environmental-Analysis_11_31

PISA. 2012. Report. Read 22.8.2015.

[http://www.oecd.org/pisa/keyfindings/PISA2012_US%20report_ebook\(eng\).pdf](http://www.oecd.org/pisa/keyfindings/PISA2012_US%20report_ebook(eng).pdf)

Ponsse. 2015. Annual Report 2014. Read 4.7.2015. <http://www.ponsse.com/media-archive/other-publications/annual-reports/2014>

Ponsse. 2015. Business sector. Read 28.6.2015.

<http://www.ponsse.com/ponsse/business-sector>

Ponsse. 2015. Equipment and harvesting costs. Read 28.6.2015.

<http://www.ponsse.com/ponsse/business-sector/cut-to-length-method/equipment-and-harvesting-costs>

Ponsse. 2014. News, Design Forum. Read 15.8.2015.

http://www.designforum.fi/prizes/fenniaprize/2014_en.

Ponsse. 2015. Product News 2015. Read 4.7.2015.

file:///C:/Users/Marika/Documents/Downloads/PONSSE_Product_News_2015_ENG.pdf

PR Newswire Association LLC. 2015. Article. Read 27.9.2015.

<http://www.prnewswire.com/news-releases/goodyear-to-build-tire-factory-in-san-luis-potosi-mexico-300071798.html>

Reed Smith LLP. 2014. Sanctions. Read 6.8.2015.

http://www.reedsmith.com/files/Publication/9221cf81-e4f7-4907-ab2c-f7dc249eac58/Presentation/PublicationAttachment/441e0ec9-dbd8-4c3a-b1fa-0bf7ed4d5872/alert_14-255.pdf?utm_source=Mondaq&utm_medium=syndication&utm_campaign=View-Original

RitchieWiki 2013. Ritchie Bros. Auctioneers. Everything about Equipment. Read 11.7.2015. <http://www.ritchiewiki.com/wiki/index.php/Skidder>

State Industry Economic Impact. 2015. American Forest & Paper Association. Read 1.8.2015 <http://www.afandpa.org/>

SteamFeed. 2015. Heavy-duty OTR tire manufacturing in the UNITED STATES. Read 5.9.2015. <http://www.steamfeed.com/heavy-duty-otr-tire-manufacturing-in-the-us-industry-market-research-report-now-available-from-ibisworld/>

Strategic Management Insight. 2013. PEST & PESTEL Analysis. Read 6.6.2015.

<http://www.strategicmanagementinsight.com/tools/pest-pestel-analysis.html>

Šušnjar, M., Horvat, D., Pandur Z., Zorić, M. 2015. Development of forest machines – new trends. Institute of Forest Engineering Faculty of Forestry, University of Zagreb. Read 5.7.2015.

http://www.crojfe2015.com/r/i/5.%20CROJFE_2015_Presentation_Susnjar.pdf

The City Wire Staff, Talk Business and Politics. 2015. Study: Consumers favor ‘Made in UNITED STATES’ products over sustainability. Read 22.8.2015.

<http://www.thecitywire.com/node/38039#.VhZqvPntlBc>

The Global Innovation Index. 2015. Global Innovation Index 2015: Switzerland, UK, Sweden, Netherlands, UNITED STATES are Leaders. Read 8.8.2015.
<https://www.globalinnovationindex.org/content/page/press-release/>

The Hofstede Centre. 2015. The UNITED STATES's Cultural Dimensions. Read 29.8.2015. <http://geert-hofstede.com/united-states.html>

The International Journal of Forest Engineering. 2014. The cost model for calculation of forest operations costs. Ackerman, P., Belbo, H., Eliasson, L., de Jong, A., Lazdins, A., Lyons, J. Read 18.7.2015.
<http://www.tandfonline.com/doi/full/10.1080/14942119.2014.903711>

The Tennessee Forestry Association (TFA). 2015. Read 13.6.2015. www.tnforestry.com

The Trans-Pacific Partnership. 2015. The Office of the United States Trade Representative. Read 1.8.2015. <https://ustr.gov/tpp/#overall-us-benefits>

The United States Department of the Treasury. 2011. Report. Read 8.8.2015.
<http://www.treasury.gov/resource-center/tax-policy/Documents/Research%20and%20Experimentation%20report%20FINAL.PDF>

The Wall Street Journal. 2015. U.S. Birthrate Hits Turning Point. Read 22.8.2015
<http://www.wsj.com/articles/u-s-birthrate-hits-turning-point-1434513662>

The White House. 2010. Executive Summary. Read 8.8.2015.
<https://www.whitehouse.gov/innovation/strategy/executive-summary>

Timber West, Journal of Logging & Sawmills. 2013. Looking to the future in logging equipment. Read 15.8.2015.
http://forestnet.com/TWissues/2013_july_august/looking_to_the_future.php

Tire Business. 2014. News. Read 13.9.2015.
<http://www.tirebusiness.com/article/20140205/NEWS/140209966>

Tire Review. 2015. Bridgestone turns out first guayule prototype tires. Read 10.10.2015. <http://www.tirereview.com/bridgestone-turns-out-first-guayule-prototype-tires/>

Trading Economics. 2015. Disposable Personal Income. Read 25.7.2015.
<http://www.tradingeconomics.com/united-states/disposable-personal-income>

Trading Economics. 2015. Labour-costs. Read 25.7.2015.
<http://www.tradingeconomics.com/united-states/labour-costs>

Transparency International. 2014. Corruption Perceptions Index. Read 6.8.2015.
<http://www.transparency.org/cpi2014/results>

U.S. Department of Commerce. 2015. Census Bureau and Economic Indicators Division, Trade Partners year to date Jul. 2015. Read 26.7.2015.
http://www.trade.gov/mas/ian/build/groups/public/@tg_ian/documents/webcontent/tg_ian_003364.pdf

VanNatta Logging and Forestry site. 2012. Skidder. Read 11.7.2015.
<http://www.vannatabros.com/index.html>, <http://www.vannatabros.com/skidder.html>

World Factbook. 2015. Central Intelligence Agency, People and Society. Read 22.8.2015 <https://www.cia.gov/library/publications/the-world-factbook/fields/2010.html>

World's Top Exports. 2015. Workman, D. Read 6.8.2015.
<http://www.worldstopexports.com/united-states-top-10-exports/2001>

PICTURES:

PICTURE 1. Skidders and Feller bunchers. John Deere. Accessed: 5.7.2015.
http://www.deere.com/en_US/industry/forestry/forestry.page?

PICTURE 2. Cable Skidder. Global Machinery Network Inc. Accessed: 5.7.2015.
<http://www.equipfind.com/logging/clark664.htm>

PICTURE 3. Grapple Skidder. Loggin On. Accessed: 5.7.2015.
http://www.logginon.net/new-wheel-weight-package-for-john-deere-skidders_news_op_view_id_655

PICTURE 4. Feller Buncher. Agricultural and Biological Engineering. Accessed: 5.7.2015. <http://abe-research.illinois.edu/ASABERobotics/2008/ASABERoboticsCompetition2008.html>

PICTURE 5. Forwarder. Direct Industry. Accessed: 4.7.2015.
<http://www.directindustry.com/prod/ponsse-oyj/product-56915-370508.html>

PICTURE 6. Harvester. John Deere. Accessed: 5.7.2015.
https://www.deere.com.au/en_AU/products/equipment/harvesters/harvesters.page

PICTURE 7. Dual Harwarder. Ponsse. Accessed: 4.7.2015.
<http://www.ponsse.com/products/dual-harwarders/buffalodual>

PICTURE 8. A Steam Donkey. VanNatta Logging and Forestry site. Accessed: 4.7.2015. <http://www.vannatabros.com/histlog.html>

PICTURE 9. Goodyear Blimp "Mayflower" in 1970. Don Boyd gallery. Accessed: 11.10.2015. <http://www.pbase.com/donboyd/image/94522124>

FIGURES:

FIGURE 1. Research Process.

FIGURE 2. Disposable Personal Income with Forecast. Trading Economics 2015. Accessed: 25.7.2015. <http://www.tradingeconomics.com/united-states/disposable-personal-income/forecast>

FIGURE 3. Labour Costs with Forecast. Trading Economics 2015. Accessed: 25.7.2015. <http://www.tradingeconomics.com/united-states/labour-costs>

FIGURE 4. Forest Land Area. Metla; FRA 2010. Accessed: 1.8.2015.
http://www.metla.fi/metinfo/tilasto/julkaisut/vsk/2013/vsk13_13.pdf

FIGURE 5. Growing Stock Volume. Metla; FRA 2010. Accessed: 1.8.2015.
http://www.metla.fi/metinfo/tilasto/julkaisut/vsk/2013/vsk13_13.pdf

FIGURE 6. Corruption Perceptions Index. Transparency International 2014. Accessed: 6.8.2015. <http://www.transparency.org/cpi2014/results>

FIGURE 7. Population Pyramid. Central Intelligence Agency, People and Society 2015. Accessed: 22.8.2015.
<https://www.cia.gov/library/publications/the-world-factbook/geos/us.html>

FIGURE 8. Cultural Dimensions. The Hofstede Centre. Accessed: 29.8.2015.
<http://geert-hofstede.com/united-states.html>

FIGURE 9. U.S. Replacement Tire Sales. Modern Tire Dealer figures, Rubber Manufacturers Association. Accessed: 5.9.2015.
<http://www.moderntiredealer.com/uploads/stats/mtd-facts-issue-2015.pdf>

FIGURE 10. Locations in the U.S. Bridgestone 2015. Accessed: 12.9.2015.
http://www.bridgestone.com/corporate/library/data_book/pdf/BSDATA2015.pdf

FIGURE 11. Locations in the U.S. ATG 2015. Accessed: 13.9.2015.
<http://www.atgtire.com/map-United States.aspx>

FIGURE 12, State and Regional Associations (The American Loggers Council)

APPENDICES

Appendix 1. State Industry Economic Impact 2015

Numbers taken from the American Forest & Paper Association's fact sheets: State Industry Economic Impact, January 2015.

	Tennes- see	North- Carolina	South- Carolina	Missis- sippi	Alabama	Georgia	Florida
EMPLOYMENT							
Forestry & Logging	3,457	6,122	4,677	6,451	7,866	8,614	4,848
Wood Products	12,29	17,844	8,173	9,136	14,565	16,817	11,931
Pulp & Paper	14,759	16,062	12,877	3,653	12,224	18,858	9,155
Total Employment	30,506	40,028	25,727	19,24	34,655	44,289	25,934
ANNUAL PAYROLL INCOME (in the United States in dollars)							
Forestry & Logging	\$35,395	\$139,376	\$153,659	\$147,836	\$214,008	\$286,834	\$132,873
Wood Products	\$459,176	\$823,481	\$409,504	\$434,461	\$652,453	\$791,848	\$490,749
Pulp & Paper	\$1,419,240	\$1,165,190	\$1,131,823	\$280,926	\$1,107,058	\$1,588,974	\$704,999
Total Compensation	\$1,913,811	\$2,128,047	\$1,694,986	\$863,223	\$1,973,519	\$2,667,656	\$1,328,621
NUMBER OF MANUFACTURING FACILITIES							
Sawmills, Millwork, Treating Engineered Wood and Panel Products	1	40	25	25	36	41	26
Other Wood Products	4	4	0	1	4	1	6
Total Wood Products	6	52	32	34	48	54	34
Pulp, Paper & Paperboard Mills	10	10	11	8	17	23	11
Converted Paper Products	132	180	78	48	58	149	128
Total Paper Manufacturing	142	190	89	56	75	172	139
Total All Segments	148	242	121	90	123	226	173
VALUE OF INDUSTRY SHIPMENTS (in the United States in dollars)							
Wood Manufacturing	\$1,742,451	\$4,087,818	\$1,882,773	\$1,664,151	\$2,960,359	\$3,190,435	\$1,943,358
Paper Manufacturing	\$5,264,329	\$6,643,716	\$7,166,609	\$2,312,620	\$8,218,786	\$11,127,124	\$4,469,271
Total Value of Industry Shipments	\$7,006,780	\$10,731,534	\$9,049,382	\$3,976,771	\$11,179,145	\$14,317,559	\$6,412,629
TAX PAYMENTS (in millions of dollars)							
Estimated State & Local Taxes	\$143	\$173	\$142	\$84	\$101	\$190	\$188

	<u>Tennessee</u>	<u>North-Carolina</u>	<u>South-Carolina</u>	<u>Mississippi</u>	<u>Alabama</u>	<u>Georgia</u>	<u>Florida</u>
LAND AREA							
(in thoUnited Statesnds of acres)							
Total Land Area	26,39	31,115	19,239	30,031	32,413	36,809	34,447
Forests	13,942	18,588	13,12	19,512	22,877	24,768	17,461
Forests as Percent of Total	52.8%	59.7%	68.2%	65.0%	70.6%	67.3%	50.7%
Federal Lands	1,394	2,139	1,035	1,843	1,028	1,809	2,068
National Forest System	712	1,277	605	1,331	750	842	1,18
TIMBERLAND							
(in thoUnited Statesnds of acres)							
National Forest System	682	1,18	593	1,325	709	669	1,128
Other Federal	310	538	390	501	255	724	664
State, County and Municipal	844	906	535	457	465	744	2,884
Private Corporate	2,249	4,231	3,994	4,696	7,205	8,436	6,779
Private non-Corporate	9,414	11,223	7,514	12,515	14,166	13,779	4,461
Total Timberland	13,5	18,077	13,025	19,495	22,8	24,352	15,916

Appendix 2. U.S. Forestry and Logger Associations 2015.

Source: Southern Loggin' Times Magazine, January/February 2015.

Alabama Forestry Assn.

555 Alabama St., Montgomery, AL 36104-4395; 334-265-8733, Fax: 334-262-1258;
Email: afa@alaforestry.org; www.alaforestry.org; C. Isaacson, exec. vp.
Annual Meeting: September 13-15 2015, Perdido Beach Resort, Orange Beach, AL

Alabama Loggers Council

555 Alabama St., Montgomery, AL 36104-4309; 334-265-8733, Fax: 334-262-1258;
Annual Meeting: TBD, Prattville, AL

Alaska Forest Assn.

111 Stedman St., Ste. 200, Ketchikan, AK 99901; 907-225-6114, Fax: 907-225-5920;
Email: afa@akforest.org; www.akforest.org
Annual Meeting: October 21-23 2015, Best Western Landing, Ketchikan, AK

American Loggers Council

PO Box 966, Hemphill, TX 75948-0966; 409-625-0206, Fax: 409-625-0207; Email:
americanlogger@aol.com; www.americanloggers.org; M. Anderson, pres; R. Schwab,
1st vp; K. Martin, 2nd vp.
Annual Meeting: September 24-26 2015, Red Lion Hotel, Eureka, CA

Arkansas Forestry Assn.

1213 W. 4th St., Little Rock, AR 72201-1905; 501-374-2441, Fax: 501-374-6413;
Email: afa@arkforests.org; www.arkforests.org; P. Prutzman, pres.; M. Braswell, exec.
vp.
Annual Meeting: October 6-8 2015, Arlington Hotel, Hot Springs, AR

Arkansas Timber Producers Assn.

2311 Biscayne Dr., Ste. 206, Little Rock, AR 72227-3393; 501-224-2232, 888-403-
2232, Fax: 501-224-9625; Email: lboccarossa@sbcglobal.net; www.arkloggers.com; D.
Crouse, pres.; S. Word, vp.
Annual Meeting: June 18-20 2015, in conjunction with In-Woods- Expo, Hot Springs,
AR

Associated California Loggers

555 Capitol Mall, Ste. 745, Sacramento, CA 95814-4581; 916-441-7940, Fax: 916-441-
7942; www.calog.com; E. Carleson, exec. dir.
Annual Meeting: January 13-15 2015, Peppermill Resort, Spa & Casino, Reno, NV

Associated Contract Loggers & Truckers Of Minnesota

3961 S. Barker Rd., Gilbert, MN 55741-8145; 218-780-5927, Fax: 888-317-7591;
Email: 4danes@cpinternet.com; www.acltmn.com; S. Dane, exec. dir.

Associated Logging Contractors Inc.

PO Box 671, Coeur D' Alene, ID 83816-0671; 208-667-6473, 800-632-8743 (ID), Fax:
208-667-2144; Email: alc@idahologgers.com; S. Sherich, pres.; M. Mahon, vp.;
S. Keough, exec. dir.
Annual Meeting: April 24-25 2015, Best Western Lodge at River's Edge, Orofino, ID

Associated Oregon Loggers Inc.

PO Box 12339, Salem, OR 97309-0339; 503-364-1330, Fax: 503-364-0836; Email: aol@oregonloggers.org; www.oregonloggers.org; J. Geisinger, exec. vp.
Annual Meeting: January 15-17 2015, Valley River Inn, Eugene, OR

California Forestry Assn.

1215 K St., Ste. 1830, Sacramento, CA 95814-3947; 916-444-6592, Fax: 916-444-0170; Email: info@calforests.org; www.calforests.org; D. Bischel, pres.
Annual Meeting: February 25-26 2015, Westin Verasa, Napa, CA

Carolina Logger's Assn.

PO Box 785, Henderson, NC 27536; Fax: 888-658-9604; Email: contact@ncloggers.com; www.ncloggers.com; J. Swanner, exec. dir.; N. Nance, COB.

Council On Forest Engineering (COFE)

620 SW 4th St., Corvallis, OR 97333-4428; 240-382-2633, Email: admin@cofe.org; <http://cofe.org>; B. Spong.
Annual Meeting: July 19-22 2015, Lexington, KY

Florida Forestry Assn.

PO Box 1696, Tallahassee, FL 32302-1696; 850-222-5646, Fax: 850-222-6179; Email: info@forestfla.org; www.floridaforest.org; L. Griner, pres.; A. Shelby, exec. vp.; B. Cook, sec/treas.; M. Bell, pres. elect.
Annual Meeting: August 25-27 2015, Wyndham Bay Point Golf Resort & Spa, Panama City Beach, FL

Forest History Society

701 William Vickers Ave., Durham, NC 27701-3162; 919-682-9319, Fax: 919-682-2349; Email: recluce2@duke.edu; www.foresthistory.org; S. Anderson, pres.; C. Oakes, lib./archivist.

Forest Products Society

15 Technology Pkwy. S., Peachtree Corners, GA 30092-8200; 770-209-7257; Email: mary@forestprod.org; www.forestprod.org; C. McKinney, exec. dir.
Annual Meeting: June 10-12 2015, Georgia World Congress Center, Atlanta, GA

Forest Resources Assn.

1901 Pennsylvania Ave. NW, Ste. 303, Washington, DC 20006-3459; 202-296-3937, Fax: 202-296-0562; Email: fra@forestresources.org; www.forestresources.org; T. Reed, chair; J. Contino, vice chair; M. Fryer, vice chair; J. Haney, vice chair; J. Parnell, vice chair; D. Hawkinson, pres.
Annual Meeting: April 27-29 2015, Sheraton Nashville Downtown, Nashville, TN

Georgia Forestry Assn.

PO Box 1217, Forsyth, GA 31029-1217; 478-992-8110, Fax: 478-992-8109; Email: info@gfagrow.org; www.gfagrow.org; A. Hopkins, dir. of comm.

Great Lakes Timber Professionals Assn.

PO Box 1278, Rhinelander, WI 54501-1278; 715-282-5828, Fax: 715-282-4941; Email: gltpaadvertising@newnorth.net; www.timberpa.com; H. Schienebeck, exec. dir.
Annual Meeting: September 11-12 2015, UP Fairgrounds, Escanaba, MI

Independent Logging Contractors of Alabama

1212 Hwy. 239, Union Springs, AL 36089-4414; 251-966-2406, Fax: 251-966-5336; E. Castleberry, chmn.

Intermountain Logging Assn.

PO Box 482, Saint Maries, ID 83861-0482; 208-245-3425, Fax: 208-245-3465; www.intermountainlogging.org; J. Kelly, pres; T. Stone, treas; M. Newton, vp. Annual Meeting: April 8-10 2015, Mirabeau Park Hotel, Spokane Valley, WA

Kentucky Forest Industries Assn.

106 Progress Dr., Frankfort, KY 40601-8695; 502-695-3979, Fax: 502-695-8343; Email: bob@kfia.org; www.kfia.org; H. Christ, pres.; D. Gay, vp; Y. Bradley, sec./treas.

Annual Meeting: March 25-27 2015, Embassy Suites, Lexington, KY

Louisiana Forestry Assn.

PO Box 5067, Alexandria, LA 71307-5067; 318-443-2558, Email: lfa@laforestry.com; www.laforestry.com; D. Cupp, pres.; T. Meiners, 1st vp.; M. Rachal, 2nd vp.; J. Dickson, 3rd vp.; G. Ramsey, treas.

Maryland Forests Assn.

PO Box 904, Brooklandville, MD 21022; 410-823-1789; Email: director@mdforests.org; www.mdforests.org; T. Berman, pres.; V. Finney, exec. dir.

Massachusetts Forest Alliance

249 Lakeside Ave., Marlborough, MA 01752-4503; 617-455-9918; Email: info@massforestalliance.org; www.massforestalliance.org; D. Crane, pres.; C. Thompson, pres. elect.

Annual Meeting: April 25 2015, Southbridge Hotel & Conference Center, Southbridge, MA

Michigan Association Of Timbermen

7350 State Hwy. M123, Newberry, MI 49868-8179; 906-293-3236, Fax: 906-293-5444; www.timbermen.org; B. Owen, exec. dir.

Minnesota Timber Producers Assn.

324 W. Superior St., Ste. 903, Duluth, MN 55802-1717; 218-722-5013, Fax: 218-722-2065; W. Brandt, exec. vp.

Mississippi Forestry Assn.

620 N. State St., Ste. 201, Jackson, MS 39202-3398; 601-354-4936, Fax: 601-354-4937; Email: mfa@msforestry.net; www.msforestry.net or msforestry.blogspot.com

Mississippi Loggers Assn.

PO Box 659, Quitman, MS 39355-0659; 601-776-5754, Fax: 601-776-2737; Email: mfa@msloggers.org; www.msloggers.org; C. Johnson, dir.; S. Benefield, asst. dir.; K. Martin, pres.

Missouri Forest Products Assn.

505 E. State St., Jefferson City, MO 65101-3024; 573-634-3252, Fax: 573-636-2591; Email: moforest@moforest.org; www.moforest.org; B. Brookshire, exec. dir. Annual Meeting: July 24-25 2015, Hilton Branson Convention Center, Branson, MO

Missouri Loggers Council

505 E. State St., Jefferson City, MO 65101-3024; M. McCarthy, dir.
Annual Meeting: July 25 2015, Hilton Branson Convention Center, Branson, MO

Montana Logging Assn.

PO Box 1716, Kalispell, MT 59903-1716; 406-752-3168, Fax: 406-756-9574; Email: mla@logging.org; www.logging.org; R. Anderson, pres.; K. Olson, exec. dir., K. St. Onge; vp.
Annual Meeting: May 15-16 2015, Kwataqnuq Resort, Polson, MT

NH Timber Harvesting Council

54 Portsmouth St., Concord, NH 03301-5486; 603-344-1130, Fax: 603-225-5898; www.nhtoa.org; J. Stock, exec. dir.; E. Johnson, program dir.; D. Park, office mgr.

North Carolina Forestry Assn.

1600 Glenwood Ave., Raleigh, NC 27608-2356; 800-231-7723, Fax: 919-832-6188; Email: cbrown@ncforestry.org; www.ncforestry.org; P. Gibson, exec. vp.
Annual Meeting: October 7-9 2015, Marriott Resort & Spa at Grande Dunes, Myrtle Beach, SC

Northeastern Loggers Assn.

PO Box 69, Old Forge, NY 13420-0069; 315-369-3078, Fax: 315-369-3736; Email: nela@northernlogger.com; www.northernlogger.com; J. Phaneuf, exec. dir.
Annual Meeting: May 15-16 2015, Cross Insurance Center, Bangor, ME

Ohio Forestry Assn.

1100 Brandywine Blvd., Ste. H, Zanesville, OH 43701-7303; 614-497-9580, Fax: 614-497-9581; Email: info@ohioforest.org; www.ohioforest.org; J. Dorka, exec. dir.
Annual Meeting: February 11-12 2015, Embassy Suites, Dublin, OH

Oklahoma Forestry Assn.

4878 E. State Hwy. 3, Idabel, OK 74745-5113; Fax: 580-286-1071; www.okforestry.org; D. Lewia, pres.; C. Bouffleur, vp.

Olympic Logging Conference

PO Box 1215, Anacortes, WA 98221-6215; 360-202-7014, Email: register@olcnw.com; www.olympicloggingconference.com; D. Oster-Courtney, mgr.
Annual Meeting: April 29-May 1 2015, Fairmont Empress Hotel, Victoria, BC

Oregon Logging Conference & Show

PO Box 10669, Eugene, OR 97440-2669; 541-686-9191, Fax: 855-866-0572; Email: rikki@oregonloggingconference.com; www.oregonloggingconference.com; R. Wellman, mgr.
Annual Meeting: February 19-21 2015, Eugene Hilton & Lane Events Center & Fairgrounds, Eugene, OR

Pacific Logging Congress

PO Box 1281, Maple Valley, WA 98038-1281; 425-413-2808, Fax: 855-866-0572; Email: rikki@pacificloggingcongress.com; www.pacificloggingcongress.com; R. Wellman, exec. dir.
Annual Meeting: November 8-11 2015, Hilton Waikola, Waikola, HI

Pennsylvania Forestry Assn.

PO Box 1278, Mechanicsburg, PA 17055-1278; 717-766-5371

Professional Logging Contractors of Maine

49 Pineland Dr., Ste. 201A, New Gloucester, ME 04260-5120; 207-688-8195; www.maineloggers.com; D. Doran, exec. dir.; B. Sovers, pres.; S. Madden, 1st vp.
Annual Meeting: May 1 2015, Jeff's Catering, Brewer, ME

Redwood Region Logging Conference

5601 S. Broadway St., Eureka, CA 95503-6904; 707-443-4091, Fax: 707-443-0926;
Email: rrlc@sonic.net; www.rrlc.net; K. Ziemer, exec. dir.
Annual Meeting: March 19-21 2015, Redwood Acres Fairgrounds, Eureka, CA

South Carolina Forestry Assn.

PO Box 21303, Columbia, SC 29221-1303; 803-798-4170, Fax: 803-798-2340; Email: scfa@scforestry.org; www.scforestry.org; C. Crawford, pres.

South Carolina Timber Producers Assn.

PO Box 811, Lexington, SC 29071-0811; 803-957-9919, 800-371-2240, Fax: 803-957-8990; Email: bcjpaw@windstream.net; www.scloggers.com; B. McKinney, chmn.; T Seckinger, vice chmn.; C. Jaynes, pres./ceo.; R. Crowder, sec./treas.
Annual Meeting: February 6-8 2015, Springmaid Beach Resort & Conference Center, Myrtle Beach, SC

Southeastern Wood Producers Assn.

PO Box 9, Hilliard, FL 32046-0009; 904-845-7133, Fax: 904-845-7345; Email: mwade@swpa.ag; www.swpa.ag; R. Schwab; T. Carroll, exec. dir.; J. Lane, sec/treas.
Annual Meeting: June 5-6 2015, Renaissance at the World Golf Village, St. Augustine, FL

Tennessee Forestry Assn.

PO Box 290693, Nashville, TN 37229-0693; 615-883-3832, Fax: 615-883-0515; Email: cdinwiddie@tnforestry.com; www.tnforestry.com; S. Owen, pres.; C. Dinwiddie, exec. dir.

Texas Forestry Assn

PO Box 1488, Lufkin, TX 75902-1488; 936-632-8733, Fax: 936-632-9461; Email: tfa@texasforestry.org; www.texasforestry.org; R. Hufford, exec. dir.

Texas Logging Council

PO Box 1488, Lufkin, TX 75902-1488; 409-384-0016, Fax: 936-632-9461; Email: chargincharlie42@hotmail.com; www.texasforestry.org; C. Gee, coord.

Virginia Forest Products Assn.

PO Box 160, Sandston, VA 23150-0160; 804-737-5625, Fax: 804-737-9437; Email: vfpa@att.net; J. Piland, bd. chmn.; S. Jennings, pres.; L. Anderson, dir. of results.
Annual Meeting: September 2015, The Homestead Resort, Hot Springs, VA

Virginia Forestry Assn.

3808 Augusta Ave., Richmond, VA 23230-3910; 804-278-8733, Fax: 804-278-8774; Email: vfa@vaforestry.org; www.vaforestry.org; G. Scheerer, pres.; J. Carroll, vp.

Virginia Loggers Assn.

33 Morewood Pl., Palmyra, VA 22963-2750; 434-589-1942, Email: valoggersas-soc@aol.com; www.valoggers.org; V. Wright, pres.
Annual Meeting: August 23-25 2015, TBD

Washington Contract Loggers Assn.

PO Box 2168, Olympia, WA 98507-2168; 800-422-0074, Fax: 360-943-8544; Email: jerryb@loggers.com; www.loggers.com; E. Bryant, chmn. of board; J. Bonagofsky, pres/ceo.
Annual Meeting: March 27-28 2015, Tulalip Casino, Marysville, WA

West Virginia Forestry Assn.

PO Box 718, Ripley, WV 25271-0718; 304-372-1955, Email: wvfa@wvadventures.net; www.wvfa.org; F. Stewart, exec. dir.

Appendix 3. Trade Events

The list of the 2015 Trade Shows was from the Southern Logging' Times Magazine, January/February 2015.

February 5-7: Sierra-Cascade Forest Products & Construction Equipment Exposition, Shasta District Fairgrounds, Anderson, CA: 530-222-1290; sierracascadeexpo.com

February 19-21: Oregon Logging Conference & Show, Hilton Hotel/Lane County Convention Center and Fairgrounds, Eugene, OR: 541-686-9191; oregonloggingconference.com

March 19-21: Redwood Region Logging Conference, Redwood Empire Fairgrounds, Eureka, CA: 707-443-4091; rrlc.net

April 8-10: Intermountain Logging Assn. Equipment Show & Conference, Mirabeau Park Hotel and Convention Center, Spokane Valley, WA: 208-245-3425; intermountainlogging.org

May 15-16: Northeastern Forest Products Equipment Expo, Bangor, ME: 315-369-3078; nefpexpo.net

June 18-20: InWoodsExpo (live equipment demo), Hot Springs, AR; Larry Boccarossa at 501-224-2232; lboccarossa@sbcglobal.net; arkloggers.com/expo

September 10-12: Lake States Logging & Heavy Equipment Expo, EAA Event Grounds, Escanaba, MI: 715-282-5828; timberpa.com

September 18-19: Mid-Atlantic Logging & Biomass Expo, Selma-Smithfield, NC: DK Knight at 334-834-1170; dk@hattonbrown.com; malbexpo.com