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## **Attitudes and Perceptions of the Millennial Generation surrounding Wood Products and the Wood Products Industry**

Kassandra B. Stout

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Attitudes and perceptions of the millennial generation surrounding wood products and the  
wood products industry

By

Kassandra Stout

A Thesis  
Submitted to the Faculty of  
Mississippi State University  
in Partial Fulfillment of the Requirements  
for the Degree of Master of Science  
in Sustainable Bioproducts  
in the Department of Sustainable Bioproducts

Mississippi State, Mississippi

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2019

Attitudes and perceptions of the millennial generation surrounding wood products and the  
wood products industry

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The wood products industry faces increased pressure to attract and maintain the interest of young audiences, such as the millennial generation. This study was created in attempt to bridge the perceived communication gap between the industry and millennial generation, or “millennials.”

Millennials are defined in this study as individuals born from 1980 to 2000. An online survey was created and distributed to over 1500 millennials in February 2018 and received 1,479 usable surveys. Analysis performed on the resultant data included descriptive statistics and chi-square calculations.

The study results indicate millennials have a positive view of wood products and hold uncertain or neutral perceptions towards the entire industry. Millennials perceive wood products as stylish, durable, and environmentally friendly. Millennials have neutral perceptions of the industry with stronger attitudes towards the industry’s relationship with the environment. Millennial responses also indicate weak general knowledge regarding the wood products industry and wood product properties.

## DEDICATION

I dedicate this to the women throughout history who persevered against adversity and provided me the opportunity to stand where I am today. As Laurel Thatcher Ulrich once said, “Well-behaved women seldom make history.”

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To my parents, Charlie and Michaelene. Thank you for supporting and encouraging me during this time of great adventure and change. I feel incredibly lucky to have you as my parents. Both of you serve as an inspiration and great life advisors. I hope you know how proud I am to be your daughter. Lots of love.

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CHAPTER I  
BACKGROUND ON THE MILLENNIAL GENERATION AND MISPERCEPTIONS  
FACING THE WOOD PRODUCTS INDUSTRY

**Introduction**

Industries must adapt to evolving societies and cultures to remain relevant and thrive in the 21<sup>st</sup> century. As Winston Churchill once said, “To improve is to change; to be perfect is to change often.” There are multiple ways to interpret what Churchill meant by this, but a simple understanding is: do not settle for what is given, but strive towards a higher ideal. Yet, before change can begin, there must be recognition for a need for change.

Over the past several years, the wood products industry has begun questioning how best they can adapt to an evolving social and cultural environment. There is special interest in improving the relationship between the industry and younger generations, like the millennial generation. The millennial generation is the up-and-coming generation, soon to outnumber baby boomers in the workforce and beyond (Fry 2018b). The industry faces a growing issue of employees retiring faster than empty positions fill. There is difficulty in gaining and keeping the interest of younger generations to encourage them to join the industry.

This research study was born as an attempt to help bridge the gap in communication between the industry and the millennial generation, also known as

“millennials”. The focus is to determine perceptions millennials hold towards the wood products industry and its products. Illuminating the perceptions held by millennials may help the industry to better strategize for the future. Building a stronger relationship with a younger generation can ensure the viability of an industry for years to come.

### **Literature Review**

The following literature review provides explanation, definition, and outside context for the resulting data of this study.

#### **Public perception of the current wood products industry**

The wood products industry is one of the largest and longest-standing industries in the United States. As of 2014, the industry employed about 1 million individuals and generated sales over \$200 billion (Oswalt and Smith 2014). In recent years, however, there has been an increase in retiring employees and overseas competition, resulting in a slight drop in employment numbers (Hansen 2010).

In the coming years, the demand for lumber and other wood products is expected to grow. In 2005, wood was used more than any other basic material in the United States, compared to metals and plastic combined (Bowyer et al. 2007). The increased demand for natural resources will result from an increase in the world’s population. The United Nations (2017) estimates the world population will reach 8.6 billion in 2030 and 9.8 billion in 2050. Thus, the demands for all resources are expected to rise to match population needs.

The availability of forest lands to supply materials comes into focus with expected population increases. The current total global forest land coverage percentage is around

31 percent (FAO 2018). In the United States alone, forest coverage area is around 33 percent of the total land and has stayed relatively stable even with population increase (Oswalt and Smith 2014). The stability of forest growth and maintenance may be tested by increasing product demands and land availability. While people will need lumber to build housing, they will also need land to build upon. Multiple advancements in technology, forest management practices, and research have aided the U.S. forest supply to increase while serving the needs of the industry (Bowyer et al. 2007). However, it is possible the population increase may have no effect on forest land coverage in the U.S. in the coming years.

There appears to be, however, a remaining miscommunication between the industry and the public regarding the growth and responsible maintenance of U.S. forests. Bowyer et al. (2007) mention a possible reason for continued public misperception may rest in the fact that many wood products nowadays do not look like traditional wood. Wood products have become more modern and sophisticated over the years with advancements in design and finishing. Traditional wood products like structural lumber, ceiling beams, kitchen cabinets, and furniture may be immediately associated while other products such as rayon (used in fabrics), car parts, and toothpaste remain unrecognized (Bowyer et al. 2007). The public may not realize tree cellulose is present in these other products.

The invisible presence of some wood products touches upon a possible factor contributing to public perceptions. The visibility or invisibility of the industry plays a role in working against improving public perceptions (Mater 2005). Compared to the mining of materials like metals, cements, and natural fuel sources, the harvesting of trees is blunt



and obvious (Bowyer et al. 2007). A study observing the perceptions of environmentalists in Mississippi revealed clear-cutting as a prominent concern among environmentalists and conservation groups (Habig et al. 2005). The visibility of clear-cutting or harvesting can be jarring to the public who do not understand why it is happening.

Additional outside influences that may affect public perception involve messages promoted by various environmental organizations. The Sierra Club became more vocalized in the 1990s and made efforts to challenge the wood products industry (Uhrig 1999). Other organizations such as Common Ground, The Trust for Public Lands, and The Conservation Fund also stirred up mixed feelings towards the industry (Mater 2005). The presence of environmental organizations such as these provides a glimpse into a growing public consciousness towards social and environmental responsibility.

Environmentalist organizations strengthened as the public began to listen and take their claims as factual. Issues arose between the industry and certain environmental groups when the line between fact and belief blurred (Baldwin 2004). Instead of citing scientific facts, the organizations attempted to pass their beliefs as facts to the public (Baldwin 2004). The organizations used emotion as a weapon in their promotional campaigns against the wood industry (Baldwin 2004). The industry's response to the new wave of environmentalist messages did not work to correct public misperceptions, signaling traditional response approaches may need to change.

A lasting effect from increased pressure of environmental organizations as well as public outcry spawned the creation of wood product certification (Vlosky and Ozanne 1998). The industry adopted environmental certification of their products in the 1990s in

attempts to appease public demands. Vlosky and Ozanne described the certification of products as “one of the most pressing issues” (1998). It became apparent consumers valued product certification to aid the environment. Thus, several different forms of certification were created to ease the mind of consumers.

Consumers now find ecolabels displayed on wood products to show their environmental certification. Placing ecolabels on products signifies the market orientated approach the industry took to respond to consumer concerns of the management of the world’s forests (Anderson and Hansen 2004). Multiple studies revealed consumers have an increased preference for certified products (Anderson and Hansen 2004; Vlosky et al. 2009).

The added trend of green building has also influenced forest certification. The expansion of green building has influenced stores such as Lowe’s and Home Depot (Vlosky et al. 2009). Both Lowe’s and Home Depot committed to selling certified forest products (Vlosky et al. 2009). Other retailers are also taking preference in selling certified wood products. In the study by Vlosky et al. (2009) the number of companies who sold certified products rose from 8 percent to 42 percent from 2002 to 2008, respectively. These findings indicate the shift in product orientation and consumer preference among wood products.

The arrival of product certification echoes a growing importance of regulated responsible practices by the industry in product creation. There are multiple federal government policies and regulations enforced by the Environmental Protection Agency (EPA) and U.S. Forest Service to ensure the responsible use of the nation’s forestland. Some policies include the National Environmental Policy Act (NEPA), National Forest

Management Act (NFMA), The Wilderness Act of 1964 and the Clean Water Act (U.S. Forest Service n.d.). There are also local and regional state regulations regarding forest management of which the industry must be aware for operations. For example, the North Carolina Sedimentation Pollution Control Act focuses on protecting state water quality in regards to forest practices (North Carolina Forestry Association 2019). The number of policies and regulations has increased over decades in response to concerns regarding the industry's relationship with the environment.

The certification of wood products and implementation of new regulations, while somewhat cumbersome to the manufacturer, take a step in educating the public on industry practices and values. Perceptions the industry has accrued go beyond the visibility issue, pushback from environmental organizations, and additional legislative regulations. An increasingly apparent issue facing the wood products industry is the public's general lack of knowledge regarding the industry (Baldwin 2004; Mater 2005; Uhrig 1999).

Two studies focused on gathering perceptions of a certain population regarding the wood products industry. A study conducted over 20 years ago surveyed college-aged students regarding their perceptions of the industry (Uhrig 1999). The results of the 1999 thesis study recognized a need for change in how the industry promoted itself and educated the public on industry matters. The results indicated 1999 college-level students lacked sufficient, factual knowledge of basic concepts regarding the industry, the U.S. Forest Service, and other general forest-related information (Uhrig 1999). The author warned of the consequences of not properly educating young generations and the

reverberations as they grew older. The warnings listed in the 1999 thesis are relevant to current issues facing the industry now.

The second study relating to perceptions involved a survey conducted in Montana in 1999. The study revealed state residents knew relatively little facts about the industry, suggesting a need for further education (Polzin and Bowyer 1999). There was a difference in how age groups responded to questions, with those 18 to 24 years (in 1999) less likely to answer questions correctly (Polzin and Bowyer 1999). While this study focused only on those living in the state of Montana, it provides a glimpse into possible public perceptions of the industry.

The education system in the United States is a possible source of misperceptions regarding the wood products industry. Evidence suggests certain college majors are more likely than others to be environmentally inclined. Students majoring in the sciences, humanities, and education indicate higher levels of environmental consciousness whereas business and economic majors are less likely (Smith 1995).

Issues pertaining to young generational interest in the industry mirror issues at the university and college level. Dean's and directors of forest resource education programs report low student enrollment, a lack of diversity in gender and race, and the relevance of the majors in today's climate (Sample et al. 2015). Faculty reported issues in attracting diverse students as well (Sample et al. 2015). Complaints from deans and directors concerned the lack of effective outreach and support by the institution regarding their programs (Sample et al. 2015). These concerns addressed by the administrators and faculty of forest resource programs conjoin with industry indicating a possible field-wide situation.

It is important for industry scientists to foster a better public perception through educational outreach and promotional messages (Mater 2003). The scientific research and facts presented to the public may cause confusion with their terminology. Mater (2005) acknowledges foresters and industry folk should work to “speak plain” to explain their viewpoints to the public. The public may not know all of the industry slang or terminology, needing a simpler explanation.

There is a range of possible external forces contributing to public misperceptions towards the wood products industry. Yet, there are additional industry internal forces that play a part in misperceptions as well. Baldwin (2004) emphasizes that the industry needs to accept responsibility for some of the public misperceptions as it has been in a state of denial of a problem existing. Instead of taking action, the industry allowed a gap in communication to form between critics and the industry, giving room for the spread of misperceptions (Baldwin 2004). Allowing the communication gap to continue works against the industry as it tries to change perceptions.

Open communication may become vital when accidents or other critical situations occur in the industry and become local, regional, or national news. Mater (2005) points out how the actions of one wood products company can spread to “demonize” the whole industry. For example, illegal or unregulated logging of forest area that becomes public knowledge may create a black-eye for the industry from the actions of one company. While external factors may lead to misperceptions, internal actions of the industry may also contribute to continued public misperceptions.

## **Who are the millennial generation?**

There are six generations alive today. The generations, from oldest to youngest, include the Greatest (GI) Generation, the Silent Generation, the Baby Boomers, Generation X, the Millennial Generation also known as millennials or Gen Y, and Generation Z also known as GenZ or iGen (Raphelson 2014). All of the generations interact with each other in some form every day, whether in the workplace, at school, a family gathering, or while grocery shopping.

The workplace is a prime location for generations to interact and experience different behaviors, values, and opinions. For years, Baby Boomers were the dominant presence in the workforce as they were the most populous generation (Fry 2018b). Yet, as the boomers have aged and begun retiring, millennials are on track to become the dominant generation (DeVaney 2015; Fry 2018b; Holmberg-Wright, et al. 2017) Millennials became the largest working generation in the U.S. in 2016 with approximately 56 million working alongside 53 million Gen X and 41 million Baby Boomers (Fry 2018a). Current estimates place millennials to reach a total of 76 million by the year 2036, outnumbering all other generations (Fry 2018b).

Millennials are a group comprised of individuals born between the early 1980s to late 1990s/early 2000s. Age range estimates are from 1979-1994, 1982-2004, 1980-2000, 1981-1996, and beyond (DeVaney 2015; Fry 2018a; Hartman and McCambridge 2011; Holmberg-Wright et al. 2017; Levenson 2010; Myers and Sadaghiani 2016; Ralpheson 2014). There is no current unified age range definition agreed upon by scholars regarding the millennial generation.

Both industry and academia attempt to evaluate, describe, and understand millennials as they have grown into adulthood. Millennials have received an enormous amount of attention from the press and social media regarding their behaviors compared to previous generations (Myers and Sadaghiani 2010). There are multitudes of positive and negative attributes showered on millennials. The negative attributes, however, seem to be highlighted by the media to an extreme.

In a positive context, millennials are described as optimistic, team-orientated, civic minded, and able to multi-task well (DeVaney 2017). They are also described as idealistic, environmentally conscious, and entrepreneurial (Pew Research 2015). In a negative context, millennials are described as entitled, dependent, impatient, greedy, wasteful, and self-absorbed (DeVaney 2017; Pew Research 2015). Other negative attributes include laziness, disrespect to authority, a lack of focus in the workplace, abrasiveness, and arrogance (Stewart et al. 2017).

The constant outside negative attention may be a reason why millennials are more likely to ascribe negative traits to their own generation (Pew Research 2015). It is relevant to note older generations are more likely to ascribe negative attributes to millennials including entitlement, poor communication skills, and being difficult (Deal et al. 2010). A reason for this may be a gap in understanding and acceptance between differing generations.

Compared to previous generations, millennials grew up in a different economic, social, and cultural climate. Growing up in a world where everyone was encouraged to attend college, millennials earned their degrees while accumulating large amounts of student debt (Drake 2014). Upon graduation, a millennial may owe, on average, around

\$33,000 in debt (Leonhardt 2018). Finding a well-paying job to help repay this debt is another potential hardship faced by millennials. Not only do millennials face lower income level jobs, but they experience high unemployment rates (DeVaney 2015; Holmberg-Wright et al. 2017).

One major economic event impacting millions of Americans, including millennials, was the 2008 U.S. stock market crash. Millennials graduating from college around 2008 may have felt the effects of the economic downturn with few employment opportunities available. As a result, there were a fair number of millennials who had to live at home with their parents for an extended amount of time (Levenson 2010). Millennials who were not directly affected may have witnessed their parents or other relatives face financial hardship (Holmberg-Wright et al. 2017). Living through this type of economic depression can shape future generations in terms of financial values as well as social and cultural.

Millennials are the most ethnically and racially diverse generation alive with 43 percent identifying as non-white (Drake 2014). This diversity is in part due to the rise of interracial marriage as well as an influx of immigrants from other nations within the millennial age bracket (Drake 2014). They are also a generation less likely to align themselves with traditional religious or political organizations, with 29 percent being non-affiliated with a single religion (Drake 2014). When asked to describe themselves, millennials were least likely to say they were rigid, religious, or patriotic (Pew Research 2015). However, millennials do appear to value education. Compared to previous generations, millennials have over double the college-level credentials (Levenson 2010).



In particular, millennial women have attained greater education levels (36%) compared to their Silent Generation grandmothers (9%) (Fry et al. 2018).

Millennials have also waited longer to marry (Drake 2014; Fry et al. 2018). Reasons for this relate back to financial burdens such as student loans and lower-income jobs as well as the desire to want to stay single longer. There are a number of life decisions millennials held off completing because they did not believe they had a stable financial foundation (Drake 2014). For this reason, millennials differ in personal values and economic stability.

The millennials were also privy to a changing global climate. Millennials grew into a world with U.S. policies such as the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the Oil Pollution Act of 1990, and amendments to the Clean Air Act (U.S. EPA 2018a; U.S. EPA 2018b; U.S. EPA 2017). There was also the creation of the Kyoto Protocol of 1997, an international treaty by members of the United Nations to commit to reducing greenhouse gas emissions, put into action in 2005 (U.N. Climate Change 2019). These environmental factors have contributed to how millennials may view, behave, and consider current issues.

However, there is one particular element working within and behind the scenes of previously stated factors that may have one of the most influential relationships with millennials: technology. Millennials have been nicknamed “digital natives” because of their technological savviness (Noble et al. 2009; Yeaton 2008). The prominent presence of millennials on social media may be due to timing. The internet, or World Wide Web, was first launched in 1991, and after a decade of continuous refinement, social media sites and applications began to appear (van Dijck 2013). Myspace (2003), Facebook

(2004), YouTube (2005), and Twitter (2006) were some of the first major social media sites launched (van Dijck 2013). Their presence in the early 2000s coincided with the oldest millennial students (born around 1980) attending or graduating from college or beginning their careers.

The popularity of the first social media sites spurred a boom in the online world. The attraction towards social media and networking sites lay in their ability to create a new sphere of communication, whether private or public (van Dijck 2013). The launch of the smart phone, such as the iPhone in 2007, further changed communication styles and accessibility. By 2018, the number of adults who use the internet across generations reveals the significance of the rise of social media. Approximately, 98 percent of 18 to 29 year olds and 97 percent of 30 to 49 year olds now use the internet (Pew Research Center 2018). In particular, millennials have increased their time spent on mobile devices, in general, from 107 minutes in 2012 to 223 minutes in 2017 (GlobalWebIndex 2018). Smart phones, the internet, and social media have become a part of everyday life for young generations, like millennials.

The relationship millennials have built over several years with social media has shown to spread from their personal life into the work sphere. Millennials believe the internet has had a positive impact on society whereas older generations are bit more skeptical (Jiang 2018). It is increasingly important for businesses to recognize millennial values toward social media. A growing reason to be aware is to prevent any potential communication conflicts that may arise between generations at work (Cho et al. 2013). There are bound to be differences in the way people relate to one another and approach

tasks. Stewart et al. (2017) notes millennials have a distinction for placing technology as a defining characteristic of their generation.

In terms of work duties and responsibilities, millennials appear to have a few differing values and beliefs. Millennials place emphasis on open communication in the workplace culture, a better work-life balance, hour flexibility, and a desire to know the value of their position (Holmberg-Wright et al. 2017; Myers and Sadaghiani 2010). Millennials value two-way communication rather than one-way due in part to social network use (Holmberg-Wright et al. 2017). Instead of being told what to do, they seek to have a conversation regarding the task. Having open communication enables millennials to build relationships with their supervisors, peers, and mentors in the workplace (Myers and Sadaghiani 2010). This interest in open communication from senior to entry level employees may cause some distress to generations not accustomed to it.

In addition to improved communication, a plethora of research indicates millennials want to know the “why” of their job tasks (Hartman and McCambridge 2011; Holmberg-Wright et al. 2017; Myers and Sadaghiani 2010; Stewart et al. 2017). Knowing the “why” behind what millennials are doing carries a sense of pride and fulfillment in their life. Millennials also have interest in maintaining a work-life balance, expressing an interest in flexible work hours and location (Myers and Sadaghiani 2010). Instead of sticking to the traditional 9-to-5 workday, millennials appear to appreciate having flexibility in their hours. There is also interest in expanding where they work with options to work from home or elsewhere.

If millennials do not receive a sense of fulfillment from their work and disagree with the culture of the workplace, they are likely to leave. Millennials are more likely to

“job hop” rather than stay in a position for a long period (DeVaney 2015; Myers and Sadaghiani 2010; Stewart et al. 2017). Some reasons for their turnover ties into a lack of promotional opportunities, an inability to form relationships with mentors and coworkers, a lack of job satisfaction, and conflict with their values on work-life balance (DeVaney 2015; Myers and Sadaghiani 2010; Stewart et al. 2017). Rather than stay in a job where there is no opportunity for growth, millennials will seek other employment options. It is a reason millennials view the relationship between a workplace culture and commitment to an organization different from previous generations (Stewart et al. 2017).

However, the desire for a millennial to change jobs to find something more satisfying should not be viewed entirely negative. During and after the 2008 recession, millennials still sought out some form of professional experience when they could not find a permanent position. Some millennials found internships that allowed them to experience a variety of career paths (Myers and Sadaghiani 2010). Thus, when they found a permanent position, millennials were able to bring new ideas and previous experience to the workplace (Myers and Sadaghiani 2010).

Regarding purchase decisions, millennials have slight differences in how they value a variety of products. The technological savviness of millennials contributes to certain buying habits (Noble et al. 2009). Millennials show an affinity for researching products online, and reviewing testimonials or reviews before purchase (Parment 2013; Pate and Adams 2013). Seeing items “liked” by their friends or celebrities endorsing products also influences millennial decisions (Parment 2013; Pate and Adams 2013). These factors may be a result of millennial emphasis towards their image and reputation,

indicating a self-consciousness for how others perceive them (Noble et al. 2009; Parment 2013).

### **Objectives**

There are two main objectives of this study: 1) evaluate millennials' perceptions toward the wood products industry and 2) to examine millennials' perceptions of wood products. This study aims to provide information for industry and academia to use to foster increased awareness of the wood products field. Study results can aid industry with marketing, employment opportunities, and beyond. Academia could benefit as well by fostering continued studies in this particular area.

Based on these broad objectives, a series of hypotheses were created regarding wood products industry perceptions and wood product perceptions.

Wood industry perceptions:

**H1a:** Millennials think it is positive for a company to be involved in social media.

**H1b:** Millennials have little knowledge about the wood products industry.

**H1c:** Millennials hold a negative view of the wood products industry.

**H1d:** Millennials think the wood products industry harms the environment.

Wood product perceptions:

**H2a:** Millennials think wood products are not durable.

**H2b:** Millennials think wood products are not environmentally friendly.

**H2c:** Millennials perceive wood products to be outdated for the home.

**H2d:** Millennials do not think cross laminated timber is a safe product to construct tall buildings.

## **Importance of the Study**

The wood products industry has seen a decline in interest from younger generations toward joining the workforce. It is necessary to improve interest levels among young people toward joining the industry to maintain growth and overall success. This issue has become a popular topic among wood products professionals as they see more employees retiring than those joining. In response to this rising call-to-action, this study was created to illuminate current perceptions young people hold towards the industry and products.

There is no current information (to the author's knowledge) of previous studies examining millennials perceptions of the wood products industry. The millennial generation is a significant audience to engage as they are the up-and-coming generation, defined in this study as ranging from 18 to 38 years old in 2018. Conducting market research to determine how millennials value a product or view an industry can be vital in providing information for industries to better strategize for the future.

The significance of this study lies within its ability to ascertain new information regarding younger generation opinions about the wood products industry. The study provides data on how millennials view the industry and the reason for their attitudes. In addition, this study serves as a starting point or foundation for future studies to continue to discover further insights into perceptions of younger generations towards the wood products industry.

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## CHAPTER II

### MILLENNIAL PERCEPTIONS OF THE WOOD PRODUCTS INDUSTRY

#### **Introduction**

Over the past several years, the wood products industry has begun questioning how best to adapt to an evolving social and cultural environment. There is special interest in improving the relationship between the industry and younger generations, such as the millennial generation. The “millennials” are the next up-and-coming generation, soon to outnumber baby boomers in the workforce and beyond (Fry 2018b). The industry faces a growing issue of employees retiring faster than empty positions fill. Attracting and keeping the attention of younger generations is becoming an industry focus.

This research study was created as an attempt to help bridge the gap in communication between the industry and the millennial generation, also known as “millennials.” It focuses on determining the perceptions millennials hold towards the industry and its products. Illuminating the perceptions held by millennials may help the industry to better strategize for the future in correcting public misperceptions.

There are several external and internal factors that may contribute to current public misperceptions. Possible external factors include the visibility of the industry, pushback from environmental organizations, presence of new product certification, federal government regulations, and the general lack of public knowledge regarding the industry.

The visibility of the industry can work against improving public perceptions (Mater 2005). Compared to other industries that mine materials below the Earth's surface like metals (steel) and natural fuel sources, the harvesting of forests is obvious (Bowyer et al. 2007). It would not be feasible to reduce the visibility of the industry because of the work involved. Thus, when the public drives past cleared forestland they may develop misperceptions toward the industry.

The visibility of cleared forest sites may contribute to pushback from environmental organizations. Organizations such as the Sierra Club, Common Ground, and the Conservation Fund make negative claims against the industry, creating mixed feelings in the public (Mater 2005; Uhrig 1999). Instead of promoting factual scientific statements, environmental organizations attempted to pass beliefs off as facts (Baldwin 2004). The industry response to the statements did nothing to correct public misperceptions, signaling the traditional response approach was in need of change (Baldwin 2004).

The reverberating effects of campaigns promoted by environmental organizations stirred the public enough to pressure the industry to create a method of product certification. The wood products industry adopted certification of their products in the 1990s to appease growing public environmental concerns. It became one of the "most pressing issues" of the decade (Vlosky and Ozanne 1998). Ecolabels can now be found on a variety of wood products. Studies have revealed consumers increasingly prefer certified products (Anderson and Hansen 2004; Vlosky et al. 2009). The certification of products may give the environmentally conscious public the ability to feel responsible in their purchases.

In addition to outside organizations, the federal and state government regulations of the industry may contribute to public perceptions of the industry. Multiple policies include the National Environmental Policy Act (NEPA), National Forest Management Act (NFMA), The Wilderness Act of 1964, and the Clean Water Act (U.S. Forest Service n.d.). State regulations must also be heeded by wood product companies who operate within the borders. While regulations and policies are a necessary element to all industry, it is the education provided about them which can lead to public misperception.

The education provided to the public touches upon the final possible external factor influencing public perceptions. An increasingly apparent issue facing the wood products industry is the public's general lack of knowledge about the industry. Public opinion regarding the industry was a subject of two studies over 20 years ago (Polzin and Bowyer 1999; Uhrig 1999). Both studies revealed the public had little factual knowledge concerning the industry and U.S. forest climate, suggesting a need for further education (Polzin and Bowyer 1999; Uhrig 1999).

The lack of knowledge may stem from the education system in the U.S. not covering sufficient material regarding wood products. University and college programs centering on forest resource programs report low student enrollment, a lack of diversity, and concerns regarding the relevance of course material (Sample et al. 2015). The current outreach for the programs appears insufficient and ineffective in attracting young people (Sample et al. 2015). Mater (2005) encourages industry scientists to foster better perceptions through improved educational outreach and industry promotions. The lack of knowledge regarding the wood products industry may be one of the more pervasive reasons for public misperceptions.

While there are many potential external forces, there are also possible internal forces contributing to industry misperceptions. A possible main internal force is the industry continuing to live in a state of denial that there is a perception problem (Baldwin 2004). Industry inaction has allowed for a gap in communication to occur, providing room for confusion and incorrect information to be spread (Baldwin 2004). This gap allows the public to demonize the entire industry if there is even a single misstep by one company (Mater 2005). Thus, the continuation of public misperception cannot be solely contributed to possible external, but internal forces as well.

The focus of this study was to determine current perceptions held by young generations towards the industry. The millennial generation, or “millennials,” is comprised of individuals born from the early 1980s to late 1990s/early 2000s. There is no current unified age range definition agreed upon by scholars regarding the millennial generation. Age range estimates are from 1979-1994, 1982-2004, 1980-2000, and beyond (DeVaney 2015; Fry 2018a; Hartman and McCambridge 2011; Holmberg-Wright et al. 2017; Levenson 2010; Myers and Sadaghiani 2016; Ralpheson 2014).

Millennials have received an enormous amount of attention from the press regarding their behaviors compared to previous generations (Myers and Sadaghiani 2010). News stories are consistently featured surrounding their behaviors, values, and differences in work habits, spending power, and view of life. Millennials are described as idealistic, environmentally conscious, entitled, optimistic, and self-absorbed among others (DeVaney 2017; Pew Research 2015). In the workplace, they are painted as arrogant, disrespectful to authority, and lazy (Stewart et al. 2017).

Yet, most of the adjectives ascribed to millennials come from older generations and not the millennials themselves. To understand why millennials developed into their current situation, the environment in which they grew up should be reviewed. Millennials have experienced multiple forms of financial difficulties including the U.S. stock market crash in 2008 and increasing amounts of student loans coupled with low income jobs or unemployment (Levenson 2010; Holmberg-Wright et al. 2017).

The millennials are also privy to a changing global climate. They grew up in a world with U.S. policies such the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the Oil Pollution Act of 1990 and amendments to the Clean Air Act (U.S. EPA 2018a; U.S. EPA 2018b; U.S. EPA 2017). With the rise of new environmental policy changes, Hollywood directors and studios took note. As a result, movies and TV shows with environmental themes began appearing, such as *FernGully: The Last Rainforest* (1992), *Once Upon a Forest* (1993), *Pocahontas* (1995), and even the reboot of the film *The Lorax* (2012). The popularity of these children's movies may have imbued certain beliefs and ideas into the absorbent young millennials' minds (Holbrook and Schindler 1994; Parment 2013; Tattoli 2017).

Millennials also belong to one of the most racially diverse generations in history (Drake 2014). They are a generation also less likely to align themselves with traditional religious or political institutions (Drake 2014). Yet, millennials do seem to value education. Compared to previous generations, millennials have over double the college-level credentials (Levenson 2010).

Millennials relationship with technology, specifically social media, is a possible source for a variety of generational differences. Millennials have been nicknamed

“digital natives” because of their technological savviness (Noble et al. 2009; Yeaton 2008). Their generation rose alongside social media platforms and sites such as Myspace (2003), Facebook (2004), YouTube (2005) and Twitter (2006) (van Dijck 2013). The advent of these new online, interactive sites allowed for the growth of a new type of communication and social networking.

Compared to older generations, millennials believe the internet and social media sites have a positive impact on society (Jiang 2018). Stewart et al. (2017) notes millennials have a distinction for placing technology as a defining characteristic of their generation. As a result of growing up with new technologies, millennials view workplace culture and traditions differently.

In partial credit to social network use, millennials value two-way communication rather than one-way (Holmberg-Wright et al. 2017). Instead of being told what to do, they seek to have a conversation regarding the task. Having open communication enables millennials to build relationships with their supervisors, peers, and mentors in the workplace (Myers and Sadaghiani 2010).

Millennials are more likely to “job hop” rather than stay in a position for a long period (DeVaney 2015; Myers and Sadaghiani 2010; Stewart et al. 2017). Some reasons for their turnover ties is a lack of promotional opportunities, an inability to form relationships with mentors and coworkers, a lack of job satisfaction, and conflict with their values on work-life balance (DeVaney 2015; Myers and Sadaghiani 2010; Stewart et al. 2017). Rather than stay in a job where millennials do not sense ability for growth, they will seek other employment options. Thus, millennials view the relationship between



a workplace culture and commitment to an organization different from previous generations (Stewart et al. 2017).

## **Methodologies**

### **Survey questionnaire creation**

Survey question topics were created based on information found in research articles and from informal conversations with industry leaders. As the current industry workforce nears retirement age, there is an increased need to recruit and employ younger generations. There have been no studies conducted thus far (to the author's knowledge) that have surveyed the millennial generation to understand their perceptions of the wood products industry or wood products. Thus, the survey questions could be formed as general or specific as required by the objectives of this study.

As a result, both general and specific questions were created to gauge millennials' individual perceptions. The questions covered several topics related to different sectors of the wood products industry. There was also an interest in discovering perceptions of cross laminated timber (CLT) as it is a relatively new product to the United States wood industry.

The survey questionnaire consisted of 40 total questions (see Appendix A). There were multiple formats for the questions including multiple choice, five-point Likert scale, open-ended, and categorical (ranking). Demographics, including age, education level, race/ethnicity, and state of residence, made up seven of the 40 questions. The age question was the most important to arrange as this study focuses on the millennials. The age range chosen to define the millennial generation herein are those aged 18 to 38 years old in 2018 (born 1980-2000). Outside of this research, there is no single, unified age

range agreed upon by scholars to define the millennial generation. Thus, this study based its age range on previous literature findings regarding possible or accepted millennial age ranges.

About half of the survey questions related to the wood products industry and the other half related to wood products. Industry questions requested respondents' opinions regarding topics such as: general knowledge, industry reputation/ credibility, and the industry's relationship with the environment. Wood products questions requested respondents' opinions regarding topics such as: general knowledge, popularity of products, physical appeal, durability of wood versus other materials, and a few specific questions surrounding cross laminated timber (CLT). In addition, questions were provided regarding respondent use of social media applications and their self-perception of their own generation.

After creating a draft of the questionnaire as a Word document, the survey was programmed online with the Qualtrics platform. Qualtrics is an online platform that provides survey software to create and collect survey data (Qualtrics 2018). Every question was formatted according to Dillman's tailored design method (Dillman et al. 2014).

### ***Institutional Review Board***

Mississippi State University policies require any research that involves human subjects to be approved before research procedures begin. The Institutional Review Board (IRB) and the Mississippi State University Office of Research Compliance complete this review to protect the human subjects involved in the research. Prior to

dissemination this study was reviewed by the MSU IRB and was approved on March 1, 2018.

### **Data collection**

The online survey was distributed by Research Now Survey Sampling International (SSI), a company providing data collection services for marketing research studies. Research Now SSI serves both large and small businesses, colleges/ universities, and “more than 5,800 market research agencies, media and advertising agencies, consulting and investment firms, and healthcare and corporate customers” (2018a). They are a company which aims to provide clients with the best data collection services possible. Research Now SSI conforms to the quality and ethical standards required of research organizations set by the European Society of Marketing Research (ESOMAR), the Insights Association, The American Marketing Association, and many more (2018c).

Research Now SSI uses panel-based sampling to identify respondents for surveys. The panels are comprised of people who have voluntarily agreed to take the survey and provide answers. The panel to which each survey is distributed depends upon the clients’ study requirements. The number of responses requested plus specific demographics constitute some of the possible study/panel requirements. Survey respondents are only allowed a one-time, single response and when the total number of needed responses is met, the survey is closed.

In order for Research Now SSI to provide a sample reflective of the target population, they use multiple quality control techniques. Examples of quality control measures include, “digital fingerprinting that flags duplicate respondents,” and “pattern recognition software identifies fraudulent respondents” (SSI 2018b; 2018c). There is also

continuous monitoring performed to ensure quality samples. To provide a representative sample, Research Now SSI uses its SSI Dynamix™ program to manage sample selection by using methodological questions to learn about the respondents, matching respondents to surveys with a three-step randomization process, and combining respondents from multiple sources into a single and monitored sample (2018d). The ability to integrate respondents from any source into one allows for a more diverse and representative sample panels.

Methods of surveying populations using the internet have evolved because of increasing demand. The methods Research Now SSI has implemented to ensure data quality corroborate with those described by Baker et al. (2010). An increasing number of industries have begun to rely on online panel services for research purposes. According to Callegaro et al. (2014), online surveys have taken precedence regarding how market research is conducted. Reasons for this increase relate to lower costs, faster response rate, higher levels of non-response in other methods, and issues regarding the reach of different modes (Baker et al. 2010). As a result, panel companies, such as Research Now SSI, who can provide access to millions of individuals, will continue to grow in value and popularity (Callegaro et al. 2014).

The value of online panel sampling goes beyond lower costs and faster response rates. There is evidence of a reduction in measurement error in online surveys versus other modes (Farrell and Petersen 2010). The use of internet surveys also allows the respondents to take their time in answering without facing question fatigue (Farrell and Peterson 2010; Dillman et al. 2014). Online surveys can allow for a great reach of the

survey beyond local community borders. The surveys are able to reach a larger population thereby increasing the potential for different response opinions.

### ***Bias potential***

Given the implementation of the study using an online panel company to distribute the survey, measuring non-response bias can be a potential issue (Sharp et al. 2011). However, as this study had two “waves” of responses, non-response bias was tested by comparing the early versus late responses. Other studies have used this approach in calculating non-response bias in online surveys whereby the number of non-respondents is unknown (Aguilar and Cai 2010; Lesser et al. 2011; Montague et al. 2016). Two questions, both yes-or-no answers, were chosen to test for bias. The Kolmogorov-Smirnov test (K-S test) was calculated to compare early versus late response. The K-S statistic for each question (#13 K-S=1.0, #29 K-S=0.97) confirmed the samples came from the same distribution. As a result, those who completed the survey later did not appear statistically different from those who completed it early.

Coverage bias is another area that may cause issues in cases of panel sampling. Coverage bias or error occurs when there is a disconnect between the targeted population and the sample drawn (Blair and Sinkhan 2006; Couper 2002). Couper (2002) finds that coverage error is the largest threat to online surveys in regards to its inability to reach respondents outside of the internet. In an attempt to reduce coverage error, this study focused on a single generation and defined the age range to incorporate all of the possible millennial age ranges previously published. The required use of the internet to access the survey would allow only those with the ability to do so. However, this limitation was not viewed as a potentially large coverage error as one of the main focuses of this survey was

respondent use of social media. To access social media, respondents must have access to the internet in some function. Millennials have shown to be prodigious users of the internet compared to older generations. Their heavier presence in the online world supports the idea of this study being able to reach its targeted population. Therefore, it is anticipated that there is a reduced coverage error as its targeted sample is in line with the targeted population.

### *Pre-testing the survey*

One round of pre-testing was done with the survey before the final version was ready for distribution. Pre-testing of surveys is a recommended method to resolve previous undetected issues and to reduce measurement errors with survey questions before full testing begins (Dillman et al. 2014). There are multiple methods to pre-test a survey. For this survey, the pre-test method of choice was to conduct a pilot study of a small number of people from the desired sample population before mass distribution (Dillman et al. 2014).

The pre-test occurred with the panel sample company Research Now SSI. The survey was administered to approximately 150 respondents for a pre-test prior to the full field launch. The pre-test began and was completed on March 7, 2018. The online pre-test is done to test if respondents answer the questions and to receive feedback regarding survey design. Feedback from the pre-test respondents aided in producing the final questionnaire. Feedback was collected from respondent comments in the open-ended box at the end of the survey. There were 144 usable responses from the pre-test. Approximately, 40 responses were discarded because those respondents did not fall in the age range or did not complete the questionnaire.

Based on the comments provided in the open-ended box of the initial 144 responses, two questions were altered to ease the answer process of the respondent. One question had the number of answer choices reduced while the other had the format changed altogether. The resulting survey became the final questionnaire.

### ***Sample collection***

The only requirement for this study was a specific age range of 18 to 38 year olds. All other demographics were random. Research Now SSI distributed the survey to a random sample from an online panel. The target number of responses was 1,500 and responses were collected until the target number was met. The 144 usable pre-test responses were included in the target of 1,500. Full field testing for the first wave occurred from March 14, 2018 to March 28, 2018.

The first wave incurred 1,234 usable completes, including the 144 usable pre-test responses. A second wave was launched in attempts to closer attain the 1,500 goal. The second wave occurred from April 18, 2018 to April 25, 2018. The second wave incurred 101 usable responses. The overall total number of responses from both waves was 1,818. However, approximately 339 responses were removed because those respondents did not fall in the age range or did not complete the questionnaire. This filtration resulted in a total of 1,479 usable responses.

### **Data analysis measures**

The SAS Analytics Software program was utilized to analyze the survey data. Descriptive statistics such as frequencies, means, and modes were calculated for all of the

questions. Further analysis included chi-square tests performed on yes-or-no, multiple choice, and all of the five-point Likert scale questions.

The chi-square ( $\chi^2$ ) test of independence was calculated to determine if significant relationships existed between select questions and the respondent demographics. The demographic variables tested were age, race/ethnicity, education, geographic region of residence, and gender. The significance level for this study was at  $\alpha = 0.05$ .

The chi-square test is appropriate to use for this study as the data is nominal or ordinal, the sample size is large, subjects were randomly selected, and there are violations of the assumptions of equal variances in the data (McHugh 2013).

## **Results**

### **Demographics**

The demographic breakdown from the 1,479 usable surveys revealed 54 percent of respondents were female ( $n = 796$ ) and 46 percent were male ( $n = 672$ ). The gender makeup for this study is similar to the entire U.S. with 51 percent female and 49 percent male (Howden and Meyer 2011). The majority of respondents live in the South (35%) and Midwest (23%) while 22 percent were from the West and 20 percent were from the Northeast. In terms of race/ethnicity, 79 percent of the respondents identified as Caucasian (white), 10 percent as African American, 8 percent as Asian and 2 percent as Other. The racial makeup of this study is on-par with the 2010 U.S. Census that reported 78 percent Caucasian, 13 percent African American, and 5 percent Asian (U.S. Census 2010).

Approximately, 45 percent of respondents identified as married, 38 percent as single, 15 percent as living with a partner, and three percent as divorced/separated. The



current level of education completed by respondents indicated 39 percent held college/advanced degrees, 26 percent held a high school degree or less, 22 percent had some college (no degree), and 13 percent held technical/associates degrees. The educational attainment is similar to the entire U.S., where 31 percent hold college/advanced degrees, 29 percent hold high school degrees, 19 percent have some college (no degree), and 10 percent hold associate degrees (U.S. Census 2017). Perhaps most important, there was a relatively equal turnout among age groups of survey respondents, as seen in Table 2.1.

Table 2.1 Age group frequency and percentage of survey respondents

<b>Age Group</b>	<b>N</b>	<b>Percent (%)</b>
<b>18-20</b>	141	9
<b>21-23</b>	151	10
<b>24-26</b>	206	14
<b>27-29</b>	252	17
<b>30-32</b>	261	18
<b>33-35</b>	258	18
<b>36-38</b>	205	14

\*Percent values are rounded to the nearest whole number.

The largest amount of respondents belonged to the groups covering ages 30-35 years (18%) and 27-29 years (17 %). These groups were followed closely by the 24-26 years (14%) and the 21-23 years (10%). Overall, the age demographic results provided a suitable sample to move forward with hypotheses testing.

### **Self-perception**

When asked their opinion on the label “millennial generation,” a third of respondents (37%) indicated a neutral attitude (“3” value). Only 32 percent of millennials

indicated a positive association (“4 or 5” value) with the label. Respondents were then asked to further describe their generation by choosing between two opposing adjectives, for example 1) ambitious versus 2) lazy.

Millennials described their generation as expressive (86%), innovative (82%), selfish (66%), and passionate (65%). There was also an indication that respondents view their generation as independent (52%) and ambitious (54%). In comparison, the Pew Research Center (2015) found that millennials largely described their generation as self-absorbed (59%), wasteful (49%), and idealistic (39%).

### **Social media**

Millennials indicated they are more comfortable using email (75%) and text messaging (78%) compared to face-to-face conversations and phone calls.

Approximately, 94 percent of respondents currently use social media applications and check them daily (62%) or hourly (24%).

The top five social media apps used are Facebook (94%), YouTube (76%), Instagram (63%), Snapchat (48%), and Twitter (44%). From the same list of provided social media apps, millennials ranked the top three most relevant as Facebook, Instagram, and YouTube. These findings are consistent with a study where Facebook, Instagram, and YouTube were listed as the most popular social media sites (Smith and Anderson 2018).

After answering multiple choice questions regarding social media habits and preferences, respondents were asked to consider five-point Likert scale social media statement questions. These statements revolved around company or business use of social media (Table 2.2).

Table 2.2 Q8: Millennials' attitude towards company use of social media apps

Statement	P value (p<0.05)	Mean	N	Response Percentage (%)	
				4 or 5 (agree or strongly agree)	1 or 2 (disagree or strongly disagree)
Social media is an effective tool for companies to use	E (<0.005) R (<0.0001)	4.04	1472	77	8
Social media keeps companies relevant	G (<0.0001) E (<0.0003)	4.00	1471	75	7
I have learned of companies through social media	G (<0.0001) E (<0.0003)	4.01	1471	74	10
Social media can help promote company corporate social responsibility	G (<0.009) E (<0.0009)	3.91	1470	70	8
Using social media helps to build a strong brand identity for a company	A (<0.03) E (<0.01) G (<0.0004)	3.96	1469	70	8
Social media helps to personalize company marketing efforts to the individual	E (<0.0008)	3.86	1463	69	9
I like to follow companies on social media for news and updates	A (<0.02) R (<0.04)	3.65	1474	62	18
I feel more engaged with companies who have a social media presence	E (<0.04)	3.66	1469	59	14
I respond to/interact with companies through social media	E (<0.002)	3.44	1471	54	22

\* P value abbreviations are A=age, G=gender, E=education, and R=race. Means are rounded to the nearest hundredth. Proportions are rounded to the nearest whole number. Values are based on a five-point scale where 5 = strongly agree and 1 = strongly disagree.

Millennials view social media as an effective tool (77%) for companies to utilize and to keep their business relevant (75%). Certain demographic factors indicated chi-

square based statistical significance ( $\alpha = 0.05$ ) for all of the social media statements. Millennials with college/advanced degrees ( $p < 0.005$ ) were more likely to agree and all millennials who identified as African American ( $p < 0.0001$ ) were least likely to agree with the statement “social media is an effective tool for companies to use.” Millennial females ( $p < 0.0001$ ) were more likely to strongly agree and all millennials with a high school degree ( $p < 0.0003$ ) held a neutral attitude (“3” value) regarding social media keeping a business relevant.

Millennials also agreed (73%) that using social media helps build a strong brand identity. Females ( $p < 0.0004$ ) and all millennials ages 18-20 ( $p < 0.03$ ) were more likely to strongly agree, while all millennials with a high school degree ( $p < 0.01$ ) were more likely to answer neutral “3” for that statement. Over half of millennials (70%) agreed that social media can help promote corporate social responsibility. Millennial females ( $p < 0.009$ ) were more likely to strongly agree, and all millennials with a high school degree held a neutral attitude (“3” value) towards that statement.

### **General industry**

Before listing detailed industry questions, there were several general ideas provided for millennials to consider. The general ideas revolved around respondent interaction with forests (recreation, etc), their attitudes toward the industry’s relationship to the environment, and their attitudes towards industry’s relationship with consumers.

Approximately, 65 percent of millennials said they knew of the wood products industry before taking this survey. Millennials who identified as Caucasian (68%) or Other (72%) were more likely ( $p < 0.0001$ ) to answer that they knew of the industry before this survey, compared to African Americans (51%).

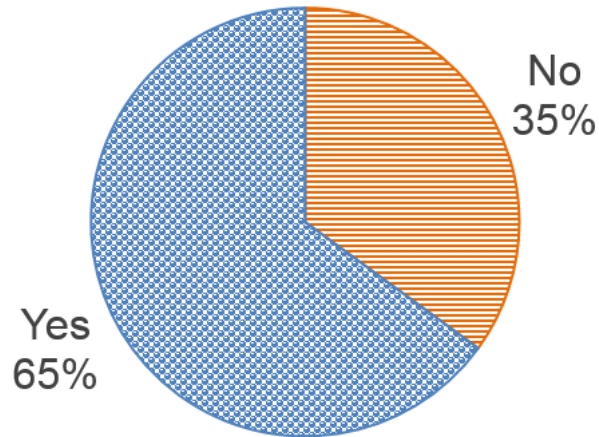


Figure 2.1 Q13: Percentage of millennials who knew of the wood products industry

Millennials also indicated that previous knowledge of the industry came from family (35%), friends (25%), and online (23%). In addition, 23 percent of millennials indicated they had learned of the industry from a college/university. Respondents were least likely to learn about the industry from a career center (6%). Only 13 percent of survey respondents currently have an immediate family member working in the industry.

In regards to the value in which millennials hold forests, Figure 2.2 illustrates their ranking of what they perceive as the most important uses or reasons for forests to exist.

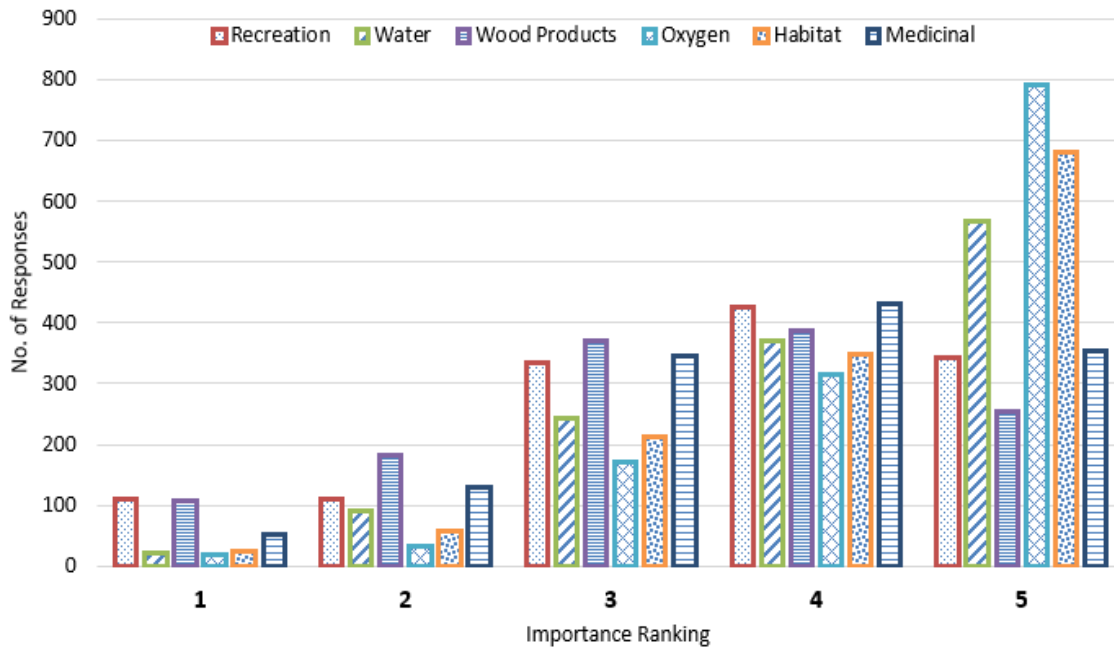


Figure 2.2 Q10: Millennials’ ranking of different forest uses

\*Values are based on a five-point scale, where 5=most important and 1=least important.

The top three most important (4 or 5 value) forest uses listed were oxygen creation (83%), animal habitat (78%), and water (72%). Both wood products and recreation ranked low in importance. However, both these uses were still considered somewhat important, leaning towards a “3 or 4” value.

In addition, Table 2.3 shows 62 percent of millennials agreed with the statement “I think the wood products industry damages our forests”. Females ( $p < 0.01$ ) and millennials ages 18-20 ( $p < 0.01$ ) were more likely to strongly agree with that statement.

Table 2.3 Q12. Millennials' attitude towards general wood products industry ideas

Statement	P value (p<0.05)	Mean	N	Response Percentage (%)	
				4 or 5 (agree or strongly agree)	1 or 2 (disagree or strongly disagree)
I think the wood products industry damages our forests	A (<0.01) G (<0.01)	3.71	1469	62	11
I think the wood products industry is important to my daily life	E (<0.005)	3.54	1471	56	14
I think there are opportunities for young people in the industry	A (<0.0006) G (<0.04)	3.51	1473	52	13
I rarely think about where wood products originate	G (<0.008) E (<0.0001) R (<0.04)	3.20	1478	46	31
I think the wood products industry is an ageing workplace	A (<0.008) G (<0.0003) E (<0.0007)	3.37	1470	43	16
I think the wood products industry has kept up with society cultural changes.	G (<0.0001)	3.24	1474	39	21
I have an interest in joining the wood products industry	G (<0.0001) E (<0.0001)	2.51	1471	25	51

\* P value abbreviations are A=age, G=gender, E=education, and R=race. Means are rounded to the nearest hundredth. Proportions are rounded to the nearest whole number. Values are based on a five-point scale where 5 = strongly agree and 1 = strongly disagree.

However, 56 percent of millennials agreed that the wood products industry is important to their daily life (Table 2.3). Millennials with technical/ associate's degrees were most likely to agree (p<0.005) with that statement. A little over half (52%) of millennials agreed there is opportunity for young people in the industry. Males (p<0.04) were more likely to strongly agree with that statement. Millennials ages 27-29 (41%)

were more likely ( $p < 0.0006$ ) to agree there is opportunity for young people versus ages 18-20 (24%).

In addition, 31 percent of millennials strongly disagreed with the statement, “I have an interest in joining the wood products industry.” Millennial females (39%) were more likely to strongly disagree ( $p < 0.0001$ ) with that statement versus males (22%). All millennials with a high school degree ( $p < 0.0001$ ) held a neutral attitude towards having an interest in joining the industry.

### *Relationship with environment*

Millennials also considered topics concerning the industry and environment.

Table 2.4 Q19: Millennials’ attitude towards wood products industry relationship with environment

Statement	P value ( $p < 0.05$ )	Mean	N	Response Percentage (%)	
				4 or 5 (agree or strongly agree)	1 or 2 (disagree or strongly disagree)
It makes me sad to see cleared forest lands	G ( $< 0.0001$ ) E ( $< 0.0001$ )	3.99	1472	71	9
I understand why wood products are important to our world	A ( $< 0.02$ ) E ( $< 0.0002$ )	3.78	1466	67	8
The wood products industry harms the environment	—	3.61	1471	56	12
I do not think the wood products industry replants trees they cut down	G ( $< 0.007$ )	3.22	1472	41	24
I think wood products contribute to improving our environment	A ( $< 0.0001$ ) G ( $< 0.0001$ ) E ( $< 0.02$ )	3.15	1474	36	26

\*P value abbreviations are A=age, G=gender, E=education, and R=race. Means are rounded to the nearest hundredth. Proportions are rounded to the nearest whole number. Values are based on a five-point scale where 5 = strongly agree and 1 = strongly disagree.



Approximately, 71 percent of millennials agreed it makes them sad to see forest lands cleared and 41 percent believe the industry does not replant after clearing forests (Table 2.4). Females (45%) ( $p < 0.0001$ ) were most likely to strongly agree versus males (32%) and all millennials with a college/advanced degree ( $p < 0.0001$ ) were most likely to agree that seeing forest lands cleared made them sad. Males were most likely to strongly disagree ( $p < 0.007$ ) with the idea that the industry does not replant trees. More than half of millennials (56%) were also more likely to agree with the idea of the industry harming the environment. There were no statistical significances for that statement.

### ***Relationship to consumer***

There were additional questions designed to determine millennial knowledge and attitude toward the industry's relationship with everyday consumers.

Table 2.5 Q18: Millennials' attitude towards wood products industry advertising

Statement	P value (p<0.05)	Mean	N	Response Percentage (%)	
				4 or 5 (agree or strongly agree)	1 or 2 (disagree or strongly disagree)
I think wood products companies should create awareness of their environmental friendliness	A (<0.01) G (<0.0001) E (<0.01) R (<0.0001)	3.99	1474	71	6
I think knowing how wood products benefit the environment would be beneficial to consumer opinion	G (<0.0006) E (<0.001)	3.92	1475	68	5
I think wood products marketing is mainly business to business.	A (<0.004) G (<0.0001) E (<0.0001) R (<0.003)	3.47	1477	50	14
Wood products marketing does not focus on the consumer	G (<0.0001) E (<0.0002)	3.21	1471	33	18
I <b>do not</b> think wood products marketing needs to be improved	G (<0.0001) E (<0.04) R (<0.04)	2.86	1473	24	33

\* P value abbreviations are A=age, G=gender, E=education, and R=race. Means are rounded to the nearest hundredth. Proportions are rounded to the nearest whole number. Values are based on a five-point scale where 5 = strongly agree and 1 = strongly disagree.

Approximately, 71 percent of millennials agreed the industry should continue to promote their environmental friendliness (Table 2.5). Females (41%) (p<0.0001) were most likely to strongly agree compared to males (28%) and all millennials ages 33-35 were most likely to agree (p<0.01) with that statement. Also, millennials holding a college/advanced degree (p<0.01) and all millennials who identified as Caucasian (p<0.0001) were most likely to agree wood products companies should promote their environmental friendliness.

Over half of millennials (68%) agreed that consumers benefit from knowing that wood products companies are environmentally friendly. Millennials females were more likely to strongly agree ( $p < 0.0006$ ) that it would be beneficial for consumers to know how wood products are better for the environment.

Thirty-three percent of millennials who disagreed with the statement, “I do not think wood products marketing needs to be improved.” Millennial females ( $p < 0.0001$ ) and all millennials with college/advanced degrees ( $p < 0.04$ ) were more likely to disagree with that statement. Millennials who identified as Caucasian were more likely to disagree ( $p < 0.04$ ) with that statement as well.

## **Discussion**

The perceptions of the millennial generation towards the wood products industry vary by topic. The results in this chapter pertain to the first part of the study’s objectives. The hypotheses stated:

**H1a:** Millennials think it is positive for a company to be involved in social media

**H1b:** Millennials have little knowledge about the wood products industry.

**H1c:** Millennials hold a negative view of the wood products industry.

**H1d:** Millennials think the wood products industry harms the environment.

Millennials appear to describe their own generation in a positive light. Rather than focus on negative descriptors, respondents touched upon millennial ambition, optimism, passion, and awareness as a generation. However, 58 percent of respondents indicated the millennial generation was unprofessional. This negative attribute indicates some possible cognitive dissonance within the millennial mindset. The outside attention millennials receive may be a reason for this dissonance between being ambitious and passionate, yet

unprofessional. The media is quick to ascribe negative traits to millennials, thus imbuing the negative thoughts within them (Pew Research 2015).

Overall, millennials held positive views towards companies that use social media to engage with consumers, confirming hypothesis **H1a**. They believe social media is a great asset to a modern business and generally agreed with all of the nine statements in the survey regarding social media. The views millennials hold towards social media may result from their familiarity and positive associations with it. Compared to previous generations, millennials believe social media has had a positive impact on society (Jiang 2018).

While Facebook remains the most popular app, the increasing popularity of Instagram should be noted. Millennials and the subsequent generation are moving away from the “first” social media platforms to others like Instagram (Smith and Anderson 2018). One of the reasons young generations are doing so is the increase in older generational participants joining apps such as Facebook (Zickuhr and Madden 2012). In an attempt to distance themselves from the eyes of their older relatives, millennials are turning to different platforms (Sweney 2018). Every industry, including wood products, should be aware of the shifts in popularity of social media platforms. It is likely that these platforms and popularity will continue to change as technologies continue to evolve.

There is room for improving awareness of the wood products industry, especially in regards to increasing awareness within other racial groups. Millennials who identified as Caucasian were more likely to know the industry exists, compared to all other races. A reason all millennials who identified as Caucasian may be more likely to know of the industry stems from the industry being a traditionally Caucasian dominated field. It also

indicates there is a continued lack of racial diversity within the industry as well as university or college programs associated with the field (Sample et al. 2015). It may be beneficial for the industry to conduct further research into how best to attract a more diverse audience.

It should perhaps concern the industry that millennials were most likely to hear about it from their family and friends. Only 23 percent of respondents indicated they learned of the industry while in college or at a university. Studies done have revealed forest resource programs have low enrollment and popularity (Sample et al. 2015). A breakdown in the relationship between the industry and colleges may be a contributing factor to low awareness at colleges. This result may also relate to why younger millennials (ages 18-20) may be less likely to see opportunity in the industry. The younger millennials (ages 18-20) may not be informed about or aware of opportunities in the wood products industry because of a small industry presence at the college/university level.

In terms of opportunity in the industry, a little over half of millennials (52%) agreed they saw opportunity for themselves. Millennial males were more likely to strongly agree with the statement. A possible reason for males being more likely to agree relates to the idea of the wood products industry as a traditionally male dominated field. Only in recent decades has there been recognition for a need to increase gender diversity (Hansen et al. 2016). Thus, millennial females may be less inclined to agree because of the gender stigma attached to the industry. These associations may also relate to why females indicated they do not have an interest in joining the industry. A reason for their uncertainty may be in the lack of awareness regarding potential opportunities for all types

of individuals. Stereotypical assumptions that only those with forestry, forest products, or some equivalent background are welcome to the industry need to be lessened (Smith 1995).

Results illustrated in Figure 2.1 indicate millennials are perhaps a more environmentally conscious group, placing survival and natural elements (oxygen, animal habitat, and water) as the most important reasons to have forests. Material items such as wood products and outdoor recreation ranked lower in importance. Possible reasons for why millennials are more environmentally conscious relate to the atmosphere in which they grew up. New environmental policies were created or amended by the U.S. government and internationally from 1980 to 2000 (U.S. EPA 2018a; U.S. EPA 2017). While these policy changes did not have an immediate impact on millennials, these changes may have influenced their beliefs and values when they became active spending consumers.

As environmental policy changes were happening, Hollywood directors and studios took note. Movies with environmental themes began appearing, such as *FernGully: The Last Rainforest* (1992), *Pocahontas* (1995), and even the recent reboot movie of *The Lorax* (2012). The popularity of these children's movies may have imbued certain beliefs and ideas into the absorbent young millennial minds (Tattoli 2017).

Hollywood has perhaps promoted the notion that the environment suffers at the hand of the industry. The 2012 reboot of the classic Dr. Seuss tale of *The Lorax* is an example of how the film industry promotes the wood products industry in a negative frame. The basic message of the film is “the environment must be protected against those who would profit from it” (Ayers 2012). There have been studies that indicate

experiences during a young individual's life can have a lasting impact on their consumer and personal behavior for years (Holbrook and Shindler 1994; Parment 2013).

Even online streaming services, such as Netflix or Hulu, may influence younger generational thought. The high availability of documentaries and TV series surrounding topics of environmentalism and climate change should be acknowledged. While potentially educational, access to these types of programs can influence behaviors and opinions regarding how to live one's life (Jones 2011). There is evidence of documentaries about social concerns, such as racism or human health, altering the public landscape after their release and influencing companies to change from public pressure (Jones 2011). Thus, environmental documentaries may have power in their ability to affect millennial attitudes towards the industry.

It may come as no surprise, therefore, that 62 percent of millennials believe the industry damages forests (Table 2.3). Females may have been more inclined to strongly agree with that statement from an emotional standpoint. There may be an argument for the influence of nature versus nurture, as females have been stereotypically associated with more nurturing personalities. Thus, seeing damage to nature may cause more of an emotional reaction from millennial females. Also, millennials ages 18-20 may be more inclined to strongly agree with that statement because of their current education level. Older millennials have probably learned from their life experiences regarding the wood products industry practices that younger millennials have yet to. The negative reaction shown by millennials from this statement reveals a continuation of a public belief that the industry does more harm than good to the environment, thus confirming the **H1d** hypothesis.

In addition, it should perhaps concern the industry that millennials (71%) feel sad when they see cleared forest lands. Millennial females may be more inclined to strongly agree with that statement based from an emotional standpoint. Again, the idea of nature versus nurture may have a part in influencing females stronger attitudes. The industry should also perhaps be concerned that only 36 percent of millennials agreed with the statement, “I think wood products contribute to improving our environment.” This result may indicate a weakness in education regarding the environmental friendliness and benefits of buying wood products compared to other materials.

It may also be worthy to note that millennials disagreed with the statement, “I do not think wood products marketing needs to be improved.” Millennial females were most inclined to disagree, perhaps indicating a desire to see more marketing or promotional effort for the industry. Millennial females may improve their interest and perception of the industry if they were better informed of potential opportunities in the industry.

Throughout the survey, millennial females indicated stronger opinions (both negative and positive) towards the industry. This gender significance was also seen in a previous study by Panwar et al. (2010) where women had stronger opinions towards the industry. There is no clear reason or understanding as to why females appear to hold stronger opinions towards the wood products industry. There is also no definitive answer to confirm or reject hypothesis **H1c** regarding millennials holding a negative view of the industry. However, millennials appear to hold stronger opinions towards certain industry-associated actions such as cutting trees and cleared forests. Many respondents chose to list a neutral stance on issues based on a lack of knowledge. Thus, these findings confirm hypothesis **H1b** regarding millennials having little knowledge about the industry.



## **Conclusion**

The millennial generation does not appear to have a strong knowledge base surrounding the wood products industry. Millennials appear to lack an idea of general concepts regarding industry practices and values. There is evidence to suggest the wood products industry should work to educate and improve awareness towards younger generations, like the millennials.

Based on the results of this study, there are two potential audiences the wood products industry should consider for future marketing campaigns. The first audience is millennial females. Designing advertisements and structuring campaigns to engage millennial females could open a new avenue for the industry in terms of awareness and popularity. Millennial females held stronger opinions towards posed questions than males for this study. It could be beneficial for the industry to invest in millennial females as an audience because of their consumer power as a mother, aunt, sister, cousin, or best friend.

Across generations and continents, females are the most powerful economic driving force (Brennan 2018; Silverstein and Sayre 2009). As more females have entered the workforce over the decades, their ability to spend more on products has increased. Worldwide female wealth accounted for \$39.6 trillion or 30 percent of the world's wealth in 2016 (Leonhardt 2016). Females are a strong audience to cater to for an industry to thrive and succeed overtime. They can bring awareness to younger audiences, such as their children, or other family or friends regarding products. Attaining their interest could benefit the wood products industry in heightening awareness of industry practices, values, and their environmental responsibility. Altering perceptions held by females currently could positively influence the perceptions of future generations.

The second audience the industry may consider focusing on is millennials ages 18-20. This group also held stronger opinions towards the industry in this study. These young millennials could be a great audience to engage with as they are just beginning their adult life. Some may be starting college and others their work careers.

Communicating with them at ages 18-20 may allow for their future perceptions and opinions to be more positive towards the wood products industry. Improving online campaigns and industry relationships with college programs may serve as great ways to interact with them.

There are a variety of potential avenues the wood products industry could use to engage with and reach millennials. Traditional sources of information such as newspapers and magazines remain viable, but the internet has become a popular way for people to get information. Millennials have a close relationship with social media platforms and the industry could use this to their advantage. Taking into account the results of this study, the industry marketers could design engaging online campaigns to encourage millennial interaction with the industry. Creating witty hashtags, unusual campaign slogans, or producing a humorous viral video could perhaps reach young millennials (ages 18-20).

It would be unreasonable and difficult for the industry to change the visibility of its work in harvesting wood. Yet, there is potential for this assumed weakness to be turned into strength for the industry. Possible marketing campaigns could be created to educate and emphasize the responsible and nurturing relationship the industry has with the environment. Large promotional boards could be placed near cleared forest sites explaining where the trees are destined to go and what products they are destined to

create (lumber yard, etc). Millennials agreed they would like to know more about the environmental friendliness of the industry, and this is a potential avenue to educate them.

The time for change is fast approaching the wood products industry and soon traditional means of marketing and promotion may not be viable. Trying new methods, researching new concepts, and taking a chance on novel ideas or campaigns may breathe new life into the wood products industry. The value of this study lies within its ability to provide potential insight for the industry in how to best reach the millennial audience. It may provide answers to some questions industry professionals may have only theorized about previously. These study results can be used to guide the wood products industry to improve relations with millennials and subsequent generations. They can also serve as a foundation for future academic research.

### **Future research and improvements of the study**

Every research study has room for improvement and there are several considerations future researchers should note. A key area to focus on for improvements is the formulation of survey questions. While perfection does not exist, market researchers strive to attain a certain level in regards to their survey instruments. This study underwent several versions before the final version was ready for public consumption. Questions were eliminated for time and others could have perhaps used further revision.

This study focused heavily on asking “how” and fewer “why” questions. Future studies should begin to focus on the “why.” Being able to understand a generation, such as the millennials, in this format would be beneficial in strengthening relationships with them as consumers. However, this study was designed as a foundation for future studies. Thus, asking “how” questions are vital to reach the next step of “why.”

In addition to the style of question, the content and explanation for certain questions could have been improved. There were a select few comments from respondents regarding the ambiguous language used for some questions. The ambiguity often rested within the word arrangement and word choices for the question. Future studies should focus on formulating precise words and phrasing of their questions to avoid confusing the respondent.

The length of the survey is another aspect to consider for each study. This survey study was relatively long, taking respondents an average of 15 minutes to complete. In the future, shorter and multiple surveys may be of more use than a single, long survey. This change could decrease the chances of respondents not completing the survey in an appropriate manner. Reducing the length would also help to ensure the structure and clarity of questions.

Data analysis methods are a factor to examine. Consideration towards future analysis is critical as every study is formulated. This factor assures meaningful conclusions can be gleaned from the study instrument.

The population sample for the study is a final important factor to consider in detail. This study defines the millennial generation as those born between 1980 and 2000 after reviewing previous research. Within this generation, there are differences between three groupings. Future studies could focus on a similar wide range or focus on a smaller, specific group within the millennial range. Yet, this potential regrouping would entirely depend on the reason for the study and the scope involved. In January 2019, the Pew Research Center published an article to solidify their stance on the true age range for millennials. They define a millennial as an individual born from 1981 to 1996 and will

only use this age range for the rest of time (Dimock 2019). Whether other research institutions will follow in this path or not will have to be closely watched by future scholars.

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CHAPTER III  
MILLENNIAL PERCEPTIONS OF WOOD PRODUCTS

**Introduction**

Over the past several years, the wood products industry has begun questioning how best to adapt to an evolving social and cultural environment. There is special interest in improving the relationship between the industry and younger generations, such as the millennial generation. The “millennials” are the next up-and-coming generation, soon to outnumber baby boomers in the workforce and beyond (Fry 2018b). The industry faces a growing issue of employees retiring faster than empty positions fill. Attracting and keeping the attention of younger generations is becoming an industry focus.

This research study was created as an attempt to help bridge the gap in communication between the industry and the millennial generation, also known as “millennials.” It focuses on determining the perceptions millennials hold towards the industry and its products. Illuminating the perceptions held by millennials may help the industry to better strategize for the future in correcting public misperceptions.

There are several external and internal factors that may contribute to current public misperceptions. Possible external factors include the visibility of the industry, pushback from environmental organizations, presence of new product certification, federal government regulations, and the general lack of public knowledge regarding the industry.

The visibility of the industry can work against improving public perceptions (Mater 2005). Compared to other industries that mine materials below the Earth's surface like metals (steel) and natural fuel sources, the harvesting of forests is obvious (Bowyer et al. 2007). It would not be feasible to reduce the visibility of the industry because of the work involved. Thus, when the public drives past cleared forestland they may develop misperceptions toward the industry.

The visibility of cleared forest sites may contribute to pushback from environmental organizations. Organizations such as the Sierra Club, Common Ground, and the Conservation Fund make negative claims against the industry, creating mixed feelings in the public (Mater 2005; Uhrig 1999). Instead of promoting factual scientific statements, environmental organizations attempted to pass beliefs off as facts according to Baldwin (2004). The industry response to the statements did nothing to correct public misperceptions, signaling the traditional response approach was in need of change (Baldwin 2004).

The reverberating effects of campaigns promoted by environmental organizations stirred the public enough to pressure the industry to create a method of product certification. The wood products industry adopted certification of their products in the 1990s to appease growing public environmental concerns. It became one of the "most pressing issues" of the decade (Vlosky and Ozanne 1998). Ecolabels can now be found on a variety of wood products. Studies have revealed consumers increasingly prefer certified products (Anderson and Hansen 2004; Vlosky et al. 2009). The certification of products may give the environmentally conscious public the ability to feel responsible in their purchases.

In addition to outside organizations, the federal and state government regulations of the industry may contribute to public perceptions of the industry. Multiple policies include the National Environmental Policy Act (NEPA), National Forest Management Act (NFMA), The Wilderness Act of 1964, and the Clean Water Act (U.S. Forest Service n.d.). State regulations must also be heeded by wood product companies who operate within the borders. While regulations and policies are a necessary element to all industry, it is the education provided about them which can lead to public misperception.

The education provided to the public touches upon the final possible external factor influencing public perceptions. An increasingly apparent issue facing the wood products industry is the public's general lack of knowledge about the industry. Public opinion regarding the industry was a subject of two studies over 20 years ago (Polzin and Bowyer 1999; Uhrig 1999). Both studies revealed the public had little factual knowledge concerning the industry and U.S. forest climate, suggesting a need for further education (Polzin and Bowyer 1999; Uhrig 1999).

The lack of knowledge may stem from the education system in the U.S. not covering sufficient material regarding wood products. University and college programs centering on forest resource programs report low student enrollment, a lack of diversity, and concerns regarding the relevance of course material (Sample et al. 2015). The current outreach for the programs appears insufficient and ineffective in attracting young people (Sample et al. 2015). Mater (2005) encourages industry scientists to foster better perceptions through improved educational outreach and industry promotions. The lack of knowledge regarding the wood products industry may be one of the more pervasive reasons for public misperceptions.

While there are many potential external forces, there are also possible internal forces contributing to industry misperceptions. A possible main internal force is the industry continuing to live in a state of denial that there is a perception problem (Baldwin 2004). Industry inaction has allowed for a gap in communication to occur, providing room for confusion and incorrect information to be spread (Baldwin 2004). This gap allows the public to demonize the entire industry if there is even a single misstep by one company (Mater 2005). Thus, the continuation of public misperception cannot be solely contributed to possible external, but internal forces as well.

The focus of this study was to determine current perceptions held by young generations towards the industry. The millennial generation, or “millennials,” is comprised of individuals born from the early 1980s to late 1990s/early 2000s. There is no current unified age range definition agreed upon by scholars regarding the millennial generation. Age range estimates are from 1979-1994, 1980-2000, 1982-2004, and beyond (DeVaney 2015; Fry 2018a; Hartman and McCambridge 2011; Holmberg-Wright et al. 2017; Levenson 2010; Myers and Sadaghiani 2016; Ralpheson 2014).

Millennials have received an enormous amount of attention from the press regarding their behaviors compared to previous generations (Myers and Sadaghiani 2010). News stories are consistently featured surrounding their behaviors, values, and differences in work habits, spending power, and view of life. Millennials are described as idealistic, environmentally conscious, entitled, optimistic, and self-absorbed among others (DeVaney 2017; Pew Research 2015). In the workplace, they are painted as arrogant, disrespectful to authority, and lazy (Stewart et al. 2017).

Yet, most of the adjectives ascribed to millennials come from older generations and not the millennials themselves. To understand why millennials developed into their current situation, the environment in which they grew up should be reviewed. Millennials have experienced multiple forms of financial difficulties including the U.S. stock market crash in 2008 and increasing amounts of student loans coupled with low income jobs or unemployment (Levenson 2010; Holmberg-Wright et al. 2017).

The millennials are also privy to a changing global climate. They grew up in a world with U.S. policies such the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, the Oil Pollution Act of 1990 and amendments to the Clean Air Act (U.S. EPA 2018a; U.S. EPA 2018b; U.S. EPA 2017). With the rise of new environmental policy changes, Hollywood directors and studios took note. As a result, movies and TV shows with environmental themes began appearing, such as *FernGully: The Last Rainforest* (1992), *Once Upon a Forest* (1993), *Pocahontas* (1995) and even, the 2012 reboot of *The Lorax*. The popularity of these children's movies may have imbued certain beliefs and ideas into the absorbent young millennials' minds (Holbrook and Schindler 1994; Parment 2013; Tattoli 2017).

Millennials also belong to one of the most racially diverse generations in history (Drake 2014). They are a generation also less likely to align themselves with traditional religious or political institutions (Drake 2014). Compared to previous generations, millennials have over double the college-level credentials (Levenson 2010).

The buying habits of millennials speak to certain cultural and social influences in their developmental years. The emergence of the internet and social media has had an effect on certain buying habits. Millennials show an infinity for researching materials



online, reviewing testimonials or reviews, before purchase (Parment 2013; Pate and Adams 2013). Seeing items “liked” by their friends or celebrities endorsing products also influences millennial decisions (Parment 2013; Pate and Adams 2013). These factors may be a result of millennial emphasis towards their image and reputation, indicating a self-consciousness for how others perceive them (Noble et al. 2009; Parment 2013). However, they are also a generation which values information regarding product value, quality, and environmental impact (Osburg et al. 2016).

Millennials relationship with technology, specifically social media, is a possible source for a variety of generational differences. Millennials have been nicknamed “digital natives” because of their technological savviness (Noble et al. 2009; Yeaton 2008). Their generation rose alongside social media platforms and sites such as Myspace (2003), Facebook (2004), YouTube (2005) and Twitter (2006) (van Dijck 2013). The advent of these new online, interactive sites allowed for the growth of a new type of communication and social networking.

Compared to older generations, millennials believe the internet and social media sites have a positive impact on society (Jiang 2018). Stewart et al. (2017) notes millennials have a distinction for placing technology as a defining characteristic of their generation. As a result of growing up with new technologies, millennials view workplace culture and traditions differently.

In partial credit to social network use, millennials value two-way communication rather than one-way (Holmberg-Wright et al. 2017). Instead of being told what to do, they seek to have a conversation regarding the task. Having open communication enables

millennials to build relationships with their supervisors, peers, and mentors in the workplace (Myers and Sadaghiani 2010).

Millennials are more likely to “job hop” rather than stay in a position for a long period (DeVaney 2015; Myers and Sadaghiani 2010; Stewart et al. 2017). Some reasons for their turnover ties is a lack of promotional opportunities, an inability to form relationships with mentors and coworkers, a lack of job satisfaction, and conflict with their values on work-life balance (DeVaney 2015; Myers and Sadaghiani 2010; Stewart et al. 2017). Rather than stay in a job where millennials do not sense ability for growth, they will seek other employment options. Thus, millennials view the relationship between a workplace culture and commitment to an organization different from previous generations (Stewart et al. 2017).

## **Methodologies**

### **Survey questionnaire creation**

Survey question topics were created based on information found in research articles and from informal conversations with industry leaders. As the current industry workforce nears retirement age, there is an increased need to recruit and employ younger generations. There have been no studies conducted thus far (to the author’s knowledge) that have surveyed the millennial generation to understand their perceptions of the wood products industry or wood products. Thus, the survey questions could be formed as general or specific as required by the objectives of this study.

As a result, both general and specific questions were created to gauge millennials’ individual perceptions. The questions covered several topics related to different sectors of the wood products industry. There was also an interest in discovering perceptions of cross

laminated timber (CLT) as it is a relatively new product to the United States wood industry.

The survey questionnaire consisted of 40 total questions (see Appendix A). There were multiple formats for the questions including multiple choice, five-point Likert scale, open-ended, and categorical (ranking). Demographics, including age, education level, race/ethnicity, and state of residence, made up seven of the 40 questions. The age question was the most important to arrange as this study focuses on the millennials. The age range chosen to define the millennial generation herein are those aged 18 to 38 years old in 2018 (born 1980-2000). Outside of this research, there is no single, unified age range agreed upon by scholars to define the millennial generation. Thus, this study based its age range on previous literature findings regarding possible or accepted millennial age ranges.

About half of the survey questions related to the wood products industry and the other related to wood products. Industry questions requested respondents' opinions regarding topics such as: general knowledge, industry reputation/ credibility, and the industry's relationship with the environment. Wood products questions requested respondents' opinions regarding topics such as: general knowledge, popularity of products, physical appeal, durability of wood versus other materials, and a few specific questions surrounding cross laminated timber (CLT). In addition, questions were provided regarding respondent use of social media applications and their self-perception of their own generation.

After creating a draft of the questionnaire as a Word document, the survey was programmed online with the Qualtrics platform. Qualtrics is an online platform that

provides survey software to create and collect survey data (Qualtrics 2018). Every question was formatted according to Dillman's tailored design method (Dillman et al. 2014).

### ***Institutional Review Board***

Mississippi State University policies require any research that involves human subjects to be approved before research procedures begin. The Institutional Review Board (IRB) and the Mississippi State University Office of Research Compliance complete this review to protect the human subjects involved in the research. Prior to dissemination this study was reviewed by the MSU IRB and was approved on March 1, 2018.

### **Data collection**

The online survey was distributed by Research Now Survey Sampling International (SSI), a company providing data collection services for marketing research studies. Research Now SSI serves both large and small businesses, colleges/ universities, and "more than 5,800 market research agencies, media and advertising agencies, consulting and investment firms, and healthcare and corporate customers" (2018a). They are a company which aims to provide clients with the best data collection services possible. Research Now SSI conforms to the quality and ethical standards required of research organizations set by the European Society of Marketing Research (ESOMAR), the Insights Association, The American Marketing Association, and many more (2018c).

Research Now SSI uses panel-based sampling to identify respondents for surveys. The panels are comprised of people who have voluntarily agreed to take the survey and

provide answers. The panel to which each survey is distributed depends upon the clients' study requirements. The number of responses requested plus specific demographics constitute some of the possible study/panel requirements. Survey respondents are only allowed a one-time, single response and when the total number of needed responses is met, the survey is closed.

In order for Research Now SSI to provide a sample reflective of the target population, they use multiple quality control techniques. Examples of quality control measures include, “digital fingerprinting that flags duplicate respondents,” and “pattern recognition software identifies fraudulent respondents” (SSI 2018b; SSI 2018c). There is also continuous monitoring performed to ensure quality samples. To provide a representative sample, Research Now SSI uses its SSI Dynamix™ program to manage sample selection by using methodological questions to learn about the respondents, matching respondents to surveys with a three-step randomization process, and combining respondents from multiple sources into a single and monitored sample (SSI 2018d). The ability to integrate respondents from any source into one allows for a more diverse and representative sample panels.

Methods of surveying populations using the internet have evolved because of increasing demand. The methods Research Now SSI has implemented to ensure data quality corroborate with those described by Baker et al. (2010). An increasing number of industries have begun to rely on online panel services for research purposes. According to Callegaro et al. (2014), online surveys have taken precedence regarding how market research is conducted. Reasons for this increase relate to lower costs, faster response rate, higher levels of non-response in other methods, and issues regarding the reach of

different modes (Baker et al. 2010). As a result, panel companies, such as Research Now SSI, who can provide access to millions of individuals, will continue to grow in value and popularity (Callegaro et al. 2014).

The value of online panel sampling goes beyond lower costs and faster response rates. There is evidence of a reduction in measurement error in online surveys versus other modes (Farrell and Petersen 2010). The use of internet surveys also allows the respondents to take their time in answering without facing question fatigue (Farrell and Peterson 2010, 210; Dillman et al. 2014). Online surveys can allow for a great reach of the survey beyond local community borders. The surveys are able to reach a larger population thereby increasing the potential for different response opinions.

### ***Bias potential***

Given the implementation of the study using an online panel company to distribute the survey, measuring non-response bias can be a potential issue (Sharp et al. 2011). However, as this study had two “waves” of responses, non-response bias was tested by comparing the early versus late responses. Other studies have used this approach in calculating non-response bias in online surveys whereby the number of non-respondents is unknown (Aguilar and Cai 2010; Lesser et al. 2011; Montague et al. 2016). Two questions, both yes-or-no answers, were chosen to test for bias. The means, modes and the Kolmogorov-Smirnov test (K-S test) were calculated to compare early versus late response. For both groups, the modes were the same and the means had a 0.02 difference. The K-S statistic for each question (#13 K-S=1.0, #29 K-S=0.97) confirmed the samples came from the same distribution. As a result, those who completed the survey late did not appear statistically significant from those who completed it early.

Coverage bias is another area that may cause issues in cases of panel sampling. Coverage bias or error occurs when there is a disconnect between the targeted population and the sample drawn (Blair and Sinkhan 2006; Couper 2002). Couper (2002) finds that coverage error is the largest threat to online surveys in regards to its inability to reach respondents outside of the internet. In an attempt to reduce coverage error, this study focused on a single generation and defined the age range to incorporate all of the possible millennial age ranges previously published. The required use of the internet to access the survey would allow only those with the ability to do so. However, this limitation was not viewed as a potentially large coverage error as one of the main focuses of this survey was respondent use of social media. To access social media, respondents must have access to the internet in some function. Millennials have shown to be prodigious users of the internet compared to older generations. Their heavier presence in the online world supports the idea of this study being able to reach its targeted population. Therefore, it is anticipated that there is a reduced coverage error as its targeted sample is in line with the targeted population.

### ***Pre-testing the survey***

One round of pre-testing was done with the survey before the final version was ready for distribution. Pre-testing of surveys is a recommended method to resolve previous undetected issues and to reduce measurement errors with survey questions before full testing begins (Dillman et al. 2014). There are multiple methods to pre-test a survey. For this survey, the pre-test method of choice was to conduct a pilot study of a small number of people from the desired sample population before mass distribution (Dillman et al. 2014).

The pre-test occurred with the panel sample company Research Now SSI. The survey was administered to approximately 150 respondents for a pre-test prior to the full field launch. The pre-test began and was completed on March 7, 2018. The online pre-test is done to test if respondents answer the questions and to receive feedback regarding survey design. Feedback from the pre-test respondents aided in producing the final questionnaire. Feedback was collected from respondent comments in the open-ended box at the end of the survey. There were 144 usable responses from the pre-test. Approximately, 40 responses were discarded because those respondents did not fall in the age range or did not complete the questionnaire.

Based on the comments provided in the open-ended box of the initial 144 responses, two questions were altered to ease the answer process of the respondent. One question had the number of answer choices reduced while the other had the format changed altogether. The resulting survey became the final questionnaire.

### ***Sample collection***

The only requirement for this study was a specific age range of 18 to 38 year olds. All other demographics were random. Research Now SSI distributed the survey to a random sample from an online panel. The target number of responses was 1,500 and responses were collected until the target number was met. The 144 usable pre-test responses were included in the target of 1,500. Full field testing for the first wave occurred from March 14, 2018 to March 28, 2018.

The first wave incurred 1,234 usable completes, including the 144 usable pre-test responses. A second wave was launched in attempts to closer attain the 1,500 goal. The second wave occurred from April 18, 2018 to April 25, 2018. The second wave incurred



101 usable responses. The overall total number of responses from both waves was 1,818. However, approximately 339 responses were removed because those respondents did not fall in the age range or did not complete the questionnaire. This filtration resulted in a total of 1,479 usable responses.

### **Data analysis measures**

The SAS Analytics Software program was utilized to analyze the survey data. Descriptive statistics such as frequencies, means, and modes were calculated for all of the questions. Further analysis included chi-square tests performed on yes-or-no, multiple choice, and all of the five-point Likert scale questions.

The chi-square ( $\chi^2$ ) test of independence was calculated to determine if significant relationships existed between select questions and the respondent demographics. The demographic variables tested were age, race/ethnicity, education, geographic region of residence, and gender. The significance level for this study was at  $\alpha = 0.05$ .

The chi-square test is appropriate to use for this study as the data is nominal or ordinal, the sample size is large, subjects were randomly selected, and there are violations of the assumptions of equal variances in the data (McHugh 2013).

## **Results**

### **Demographics**

The demographic breakdown from the 1,479 usable surveys revealed 54 percent of respondents were female ( $n = 796$ ) and 46 percent were male ( $n = 672$ ). The gender makeup for this study is similar to the entire U.S. with 51 percent female and 49 percent male (Howden and Meyer 2011). The majority of respondents live in the South (35%)

and Midwest (23%) while 22 percent were from the West and 20 percent were from the Northeast. In terms of race/ethnicity, 79 percent of the respondents identified as Caucasian (white), 10 percent as African American, 8 percent as Asian and 2 percent as Other. The racial makeup of this study is on-par with the 2010 U.S. Census that reported 78 percent Caucasian, 13 percent African American, and 5 percent Asian (U.S. Census 2010).

Approximately, 45 percent of respondents identified as married, 38 percent as single, 15 percent as living with a partner, and three percent as divorced/separated. The current level of education completed by respondents indicated 39 percent held college/advanced degrees, 26 percent held a high school degree or less, 22 percent had some college (no degree), and 13 percent held technical/associates degrees. The educational attainment is similar to that of the entire U.S., where 31 percent hold college/advanced degrees, 29 percent hold high school degrees, 19 percent have some college (no degree), and 10 percent hold associate degrees (U.S. Census 2017). Perhaps most important, there was a relatively equal turnout among age groups of survey respondents, as seen in Table 3.1.

Table 3.1 Age group frequency and percentage of survey respondents

<b>Age Group</b>	<b>N</b>	<b>Percent (%)</b>
<b>18-20</b>	141	9
<b>21-23</b>	151	10
<b>24-26</b>	206	14
<b>27-29</b>	252	17
<b>30-32</b>	261	18
<b>33-35</b>	258	18
<b>36-38</b>	205	14

\*Percent values are rounded to the nearest whole number.

The largest amount of respondents belonged to the groups covering ages 30-35 years (18%) and 27-29 years (17 %). These groups were followed closely by the 24-26 years (14%) and the 21-23 years (10%). Overall, the age demographic results provided a suitable sample to move forward with hypotheses testing.

### **Self-perception**

When asked their opinion on the label “millennial generation,” a third of respondents (37%) indicated a neutral attitude (“3” value). Only 32 percent of millennials indicated a positive association (“4 or 5” value) with the label. Respondents were further asked to describe their generation by selecting between two opposing adjectives, for example 1) ambitious versus 2) lazy.

Millennials described their generation as expressive (86%), innovative (82%), selfish (66%) and passionate (65%). There was also an indication that millennials viewed their generation as independent (52%) and ambitious (54%). In comparison, the Pew Research Center (2015) found millennials described their generation as self-absorbed (59%), wasteful (49%), and idealistic (39%).

### **General products**

Before asking specific wood product questions, general ideas were presented for millennials to consider. Respondents were asked to contemplate the meaning behind associated words or phrases to gauge their perceptions. The top three words that came to millennials first when seeing or hearing the term “wood products” were trees (33%), lumber (25%), and paper (17%). The full list of answer options provided to respondents is illustrated in Figure 3.1.

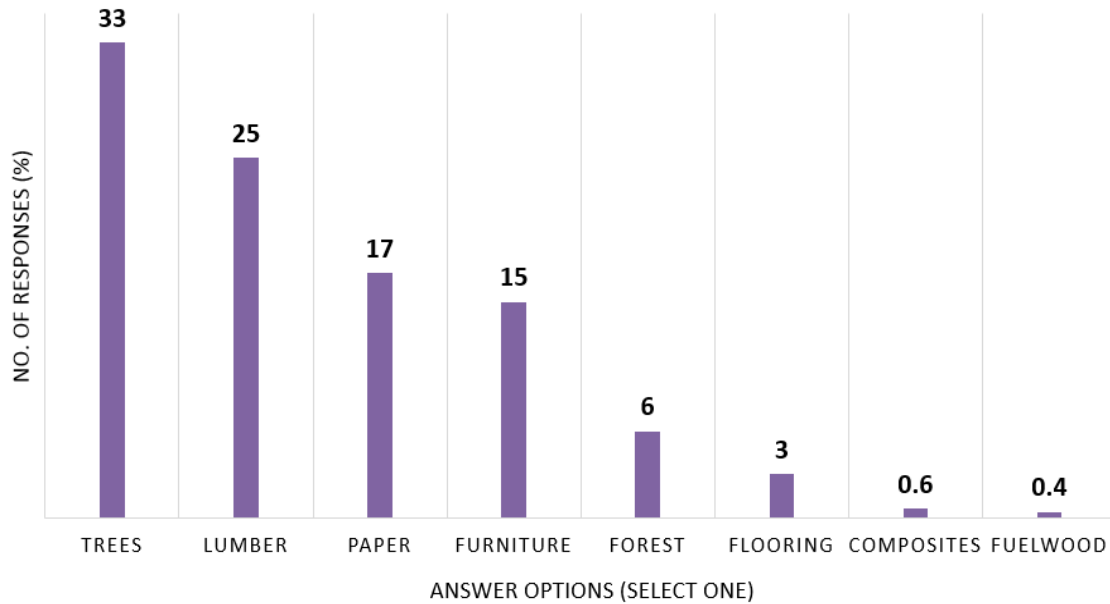


Figure 3.1 Q11: Millennials’ perception toward hearing the phrase “wood products”  
 \**n* =1476. Percent values are rounded to the nearest whole number.

In a separate question, millennials were asked to rank 10 different wood products in terms of perceived popularity. Approximately, 71 percent (*n*=751) indicated paper and pulp to be the first most popular product, followed by lumber at 51 percent (*n* =762).

Additional questions asked included how wood products perform or appeal to current millennial consumers. Approximately, 78 percent agreed wood products will always have a presence in the consumer market (Table 3.2). Millennials ages 30-38 (40%) were most likely to strongly agree ( $p < 0.006$ ) with that statement compared ages 18-20 (26%). Females ( $p < 0.006$ ) were more likely to strongly agree and all millennials with a college/advanced degree were more likely to agree ( $p < 0.0001$ ) that wood products will always have a presence in the consumer market.

Table 3.2 Q21: Millennials' attitude toward general wood products

Statement	P value (p<0.05)	Mean	N	Response Percentage (%)	
				4 or 5 (agree or strongly agree)	1 or 2 (disagree or strongly disagree)
I believe wood products will always have a place in the consumer market	A (<0.006) G (<0.001) E (<0.0001)	4.07	1476	78	6
I believe wood products are popular among consumers	A (<0.04) G (<0.002) E (<0.004)	4.00	1474	75	6
I will most likely buy wood products in the future	A (<0.0001) G (<0.005) E (<0.001) R (<0.002)	3.85	1476	66	8
I prefer wood based furniture such as dressers, bed frames, etc.	A (<0.0001) E (<0.002)	3.81	1475	63	10

\*P value abbreviations are A=age, G=gender, E=education, and R=race. Means are rounded to the nearest hundredth. Proportions are rounded to the nearest whole number. Values are based on a five-point scale where 5 = strongly agree and 1 = strongly disagree.

Approximately, 75 percent of millennials agreed that wood products are popular among consumers (Table 3.2). Females (p<0.002) were more likely to strongly agree and millennials ages 33-35 were more likely to agree (p<0.04) that wood products are popular among consumers. Millennials with some college, no degree (p<0.004) were more likely to strongly agree with that statement as well.

### ***Wood products appeal***

Specific wood product questions revolved around four main themes from which statements were created for millennials to consider. The four themes were: the

environment, physical properties, physical appearance, and durability. There were a series of statements corresponding to each of these themes for millennials to evaluate.

The first theme focused on wood products and the environment seeking to gauge millennial knowledge and attitude toward different concepts. Statements provided in Table 3.3 show results from the environmental theme block.

Table 3.3 Q23: Millennials’ attitude regarding the environmental impact of wood products

Statement	P value (p<0.05)	Mean	N	Response Percentage (%)	
				4 or 5 (agree or strongly agree)	1 or 2 (disagree or strongly disagree)
I do not like to see trees cut down	G (<0.0001)	3.78	1467	64	12
Wood is a sustainable resource	A (<0.0002) G (<0.02) E (<0.0001)	3.64	1472	60	14
We should not use wood products to construct tall buildings	G (<0.004)	3.58	1470	52	13
Compared to other building materials, wood structures are environmentally friendly	A (<0.002) G (<0.003)	3.50	1471	49	12
Using wood products is environmentally friendly	A (<0.0001) G (<0.0001)	3.23	1465	41	25
Wood is a better quality product with which to build as compared to concrete or steel	A (<0.001) E (<0.02)	3.27	1470	38	20
Wood products should not be built or used	A (<0.0003) G (<0.0001) R (<0.03)	2.64	1466	22	46

\* P value abbreviations are A=age, G=gender, E=education, and R=race. Means are rounded to the nearest hundredth. Proportions are rounded to the nearest whole number. Values are based on a five-point scale where 5 = strongly agree and 1 = strongly disagree.

Approximately, 64 percent of millennials agreed they do not like to see trees cut down (Table 3.3). Millennial females (36%) were more likely to strongly agree ( $p < 0.0001$ ) with that statement than males (24%).

There were 60 percent of millennials who agreed that wood is a sustainable resource. Millennial males were more likely to strongly agree ( $p < 0.02$ ) with that statement. All millennials ages 33-35 ( $p < 0.0002$ ) and all millennials with a technical/associate's degree were more likely to agree ( $p < 0.0001$ ) wood is a sustainable resource.

Only 38 percent agreed that "wood is a better quality product with which to build as compared to concrete or steel." A little less than half of millennials (42%) held a neutral attitude ("3" value) towards the statement. Millennials ages 18-20 ( $p < 0.001$ ) were more likely to *disagree* and all millennials with a college/advanced degree ( $p < 0.02$ ) were more likely to agree with that statement.

Finally, 46 percent of millennials disagreed that wood products should not be built or used. All millennials ages 33-35 ( $p < 0.0003$ ) were more likely to strongly disagree with that statement. Millennial females ( $p < 0.0001$ ) and all respondents who identified as Caucasian ( $p < 0.03$ ) were more likely to disagree with that statement.

The second theme surrounding wood products regarded their physical properties (Table 3.4). Over half of millennials (66%) agreed that wood burns faster than steel melts. All millennial females ( $p < 0.005$ ) held neutral attitudes and all millennials with college/advanced degrees ( $p < 0.0002$ ) were more likely to strongly agree with that statement.

Approximately, 65 percent of millennials agreed preservatives help to prevent wood decay. Females ( $p < 0.004$ ) were most likely to agree with that statement. All millennials with some college, no degree (50%) were more likely to agree ( $p < 0.0003$ ) with that statement compared to all those with a high school degree (33%). In comparison, less than half of millennials (41%) agreed that treated wood poses only a minimal risk to human health (Table 3.4). Millennial females ( $p < 0.0001$ ) and all millennials with a high school degree ( $p < 0.02$ ) were more likely to answer neutral “3” for that statement.

Table 3.4 Q24: Millennials’ attitude towards physical properties of wood products

Statement	P value ( $p < 0.05$ )	Mean	N	Response Percentage (%)	
				4 or 5 (agree or strongly agree)	1 or 2 (disagree or strongly disagree)
Wood burns faster than steel melts	G ( $< 0.005$ ) E ( $< 0.0002$ )	3.92	1469	66	7
Preservatives help to prevent wood decay	G ( $< 0.004$ ) E ( $< 0.0003$ )	3.80	1465	65	35
Wood is a reliable product to use as a building material	A ( $< 0.0005$ ) G ( $< 0.0007$ ) E ( $< 0.01$ )	3.58	1474	58	13
Treated wood poses only a minimal risk to human health	G ( $< 0.0001$ ) E ( $< 0.02$ )	3.36	1468	41	15
Natural wood is decay resistant	G ( $< 0.0001$ ) E ( $< 0.0006$ )	2.89	1470	27	35
Overall, I think wood is stronger than steel	G ( $< 0.0001$ ) E ( $< 0.0009$ )	2.66	1470	25	46

\*P value abbreviations are A=age, G=gender, E=education, and R=race. Means are rounded to the nearest hundredth. Proportions are rounded to the nearest whole number. Values are based on a five-point scale where 5 = strongly agree and 1 = strongly disagree.



Approximately, 46 percent of millennials disagreed with the idea that “overall, I think wood is stronger than steel.” Millennial females ( $p < 0.0001$ ) were more likely to disagree with that statement. Also, all millennials with a high school degree (37%) held neutral attitudes ( $p < 0.0001$ ) towards that statement compared to those with a college/advanced degree (24%).

The third theme related to the physical appearance or attractiveness of wood products (Table 3.5). Most millennials (82%) agreed they find wood products to be beautiful. In particular, females ( $p < 0.0001$ ) were more likely to strongly agree and all millennials with a college/advanced degree ( $p < 0.01$ ) were more likely to agree with that statement.

Over half (54%) of millennials disagreed with the statement “wood products do not appeal to my style taste” (Table 3.5). Millennial females ( $p < 0.0001$ ) were most likely to strongly disagree with that statement.

Table 3.5 Q25: Millennials' attitude toward the physical appearance of wood products

Statement	P value (p<0.05)	Mean	N	Response Percentage (%)	
				4 or 5 (agree or strongly agree)	1 or 2 (disagree or strongly disagree)
Wood products are beautiful	G (<0.0001) E (<0.01)	4.24	1467	82	5
I like the look of hardwood floors	G (<0.0001)	4.20	1466	79	4
I like the natural grain appearance of wood products	A (<0.03) G (<0.0002) E (<0.03)	4.11	1471	76	5
Hardwood floors increase the value of the home	A (<0.02) G (<0.0001) E (<0.0001)	4.02	1462	72	7
I prefer kitchen cabinets to show the natural wood grain	————	3.72	1472	58	9
I like the appearance of wood countertops (such as Butcher Block)	A (<0.0002) E (<0.02)	3.57	1468	53	16
I prefer kitchen cabinets to be painted to hide the natural grain	A (<0.02) G (<0.0001) E (<0.005) R (<0.009)	2.89	1466	32	36
I think wood products look outdated	A (<0.03) G (<0.0001) E (<0.006) R (<0.002)	2.57	1471	26	52
Wood products <i>do not</i> appeal to my style taste	G (<0.0001) R (<0.0001)	2.47	1466	22	54

\* P value abbreviations are A=age, G=gender, E=education, and R=race. Means are rounded to the nearest hundredth. Proportions are rounded to the nearest whole number. Values are based on a five-point scale where 5 = strongly agree and 1 = strongly disagree.

Along a similar line, over half (52%) of millennials disagreed that wood products look outdated. Again, females (30%) were more likely to strongly disagree (p<0.0001) with the statement versus males (17%). All respondents who identified as Caucasian

( $p < 0.002$ ) were more likely to strongly disagree that wood products look outdated.

However, millennials with a college/advanced degree ( $p < 0.006$ ) were more likely to *agree* that wood products look outdated.

The final theme included statements regarding the durability of wood products as seen in Table 3.6.

Table 3.6 Q26: Millennials' attitude towards the durability of wood products

Statement	P value ( $p < 0.05$ )	Mean	N	Response Percentage (%)	
				4 or 5 (agree or strongly agree)	1 or 2 (disagree or strongly disagree)
Hardwood floors are durable	A (<0.03) G (<0.006) E (<0.0008)	4.02	1473	75	7
Hardwood floors have less allergens than carpet	A (<0.002) G (<0.0001) E (<0.0001)	4.09	1466	73	5
Hardwood floors last longer than carpet floors	A (<0.002) G (<0.0001) E (<0.0006) R (<0.002)	4.01	1472	70	7
I prefer hardwood floors to carpeted floors	G (<0.0001) E (<0.0005)	3.93	1470	68	11
Wood countertops (such as Butcher Block) are durable	A (<0.0005) G (<0.01) R (<0.003)	3.80	1467	62	8
Wood furniture lasts longer than metal or plastic furniture	A (<0.0001) E (<0.0005)	3.64	1463	54	12
Wood countertops (such as Butcher Block) are difficult to clean	G (<0.04) E (<0.001)	3.33	1468	44	19

\* P value abbreviations are A=age, G=gender, E=education, and R=race. Means are rounded to the nearest hundredth. Proportions are rounded to the nearest whole number. Values are based on a five-point scale where 5 = strongly agree and 1 = strongly disagree.

Approximately, 75 percent of millennials agreed overall with the statement “hardwood floors are durable” (Table 3.6). Millennial females ( $p < 0.006$ ) were more likely to strongly agree and all millennials with a high school degree ( $p < 0.0008$ ) were most likely to answer neutral “3.” Also, millennials ages 33-35 ( $p < 0.03$ ) were more likely to strongly agree with that statement.

Over half of millennials (73%) agreed that hardwood floors contain less allergens than carpet (Table 3.6). Millennials ages 33-35 (53%) were more likely to strongly agree ( $p < 0.002$ ) with that statement versus millennials ages 18-20 (26%) by a margin of 26 percent. All millennials with a high school degree ( $p < 0.0001$ ) held neutral attitudes towards the statement. Also, all females (50%) were more likely to strongly agree ( $p < 0.0001$ ) than males (33%) with that statement.

Delving further into millennial attitudes toward flooring, 68 percent agreed they prefer hardwood to carpeted floors. Millennial females ( $p < 0.0001$ ) were more likely to strongly agree with preferring hardwood floors over carpet. All millennials with a high school degree ( $p < 0.0005$ ) held neutral attitudes towards that statement.

### ***Cross laminated timber***

Going beyond traditional wood products, there is increased interest to find applications for cross laminated timber (CLT) in the United States. Questions were asked solely in regards to CLT to unveil insights from millennial consumers regarding the use of CLT in construction.

Approximately, 16 percent of millennials said they have heard of CLT before this survey (Figure 3.2). In terms of age ( $p < 0.004$ ), millennials ages 24-32 and males ( $p < 0.0001$ ) were more likely to say they have heard of CLT.

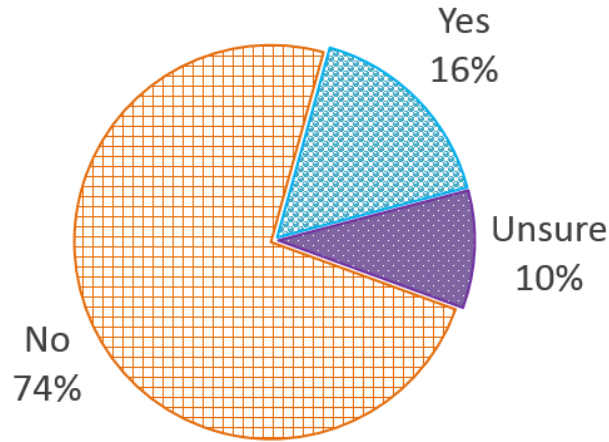


Figure 3.2 Q27: Millennials who have heard of cross laminated timber (CLT)

\* $n=1474$ . Percent values are rounded to the nearest whole number.

After determining millennial current awareness of CLT, respondents were asked a two-round Likert scale question to test if perceptions could change regarding the safety of CLT. Before respondents were asked to answer the first round question, they were provided a basic definition of CLT. This definition remained on the page as they considered the statements, shown in Table 3.7. Millennials were asked to indicate how safe or unsafe they would feel in four different types of CLT constructed buildings.

Half of millennials (50%) said they would feel safe in an entire building made of CLT. Millennial males ( $p<0.0001$ ) were more likely to say they would feel very safe in an entire building made of CLT. All millennials with a high school degree ( $p<0.0001$ ) held neutral attitudes towards that statement.

Table 3.7 Q28: Round one of millennials' attitude toward CLT building safety

Statement	P value ( $p < 0.05$ )	Mean	N	Response Percentage (%)	
				4 or 5 (safe or very safe)	1 or 2 (unsafe or very unsafe)
Residing in a building with both CLT and other traditional building materials	E ( $< 0.0001$ )	3.66	1470	57	10
Residing in a building made entirely of CLT	G ( $< 0.0001$ ) E ( $< 0.0001$ )	3.48	1474	50	15
Residing in a 3-story high building made of CLT	G ( $< 0.002$ ) E ( $< 0.0001$ )	3.35	1471	46	19
Residing in a 12-story high building made of CLT	G ( $< 0.0001$ ) E ( $< 0.0001$ )	3.02	1470	34	30

\*P value abbreviations are A=age, G=gender, E=education, and R=race. Means are rounded to the nearest hundredth. Proportions are rounded to the nearest whole number. Values are based on a five-point scale where 5 = very safe and 1 = very unsafe.

However, when the height of the CLT building was given in detail, millennial attitudes shifted in safety level. Approximately, 46 percent said they would feel safe in a 3-story CLT building. Millennial males ( $p < 0.009$ ) were more likely to say they felt very safe and all respondents with a high school degree ( $p < 0.0001$ ) were more likely to answer neutral “3” for that statement. Millennials who identified as Caucasian or Asian ( $p < 0.002$ ) were also more likely to say they would feel safe in a 3-story CLT building.

Approximately, 30 percent of millennials indicated they would feel unsafe in a 12-story CLT building. Again, millennial males ( $p < 0.0001$ ) were most likely to say they would feel safe in a 12-story building. All millennials with a high school degree ( $p < 0.0001$ ) held neutral attitudes towards this statement.

After considering round one of the statements, millennials were then provided an additional amount of information regarding CLT. This general information included

reference to fire resistance and decay resistance. Following this information, respondents were asked if learning this additional information changed their original perceptions of CLT. Approximately, 67 percent of millennials said their perceptions were changed. Only the 67 percent who answered “yes” were directed to the second round of Likert-scale questions. The format of the second round questions was the exact same as the first. The same four statements were shown for millennials to consider.

Over half of millennials who answered round two said they would feel safe in every CLT building described in the four statements, shown in Table 3.8.

Table 3.8 Q30: Round two of millennials’ attitude towards CLT building safety

Statement	P value (p<0.05)	Mean	N	Response Percentage (%)	
				4 or 5 (safe or very safe)	1 or 2 (unsafe or very unsafe)
Residing in a building with both CLT and other traditional building materials	_____	4.11	986	81	6
Residing in a building made entirely of CLT	_____	4.05	987	79	7
Residing in a 3-story high building made of CLT	A (<0.03)	4.00	988	77	7
Residing in a 12-story high building made of CLT	A (<0.005)	3.72	988	64	15

\*P value abbreviations are A=age, G=gender, E=education, and R=race. Means are rounded to the nearest hundredth. Proportions are rounded to the nearest whole number. Values are based on a five-point scale where 5 = very safe and 1 = very unsafe.

Millennials shifted to answer more positively in the second round versus the first round of statements. There were 77 percent of respondents who said they would feel safe in a 3-story CLT building, a 31 percent increase from the same statement in round one

(46%, Table 3.7). Millennials ages 24-26 (36%) and ages 36-38 (36%) were more likely ( $p < 0.03$ ) to say they would feel very safe in a 3-story CLT building versus ages 21-23 (24%). Similarly, in regards to safety in a 12-story CLT building, again, millennials ages 33-35 (44%) and ages 36-38 (43%) were more likely ( $p < 0.005$ ) to say they would feel safe versus ages 21-23 (33%).

Comparing round one and two of the CLT questions, there was a change in millennial perception after additional educational information was provided. Millennials were more likely to indicate they felt safer in round two compared to round one, as seen in Figure 3.3.

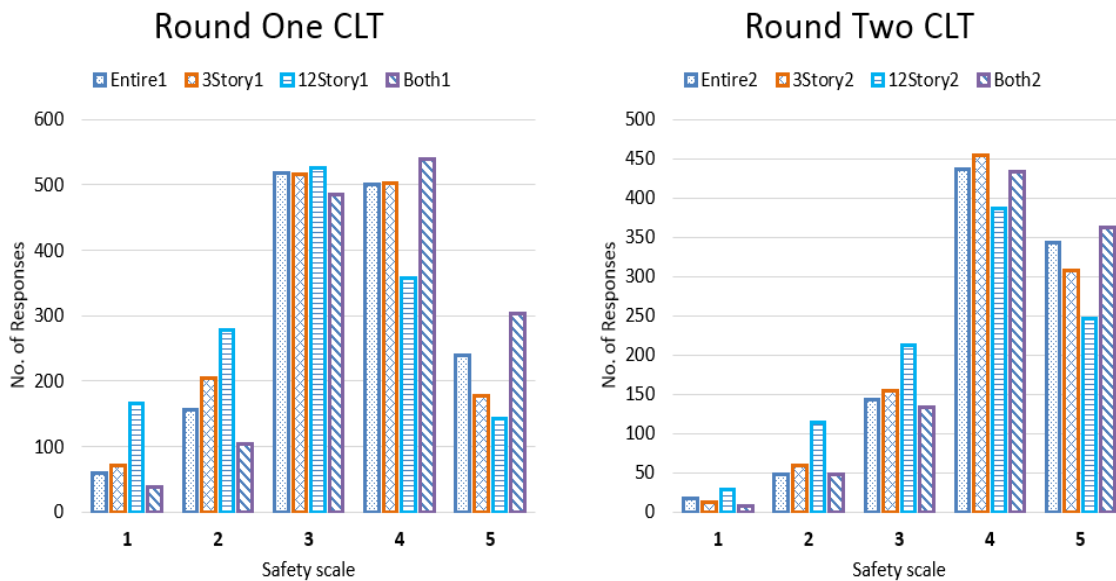


Figure 3.3 Q28 & Q30: Comparison of round one and two of millennials' attitude toward CLT building safety

\*Values are based on a five-point scale where 5=very safe and 1=very unsafe.



The results in Figure 3.3 indicate there is potential to change uncertain or negative perceptions with informative facts about wood products. In terms of the marketability of CLT, 64 percent of millennials said they thought this product would have a place in the U.S. residential and commercial construction market. Males ( $p < 0.0004$ ) were more likely to answer “no” to CLT having a place in the U.S. market. Yet, all millennials with college/advanced degrees (72%) were more likely to answer “yes” ( $p < 0.0001$ ) to CLT having a place in the U.S. market compared to those with a high school degree (54%).

At the end, respondents were asked to answer an open-ended question regarding the future use of CLT in building construction in the U.S. There were hundreds of comments left ranging from, “I think HGTV should feature it,” to “the information makes CLT sound very appealing as an alternative to traditional building materials.” Many comments expressed a desire to know more about CLT. In particular, they wanted to know information regarding material pricing, durability, longevity, and environmental friendliness.

## **Discussion**

Collecting information on how consumers view company products should be an important activity for any business. It can aid businesses in improving relations with consumers and contribute to increasing growth. The results in this chapter pertain to the second part of the listed objective hypotheses regarding wood products. The hypotheses were:

**H2a:** Millennials think wood products are not durable.

**H2b:** Millennials think wood products are not environmentally friendly

**H2c:** Millennials perceive wood products to be outdated for the home.

**H2d:** Millennials do not think cross laminated timber is a safe product to construct tall buildings

Millennials appear to describe their own generation in a positive light. Rather than focus on negative descriptors, respondents touched upon millennial ambition, optimism, passion, and awareness as a generation. However, 58 percent of respondents indicated their generation was unprofessional. This sudden negative attribute indicates some possible cognitive dissonance within the millennial mindset. The outside attention millennials receive may be a reason for this dissonance between being ambitious and passionate, yet unprofessional. The media is quick to ascribe negative traits to millennials, thus imbuing the negative thoughts within them (Pew Research 2015).

The industry should note that millennials (64%) do not like to see trees cut down, imbuing a negative light on the industry. Females in particular were more likely to strongly agree with that statement. A reason for this may relate to the idea of nature versus nurture, as there may be a greater emotional appeal in seeing a forest cut down.

It may be disheartening that only 38 percent of millennials agreed that wood is a better quality product with which to build as compared to concrete or steel. All millennials with a college/advanced degree were more likely to agree with that statement. A reason may be those with higher education are more informed regarding the benefits of building with wood. Younger millennials (ages 18-20) were also more likely to disagree with that statement, indicating they may not possess an understanding of the advantages of wood structures.

It is positive that millennials disagreed (46%) with the statement, “wood products should not be built or used.” Yet, there is room for improvement as this number

represents less than half of respondents. Millennial females were more likely to disagree with that statement. A potential reason for this may be females understand the value and need for wood products. It may also be a reason millennial females were more likely to agree that wood products will always have a place in the market.

Millennial females were also more likely to agree that preservatives help prevent wood decay. Yet, females held neutral attitudes regarding whether treated wood poses a minimal risk to human health or not. A reason for this may be due to a lack of information regarding treated wood and its relation to human health. Males may have been more likely to agree that treated wood poses minimal risk to human health because of possible working experience with treated woods.

It should be considered a positive that over half of millennials (54%) indicated wood products appeal to their style taste. A possible reason for millennial females indicating it appeals to their style may stem from the popularity of the country chic, shabby chic, or rustic interior design trends (ASID 2014; Lerner 2016). Examples of possible influential TV shows include *Fixer Upper* on HGTV and other home renovation shows. It may also be a reason why over half of millennials (52%) also disagreed with the statement that wood products look outdated. Millennial females were, again, more likely to disagree with that statement, perhaps because of interior design preferences.

There is evidence of a need for improved education and awareness regarding the sustainability and safety of wood products. Results in Table 3.4 indicate millennials possess a weak working knowledge of a variety of wood properties. Topics involving the rate at which wood burns in different situations as well as the safety now associated with wood treatments may be beneficial to promote to the public. In addition, it may be

positive to enhance millennial knowledge towards basic wood knowledge regarding its strength, load bearing capabilities, and environmental building benefits. As millennials are a more environmentally conscious group, appealing to this side of them could help to improve industry relations (Osburg et al. 2016).

Potential methods to educate millennials about wood properties may be through targeted campaigns ranging from traditional paper and ink to modern social media strategies. Each campaign would depend upon the desired goal. While focusing on the environmental aspect is important, the industry may consider posting educational facts about wood on the packaging of a manufactured product sold to consumers (Osburg et al. 2016). This may be a subtle approach to educate the public on what material the product is made of and the associated properties of it.

As for the physical appearance of wood furniture or other products, millennials find it appealed to their style taste (Table 3.5). The focus on the appearance of wood products, such as hardwood floors, ties into millennial self-perceptions and values as a generation. Millennials emphasize the importance of their image and reputation beyond that of previous generations. This higher level of self-consciousness for how others perceive them may affect how millennials purchase products (Noble et al. 2009; Parment 2013).

The positive attitudes millennials expressed in this study should give hope to the industry regarding the future appeal of wood products. These results provide evidence to reject hypothesis **H2c** stating that millennials find wood products to be outdated. Millennials also seem to agree that wood products are durable, overall. This finding is contrary to hypothesis **H2a** regarding the durability of wood products. Millennials

expressed an understanding of the value of hardwood floors versus carpet. They were less certain about the properties of wood countertops such as butcher block.

It is recommended the industry improve the awareness of CLT as a product if they seek to form a positive perception towards it. Of those 16 percent of respondents who knew about CLT, males and those who identified as Asian were more likely to know. The prominence of male attitude here may be due to the traditional male dominance in the engineering, science, and other associated fields. The significance of Asian opinion may be due to the known presence of CLT in European and Asian countries. As stated previous, CLT is a relatively new material to the U.S.

Previous studies done by Laguarda Mallo and Espinoza (2015, 2018) surveyed both the architecture community and engineering firms regarding CLT. Both communities expressed a lack of knowledge regarding CLT, but had interest in knowing more. They also indicated a willingness to potentially use the product if it became more widely available in the U.S.

Perceptions of the millennials appear to mirror that of the studies by Laguarda Mallo and Espinoza (2015, 2018). Millennials attitudes were improved towards CLT when they were provided additional information regarding its physical and mechanical properties. Millennials also indicated they believed CLT would have a place in the U.S. construction market in the future. Analysis of these results regarding CLT provides evidence to reject the hypothesis **H2d** regarding the safety of CLT.

The additional open-ended comments provided about CLT in building construction provide evidence to support the need for education and awareness. There were hundreds of comments expressing a desire to know more about CLT. Millennials

wanted to know about the price of materials (cost effectiveness), longevity and more details regarding fire and decay resistance. Showing interest in cost effectiveness is not surprising as millennials are faced with certain financial burdens like student loans. Thus, products that are effectively priced may hold more value to millennials.

Stemming from the simplified information given to them, all of the respondents shared a similar mindset when it came to the implementation of CLT. As long as the product had proven environmental friendliness, safety, and durability, millennials saw a future for it in the U.S. One respondent even commented, “I think HGTV should feature it.” Many respondents mentioned the innovation of this new wood building product as it moves past traditional methods. There were many millennials who had thoughts for the “future” of the housing market and use of sustainable materials. Overall, it appears millennials hold a positive view toward wood products and believe they are environmentally friendly, thereby rejecting hypothesis **H2b**.

### **Conclusion**

The millennial generation appears to hold a positive view towards wood products. Millennials appear to find wood products stylish, durable, and environmentally friendly. When discussing new products, such as cross laminated timber, millennials held more positive views towards the product after given additional information regarding its design and properties.

Based on the results of this study, there are two potential audiences the wood products industry should consider for future marketing campaigns. The first audience is millennial females. Designing advertisements and structuring campaigns to engage millennial females could open a new avenue for the industry in terms of awareness and

popularity. Millennial females held stronger opinions towards posed questions than males for this study. It could be beneficial for the industry to invest in millennial females as an audience because of their consumer power as a mother, aunt, sister, cousin, or best friend.

Across generations and continents, females are the most powerful economic driving force (Brennan 2018; Silverstein and Sayre 2009). As more females have entered the workforce over the decades, their ability to spend more on products has increased. Worldwide female wealth accounted for \$39.6 trillion or 30 percent of the world's wealth in 2016 (Leonhardt 2016). Females are a strong audience to cater to for an industry to thrive and succeed overtime. They can bring awareness to younger audiences, such as their children, or other family or friends regarding products. Attaining their interest could benefit the wood products industry in heightening awareness of industry practices, values, and their environmental responsibility. Altering perceptions held by females currently could positively influence the perceptions of future generations.

The second audience the industry may consider focusing on is millennials ages 18-20 years. This group also held stronger opinions towards the industry in this study. These young millennials could be a great audience to engage with as they are just beginning their adult life. Some may be starting college and others their work careers. Communicating with them at ages 18-20 may allow for their future perceptions and opinions to be more positive towards the wood products industry. Improving online campaigns and industry relationships with college programs may serve as great ways to interact with them.

There are a variety of potential avenues the wood products industry could use to engage with and reach millennials. Traditional sources of information such as newspapers

and magazines remain viable, but the internet has become a popular way for people to get information. Millennials have a close relationship with social media platforms and the industry could use this to their advantage. Taking into account the results of this study, the industry marketers could design engaging online campaigns to encourage millennial interaction with the industry. Creating witty hashtags, unusual campaign slogans, or producing a humorous viral video could perhaps reach young millennials (18-20 years).

As for the promotion of wood products, the industry should remain observant of interior design trends that may appeal to millennials. According to the result of this study, millennials seem to hold a favorable attitude towards wood products. Yet, there is need for additional education on the structural advantages of using wood versus other materials. Working with architectural and engineering firms or colleges could possibly help to further the use of wood materials in building and design projects. It could increase awareness and overall perceptions towards wood products and the industry.

The time for change is fast approaching the wood products industry and soon traditional means of marketing and promotion may not be viable. Trying new methods, researching new ideas, and taking a chance on novel ideas or campaigns may breathe new life into the wood products industry. The value of this study lies within its ability to provide potential insight for the industry in how to best reach the millennial audience and consumer. It may provide answers to some questions industry professionals may have only theorized about previously. These study results can be used to guide the wood products industry to improve relations with millennials and subsequent generations. They can also serve as a foundation for future academic research.



### **Future research and improvement on study**

There is always room for improvement in every research study. Scholars interested in this topic should note several considerations going forward. One key area to focus on refining is the creation of the survey questions. This study went through several versions before the final survey version was ready for public consumption. Questions were eliminated for time and others could have benefited from further revision.

This study focused on asking “how” questions and fewer “why.” Future studies could begin to focus on the “why.” Understanding a generation, such as the millennials, in this format would be beneficial to strengthen business level relationships with them as consumers. However, this study was designed as a foundation for future research. Thus, asking the “how” questions herein is an important first step to reach the “why.”

In addition to question style, the content and explanation for certain questions could have been refined. There were a few comments from respondents regarding the ambiguous language used for some questions. The ambiguity was in regards to the word arrangement and word choices for the question. Future studies should formulate highly precise wording and phrasing to avoid confusing the respondent.

The length of the survey should be considered as well. This survey study was relatively long, taking respondents an average of 15 minutes to complete. In the future, shorter and multiple surveys may be of more use than a single, long survey. This change could decrease the likelihood of respondents not completing the survey. Reduction of the length of the survey could also help ensure the structure and clarity of questions.

Data analysis methods are a factor to examine. Consideration towards future analysis is critical as every study is formulated. This factor assures meaningful conclusions can be gleaned from the study instrument.

The sample of this study is a final factor to consider in detail. This study defines the millennial generation as those born from 1980 and 2000. Future studies could focus on a similar range or on a smaller, specific group within the millennial generation. Yet, this would depend on the reason for the study and the scope involved. In January 2019, the Pew Research Center published an article to clarify their stance on an age range for millennials. They define a millennial as an individual born from 1981 to 1996 and will only use this range from now on (Dimock 2019). Whether other research institutions will follow in this path or not will have to be closely watched by future scholars.

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APPENDIX A  
THE SURVEY

**\*\*Opening Screen Statement\*\***

**\*\*Thank you for choosing to take this survey! Before you begin, it is important to understand that this is a research study. You will be asked to complete a 10 to 15-minute online survey. Please understand that your participation is voluntary. Your refusal to participate will invoke no penalty or loss of benefits. You may choose not to answer a question or completely discontinue your participation at any time during the survey. Please note that the data you provide may be collected and used by Qualtrics as per its privacy agreement. You should be aware that these web services may be able to link your responses to your ID in ways that are not bound by this consent form and the data confidentiality procedures used in this study. If you have concerns, you should consult these web services directly. If you have questions about the research project, please feel free to contact Rubin Shmulsky at [rs26@msstate.edu](mailto:rs26@msstate.edu).\*\***

1. What is your first response when you hear or see the phrase “**millennial generation**”? (Select one)
  - Very negative
  - Somewhat negative
  - Neither positive nor negative
  - Somewhat positive
  - Very positive
  
2. How would you best **describe** your thoughts about the millennial generation?  
Please select one word, per column row.

<input type="checkbox"/> Ambitious	Or	<input type="checkbox"/> Lazy
<input type="checkbox"/> Innovative	Or	<input type="checkbox"/> Traditional
<input type="checkbox"/> Expressive	Or	<input type="checkbox"/> Stoic
<input type="checkbox"/> Optimistic	Or	<input type="checkbox"/> Pessimistic
<input type="checkbox"/> Selfish	Or	<input type="checkbox"/> Selfless
<input type="checkbox"/> Professional	Or	<input type="checkbox"/> Unprofessional
<input type="checkbox"/> Passionate	Or	<input type="checkbox"/> Indifferent
<input type="checkbox"/> Unaware	Or	<input type="checkbox"/> Aware
<input type="checkbox"/> Independent	Or	<input type="checkbox"/> Dependent

3. Please indicate the level of comfort associated with each communication style in the following list below.

	Extremely un-comfortable	Somewhat un-comfortable	Neither uncomfortable nor comfortable	Somewhat comfortable	Extremely comfortable
Face to face conversation					
Email					
Phone					
Text messaging					

4. Do you currently use social media applications or “apps”?
- Yes
  - No

IF “YES” TO QUESTION 4, CONTINUE TO QUESTION 5.

IF “NO,” GO TO QUESTION 8.

5. (If yes to Q4) What social media apps do you currently use? (Select all that apply)
- Facebook
  - Twitter
  - Snapchat
  - Instagram
  - WhatsApp
  - YouTube
  - Skype
  - Reddit
  - Tumblr
  - Pinterest
  - Google+
  - LinkedIn
  - Other \_\_\_\_\_

6. **(If yes to Q4)** What are the **top three most relevant** social media apps that you use? Please give numbers 1-3, with 1 being your most relevant choice, 2 your second most relevant, and so on.

\_\_\_\_ Facebook  
\_\_\_\_ Twitter  
\_\_\_\_ Snapchat  
\_\_\_\_ Instagram  
\_\_\_\_ WhatsApp  
\_\_\_\_ YouTube  
\_\_\_\_ Skype  
\_\_\_\_ Reddit  
\_\_\_\_ Tumblr  
\_\_\_\_ Pinterest  
\_\_\_\_ Google+  
\_\_\_\_ LinkedIn  
\_\_\_\_ Other \_\_\_\_

7. **(If yes to Q4)** How often do you check your social media apps/profiles? (Select one)
- Never
  - Once a month
  - Multiple times a month
  - Once a week
  - Daily
  - Hourly


8. (If no to Q4, continue here) Indicate how strongly you agree or disagree with the following statements about **company use** of social media:

	Strongly Disagree	Somewhat Disagree	Neither agree nor disagree	Somewhat Agree	Strongly Agree
Social media is an effective tool for companies to use					
Social media keeps companies relevant					
I have learned of companies through social media					
I respond to/interact with companies through social media					
Social media helps to personalize company marketing efforts to the individual					
I feel more engaged with companies who have a social media presence					
I like to follow companies on social media for news and updates					
Social media can help promote company corporate social responsibility					
Using social media helps to build a strong brand identity for a company					

9. For the following question, please select option B for your answer.

- A. I should avoid this answer
- B. I should select this answer
- C. None of the above

10. Please indicate how important you consider each other following uses for forests today on a scale from 1-5, where 1 is the least important and 5 is most important.

	Least						Most
Recreation (camping, hiking etc)	1	2	3	4	5		
Animal habitat							
Wood products (lumber, furniture, etc)							
Oxygen creation							
Water							
Medicinal							

11. Of the words below, which comes to mind **first** when you see or hear the phrase “wood products?” (Select one)

- Trees
- Paper
- Lumber
- Forest
- Furniture
- Flooring
- Fuelwood/ Charcoal
- Composites (OSB, Particleboard, Flake board)
- Other \_\_\_\_\_

12. Based on your **current knowledge** about the **wood products industry**, answer the following statements to the best of your ability.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I rarely think about where wood products originate					
I think the wood products industry is important to my daily life					
I think the wood products industry damages our forests					
I think the wood products industry has kept up with society cultural changes.					
I think there are opportunities for young people in the industry					
I have an interest in joining the wood products industry					
I think the wood products industry is an ageing workplace					

13. Before taking this survey, did you **know of** the wood products industry?

- Yes
- No

IF “YES” TO QUESTION 13, CONTINUE TO QUESTION 14.

IF “NO,” GO TO QUESTION 16.

14. (If yes to Q13) How did you learn about the industry? (Select all that apply)
- Family
  - Friends
  - A school function (such as a career fair, internship fair or campus wide presentation)
  - Career center
  - School/College/University
  - Television news
  - Magazine
  - Newspaper
  - Social Media
  - Online
  - Other \_\_\_\_\_
15. (If yes to Q13) Do you have an **immediate** family member (mother, father, etc) that works in the wood products industry?
- Yes
  - No
  - Unsure
16. (If no to Q13) Have you seen advertisements for wood products?
- Yes
  - No
  - Unsure
17. Can you name **at least one** wood products company?
- Yes
  - No
  - Unsure



18. Consider marketing advertisements you have seen on a daily basis. Indicate how strongly you agree or disagree with the following statements about [wood product advertising](#).

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I think wood products marketing is mainly business to business.					
I think wood products companies should create awareness of their environmental friendliness					
Wood products marketing does not focus on the consumer					
I <b>do not</b> think wood products marketing needs to be improved					
I think knowing how wood products benefit the environment would be beneficial to consumer opinion					

19. Indicate how strongly you agree or disagree with the following statements about wood products and the environment:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I think wood products contribute to improving our environment					
It makes me sad to see cleared forest lands					
I understand why wood products are important to our world					
I do not think the wood products industry replants trees they cut down					
The wood products industry harms the environment					

20. Do you **currently own** wood products, such as wood furniture or wood cabinets?

- Yes
- No
- Unsure

21. Indicate how strongly you agree or disagree with the following general statements about wood products:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
I believe wood products will always have a place in the consumer market					
I believe wood products are popular among consumers					
I will most likely buy wood products in the future					
I prefer wood based furniture such as dressers, bed frames, etc.					

22. What do you think are the **two most popular** products created from wood? Please rank the answer options using 1 for your first choice and 2 for your second choice.

- \_\_\_\_\_ Paper & pulp
- \_\_\_\_\_ Lumber (for construction)
- \_\_\_\_\_ Furniture
- \_\_\_\_\_ Flooring
- \_\_\_\_\_ Kitchen cabinets
- \_\_\_\_\_ Kitchen countertops
- \_\_\_\_\_ Fencing
- \_\_\_\_\_ Railroad ties
- \_\_\_\_\_ Utility poles
- \_\_\_\_\_ Pallets

23. Indicate how strongly you agree or disagree with the following statements about the **environmental impact** of wood products:

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Wood is a sustainable resource					
Using wood products is environmentally friendly					
I do not like to see trees cut down					
Wood products should not be built or used					
Compared to other building materials, wood structures are environmentally friendly					
Wood is a better quality product with which to build as compared to concrete or steel					
We should not use wood products to construct tall buildings					

24. Indicate how strongly you agree or disagree with the following statements about the **physical properties** of wood products:

	Strongly Disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Wood burns faster than steel melts					
Natural wood is decay resistant					
Preservatives help to prevent wood decay					
Overall, I think that wood is stronger than steel					
Wood is a reliable product to use as a building material					
Treated wood poses only a minimal risk to human health					

25. Indicate how strongly you agree or disagree with the following statements about the **physical appearance** of wood products.

	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Wood products are beautiful					
I like the natural grain appearance of wood products					
I think wood products look outdated					
Wood products do not appeal to my style taste					
I like the look of hardwood floors					
Hardwood floors increase the value of the home					
I prefer kitchen cabinets to be painted to hide the natural grain					
I prefer kitchen cabinets to show the natural wood grain					
I like the appearance of wood countertops (such as Butcher Block)					

26. Indicate how strongly you agree or disagree with the following statements about the **durability** of wood products.

	Strongly disagree	Somewhat disagree	Neither disagree nor agree	Somewhat agree	Strongly agree
Hardwood floors are durable					
Hardwood floors last longer than carpet floors					
I prefer hardwood floors to carpeted floors					
Hardwood floors have less allergens than carpet					
Wood countertops (such as Butcher Block) are durable					
Wood countertops (such as Butcher Block) are difficult to clean					
Wood furniture lasts longer than metal or plastic furniture					

27. Have you heard of cross laminated timber (CLT)?

- Yes
- No
- Unsure

**DEFINITION:** The question below asks about a specific wood product named **cross laminated timber or CLT**. CLT is a prefabricated wood panel made of several layers of lumber stacked in alternating directions. The layers are glued together with adhesives and pressed into a solid, rectangular panel.

CLT is proving to be an advantageous alternative to concrete and steel in commercial and residential construction. If building with CLT, there is no need for additional materials such as insulation for warmth or drywall when installing. CLT is an environmental and economical building option. With this definition of CLT, answer the questions below.

28. (Show on same screen as DEFINITION) Indicate how safe or unsafe you would feel in a cross laminated timber building based on the previous definition:

	Very Unsafe	Somewhat unsafe	Neither unsafe nor safe	Somewhat safe	Very safe
Residing in a building made <b>entirely</b> of CLT					
Residing in a 3-story high building made of CLT					
Residing in a 12-story high building made of CLT					
Residing in a building with both CLT and other traditional building materials					

29. Cross laminated timber is fire resistant and decay resistant. Does learning this information change your original perceptions?

- Yes
- No

IF "YES" TO Q29, GO TO Q30.  
IF "NO" TO Q29, SKIP TO Q31.

30. (If yes to Q29) Knowing CLT is fire and decay resistant, indicate how safe or unsafe you would feel in a CLT building based on the following statements:

	Very Unsafe	Somewhat unsafe	Neither unsafe nor safe	Somewhat safe	Very safe
Residing in a building made <b>entirely</b> of CLT					
Residing in a 3-story high building made of CLT					
Residing in a 12-story high building made of CLT					
Residing in a building with both CLT and other traditional building materials					

31. **(If no to Q29, continue here)** Wood products, such as CLT, are making large strides in Europe residential and commercial building. Do you believe there is a market place for CLT materials in residential and commercial **building construction in the United States?**
- Yes
  - No
  - Unsure
32. **(Show on same screen as Q31)** Your answer to this question is very important for understanding what people think about the future of using wood products in large-scale construction. Why did you select your answer for Question 31?

### Demographic Questions

33. What is your age group? (Select one)
- 18-20
  - 21-23
  - 24-26
  - 27-29
  - 30-32
  - 33-35
  - 36-38
34. Which best describes your race/ethnicity? (Select one)
- Black or African American
  - Caucasian (white)
  - Native American or American Indian
  - Asian
  - Pacific Islander or Native Hawaiian
  - Other \_\_\_\_\_
  - Prefer not to answer
35. Are you of Hispanic or Latino origin?
- Yes
  - No
  - Prefer not to answer



36. Which gender do you identify as? (Select one)

- Female
- Male
- Non-conforming gender identity
- Other \_\_\_\_\_

37. What is your current level of education completed? (Select one)

- Some high school, no degree
- High School diploma or equivalent (example: GED)
- Some college, no degree
- Trade/Technical/Vocational training
- Associate's Degree
- Bachelor's Degree
- Master's Degree
- Doctorate Degree

38. What best describes your current marital status? (Select one)

- Married
- Living with a partner
- Divorced/Separated
- Widowed
- Single, never married

39. What state do you live in? \_\_\_\_\_

40. Do you have any additional comments you would like to add about the survey?