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Consumer attitudes and perceptions towards the use of reclaimed wood

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Consumer attitudes and perceptions towards the use of reclaimed wood

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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

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Reclaimed wood is material salvaged from old, abandoned buildings that offers sustainable living to communities. There have been previous studies on reclaimed wood, but a limited amount linking reclaimed wood to consumerism. In August 2021, an online survey was conducted to gauge consumers' knowledge of the industry and attitudes on reclaimed wood practices. Consumers are U.S. citizens 18 years of age or older. Study results indicate that respondents have little knowledge regarding reclaimed wood. Of the 1,516 respondents, 44% seem knowledgeable of reclaimed wood. Most respondents are not aware that reclaimed wood is a separate industry. Respondents believe there should be better marketing practices. Respondents also believe reclaimed wood to be environmentally friendly, durable, and aesthetically pleasing. The reasons respondents would purchase reclaimed wood are sustainability, aesthetics, and to exercise a need. Respondents acknowledge the importance of the origin of wood products. Respondents also acknowledge the importance of the industry.

DEDICATION

I dedicate this to the team of individuals that developed the leader in me and pushed me to success in the midst of uncertainty. To my “family” who helped me grow and mature. To my team who let this little flower blossom...

“For we through the spirit wait for the hope of righteousness by faith... but faith which worketh by love.” Galatians 5:5-6

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CHAPTER I
BACKGROUND ON SALVAGED LUMBER AND THE INDUSTRY

Introduction

Over the last few decades, the world has gradually shifted towards more environmentally friendly ways of living. As humanity's awareness of the role it plays in transforming the Earth grows, so does the recognition that how this awareness is used will shape Earth's future as well as humanity's (Clark et al. 2005). In the wake of environmental concerns, there has been special interest in ways to further build upon sustainable practices. Being a sustainable global market, the wood products industry focuses on the only natural, renewable resource in the world, wood.

Wood has thousands of uses and the industry plays an important role in the U.S. economy. Currently, the largest wood product sectors in the United States are lumber, engineered wood products (such as particleboard and fiberboard), and pulp and paper products (Riddle 2021). Wood is also known to be one of the oldest construction materials in the world (Wimmers 2017). The residential construction sector is an important source of timber demand in the United States. Both the housing market and residential construction contribute heavily to the U.S. economy (Riddle 2021). In 2019, residential construction outlays contributed \$1.6 trillion to GDP (7.4%) (Fuller 2020). This contribution aided in the longest economic expansion in U.S. history (Congressional Budget Office 2020). However, this expansion ended in early 2020 due to the coronavirus disease 2019 (COVID-19) pandemic (U.S. Bureau of Labor Statistics 2021).

Before the pandemic, consumer confidence had been on a general upward trend (The Conference Board 2020). But this was short-lived. During the early stages of the pandemic, consumer confidence was heavily impacted, and rising unemployment rates prompted a decline in consumer participation (Leer 2021). However, demand for lumber remained steady. This demand was fueled by residential construction, a surge in renovations, and DIY hobbyist projects (Hernandez 2021). Eventually, demand exceeded supply, which caused a softwood lumber shortage and led to increase in prices (Congressional Research Service 2021). Perhaps this shortage could have been lessened if the industry had considered the use of discarded wood from construction and demolition activities. Usually regarded as waste, discarded wood is primarily thrown in landfills when most of it is recoverable, especially when landfills are not always a viable solution.

Within the last decade, globally, governments have recognized that their approach to landfills is not a sustainable method of disposing of waste (Twinwoods 2021). Thus, they have been seeking solutions on ways to mitigate drastic pile ups of rubbish in landfills. Historically, these piles include large quantities of wood and wood products. Approximately 70 million tons of solid wood are wasted annually in the United States, primarily from municipal solid waste, construction, and demolition sites (Bratkovich et al. 2009; MacFarlane 2009; Howe et al. 2013). In 2009, the U.S. Environmental Protection Agency (EPA) estimated that more than 270,000 housing units were demolished each year in the United States (EPA 2009). Out of that total amount, up to 29 million tons could potentially be recovered and reused (Falk and McKeever 2012).

Through new innovations, ways have been developed to reduce this wood waste. One such way is the use of reclaimed lumber, a new marketable resource. As an adopted approach to

sustainability, reclaimed lumber has slowly been introduced into the wood products industry. However, to the author's knowledge, there is no relevant literature regarding consumers' perceptions of reclaimed wood. Consumers are an important component to any market as demand allots for shifts in trends that may occur. Therefore, it is important to understand the way consumers think and how they feel about this resource. Thus, this research aims to examine consumer perceptions regarding reclaimed lumber and the reclaimed lumber industry.

Literature Review

The following literature review provides definitions, insight, and context regarding the basis of this research study.

What is salvaged lumber

Reclaimed wood is salvageable material removed from waste streams and abandoned buildings for reuse into new wood products. Also referred to as salvaged lumber, reclaimed wood is important because of the role it can play in the world's agenda towards sustainable living. This resource has shown profitable potential in the market during the past few decades. The use of reclaimed wood can help to promote sustainability, increase jobs, and minimize the amount of landfill waste generated from demolishing old buildings.

Origin

The majority of salvaged lumber comes from demolition processes. Wood elements generated through construction and demolition (C&D) projects traditionally have been disposed of as low-value resources, typically by means of chipping, burning, or landfilling (Pitti et al. 2019). The salvaged lumber generated in C&D projects primarily comes from industrial, commercial, and agricultural buildings that are no longer in use (Sustainable Lumber Co. 2019).

Most abandoned properties undergo demolition processes because of associated risk. Local ordinances often consider vacant or abandoned properties as a threat to the health and welfare of the surrounding community due to close associations with crime (U.S. Department of Housing and Urban Development 2014). Vacant and abandoned buildings are labeled magnets for crime due to the “broken windows theory.” This theory suggests that one sign of abandonment or disorder will encourage further disorder (U.S. Department of Housing and Urban Development 2014). Such disorder can even be as small as a broken window. Abandoned properties often become a hotspot for criminal activity such as vandalism and arson. Between 2011 and 2015, the National Fire Protection Association (NFPA) estimated an average of 30,200 fires annually in vacant properties (NFPA 2018). Fires average in 60 civilian deaths, 160 civilian injuries, and \$170 million in property damage per year (NFPA 2018). Thus, abandoned properties undergo the demolition process to minimize public risk.

While most salvaged lumber is acquired from abandoned buildings, there are other less conventional means. Other sources of salvaged lumber include old barns, decommissioned watercraft, train stations, box cars, mills, wine barrels, etc. (Sustainable Lumber Co. 2019). The wood obtained from these outlets often possess unique qualities that drive consumer demand. In recent years, new industries have emerged to capitalize on this undervalued resource by offering consumers products that emphasize the consumer desire to live a sustainable, feel-good lifestyle (Pitti et al. 2020). By upcycling these traditional waste products, the reclaimed wood industry also capitalizes on the advantages of salvaged lumber.

Advantages

There are many advantages of reclaimed wood that make it a valuable resource. Various characteristics of this resource material appeal to environmentally conscious consumers on a market scale. Such benefits include positive environmental impacts, carbon sequestration, income generation from salvaged lumber sales, and the potential for job creation (Diyamandoglu and Fortuna 2015; Nunes et al. 2019). Salvaging lumber plays a major role in reduction of the carbon footprint. Wood naturally possesses the ability to sequester carbon which is chemically stored in the wood (Falk 2009; Falk et al. 2013). This happens in the form of carbon dioxide (CO₂) as a byproduct of photosynthesis. The carbon from CO₂ usually stays in the wood up until the natural end of its life cycle. At the end of the life cycle, decaying matter releases CO₂ back into the atmosphere resulting in greenhouse gas (GHG) emissions. Due to this concept, reusing building materials is more advantageous than using newly manufactured materials. These reclaimed materials help to avoid GHG emissions associated with new (virgin) material manufacturing (Bergman et al. 2010). This is how mitigating landfill waste aids in carbon reduction. Lumber reuse helps decrease the chances of demolition waste piling up in landfills where GHGs are emitted during decomposition.

There are also economic benefits of salvaging lumber. These benefits have a positive direct impact on communities by creating jobs for individuals with barriers to employment. Salvaging lumber from abandoned buildings more efficiently requires undergoing the process of deconstruction. Deconstruction is the disassembling of a physical structure in reverse order from the steps of construction (Diyamandoglu and Fortuna 2015). The purpose of deconstruction is to maintain the original physical properties and structural integrity of the wood with minimum damage. Deconstruction is more favorable than demolition because demolition practices

contribute heavily to the discarding of salvaged lumber. Demolition sites use heavy machinery to disassemble physical structures, which can lead to an increase in lumber damage.

Deconstruction, however, can minimize that damage. With these deconstruction efforts come the employment of local workforce trained and equipped with skills to handle the job. In places like Baltimore, Maryland, the implementation of deconstruction in low-income neighborhoods makes way for collaborative efforts among city, community, and local nonprofit organizations. Such efforts largely occur in struggling neighborhoods where unemployment rates are near 30 percent (Northern Research Station 2018). The majority of the individuals employed for these projects are people with barriers to employment such as felony convictions, past addiction, or lack of a high school diploma (Northern Research Station 2018). By creating jobs for those struggling to find work, collaborators not only give employees hope, but also equip them with skills for other future job use. Community-driven salvage efforts and land planning help increase employment rates, economic development, and urban renewal while also lowering crime centered around vacant buildings and improving lives (Northern Research Station 2018). This all occurs through the means of deconstruction.

Another advantage of reclaimed wood is its aesthetically pleasing nature. Reclaimed wood is beneficial for marketing because of its unique qualities and interesting history (Sustainable Lumber Co. 2019). Aesthetically, its antique and rustic nature adds personality to this biological material. This material is often aged and weathered which allows for a desirably unique look that is uncommon in most new materials. Another aspect of wood is that no two pieces are alike. This gives more depth and character to timber products. The historical aspects of the wood also intrigue customers. Most consumers are drawn to products and materials with an interesting backstory (YR Architecture Design 2015). They are specially drawn to pieces that

are distinctive from one another. Wood from a previous life often tends to vary in texture and shape. Some pieces can be exposed to knots, notches, or even nails. Overall, this adds richness to the story.

Compared to most lumber on the market today, old-growth timber is also more stable, stronger, and more resistant to rot and termites. This is primarily because the majority of salvaged lumber was originally harvested from old-growth forests and is essentially unavailable from current sources today (Bratkovich et al. 2009). Many of these notable species have declined which is why they are no longer readily available for construction or use in other forest products. Presently, the market is centered around quick-growing species. However, these species possess slightly less favorable mechanical properties than their counterparts. This is where reclaimed wood trademarks its popularity. Timber from mature trees offers various desirable attributes such as grain, color, strength, and stability. The mechanical properties of reclaimed wood are highly favorable due to durability. Salvaged lumber is often able to withstand various weather conditions and is less susceptible to warping (Sustainable Lumber Co. 2019). This is because over the years, old timbers have expanded, contracted, and fully dried out (YR Architecture Design 2015). In addition, reclaimed wood is often denser and more resistant to decay elements. This is due to the wood's slower growth periods. The tightly packed growth rings and extractive-rich heartwood allow for stronger more durable wood than virgin timber (YR Architecture 2015).

Disadvantages

While reclaimed wood has many positive attributes, there are still issues regarding its use. The primary concern is that reclaimed wood is not formally recognized in grading or engineering design standards (Falk et al. 2013). In terms of timber grading, all timber must be graded and approved by a lumber grading agency to be stamped and certified. However,

reclaimed wood must undergo different certification standards. As of 2012, the only procedure implemented was an examination process by a qualified individual to verify that requirements were met for a specified timber grade instead of being graded by an approved lumber grading agency (Timber Frame Engineering Council 2012). Lack of formal recognition in grading and engineering standards can cause confusion in the marketplace and on the jobsite. When timber is not graded by an approved lumber grading agency, it is automatically assigned a lumber grade of no higher than a #2 (Timber Frame Engineering Council 2012). Since lumber reuse is not specifically addressed, the degree to which existing rules, standards, and codes apply to this material is currently undefined (Falk et al. 2013). To the author's knowledge, there are still no specific standards put in place for salvaged lumber.

Another concern with this specific material is the toxins associated with it. Traditionally, lumber is treated with chemicals to help preserve the wood's life cycle. Most of these chemicals are found in the adhesives, preservatives, and insecticides used in the treatment process (Elemental Green 2021). These chemicals can contain volatile organic compounds which can be life threatening to consumers. Presently, most preservatives or adhesives do not contain such toxic elements. However, lumber treated in the past followed different standards. Between the 1940s to early 2000s, the primary preservatives used for wood treatment were chromated arsenicals (copper, chromium, and arsenic), creosote, and pentachlorophenol (PCP) (EPA 2021). Since the 1940s, chromated arsenicals (CCA) have been used to pressure treat wood to protect against insect rotting and microbial agent attacks (EPA 2021). From 1970 to 2000, majority of the wood used in outdoor residential settings was chromated arsenical treated wood (EPA 2021). Creosote, which is distilled from coal tar, was used to prevent wood degradation from pests (EPA 2021). PCP was treated as a pesticide with a variety of uses. Eventually, however, these

three heavy-duty wood preservatives were restricted from residential use due to environmental and community health concerns. In early 2021, the EPA sought to address the human health and environmental risks of using chromated arsenicals, creosote, and pentachlorophenol. The EPA determined that the risks of pentachlorophenol's outweighed its benefits and proposed cancellation (EPA 2021). Likewise, the EPA has proposed additional mitigation measures for creosote and chromated arsenicals to protect the health of workers in wood treatment facilities (EPA 2021). While most residential structures might not contain chemical toxins, wood reclaimed from factories, wooden ships, railroad ties, etc. possibly can. Therefore, it should be tested and cleaned for proper maintenance.

Reclaiming older wood also requires a higher maintenance. This is another disadvantage. The reclaiming process can be tedious and a more expensive route. Since reclaimed wood is removed from waste streams, it has additional costs for salvaging, milling (de-nailed), and transportation from the site of origin to the mills (Banchero 2019). The cost of reclaimed wood reflects both the demand and the time and energy it takes to properly treat the lumber before installation (Manomin Resawn Timbers 2021). Thus, using new, treated lumber for construction is the cheaper option. There are no additional costs with this method other than the initial costs. As previously stated, while the process of salvaging is more expensive and slower than demolition, this option has many qualities that make it appealing to consumers. As John Wooden once said, "Good things take time, as they should. [People] shouldn't expect good things to happen overnight. Getting something too easily or too soon can cheapen the outcome."

Current status of reclaimed wood

Presently, available literature on reclaimed wood focuses on the environmental benefits and market status of reclaimed lumber. Most papers discuss the emergence of the reclaimed wood industry and future market potential. In the last few decades, there has been an increased demand for products and services with lower environmental impacts. Because of market pressure, many companies now include sustainability as an essential component of their corporate social responsibility plans and business strategies (Pitti et al. 2020). These marketing strategies help effectively identify and target specific market segments which are defined by separating consumer groups based upon similar attributes (Pitti et al. 2020).

Reclaimed wood companies often focus on high end, handcrafted, exclusive, and custom production which appeals to market segments where price is not the main decision factor (Pitti et al. 2020). There are two sectors within the reclaimed lumber market: the application division and the end-use division. The application sector of the market is segmented into several areas which include furniture, flooring, paneling and siding, beams, and others. The end user sector, on the other hand, is segmented into three areas: commercial construction, residential construction, and industrial (Market Research Future 2022). Because of advancements in the construction industry, the demand for reclaimed lumber is also increasing. Within the commercial end-use segment, the rustic quality of reclaimed wood allows for the application of wall coverings, flooring, tabletops, etc. (Grandview Research 2021). In terms of residential construction, reclaimed wood is deemed a hot commodity for interior design, framing, paneling, trim, cabinets and wardrobe construction (Grandview Research 2021; Tech News 2022). While these two segments are involved heavily in the prominent use of reclaimed wood, the industrial use segment has more of a minor role. There

are a limited number of applications within this field as there are strict policies and regulations regarding the use of materials on industrial premises (Grandview Research 2021).

The reclaimed wood market is also divided into regional segments. As of 2020, Europe was the dominating force in the market accounting for 41% of global revenue in within the reclaimed lumber sector (Grandview Research 2021). As for the North American sector, the U.S. is the domineering force within this region. A surge in demand in the North American regional market is owed primarily to the commercial sector including interior decoration in retail and hospitality environments, and offices (Grandview Research 2021). As of 2021, the estimated market size value was 51.04 billion U.S. dollars. The current revenue forecast projection for 2028 is 70.37 billion U.S. dollars with a compound annual growth rate of 4.6 percent over the course of seven years (Grandview Research 2021).

What we don't know

However, the limited research on reclaimed lumber in the market fails to properly address the main priority of any market, consumers. In this study, consumers are defined as any individual 18 years of age or older. This is typically the age of majority in most states. The age of majority signifies the legally defined age at which a person is considered an adult, with all the attendant rights and responsibilities of adulthood (US Legal 2021). Thus, for these specific research purposes, 18 is considered the minimum age threshold.

Understanding the way consumers think is important because consumer opinion is what drives the market. Personal life experiences and beliefs influence consumer's perceptions and behavior. Consumer behavior is categorized as dynamic interactions between people and surroundings (Olšiaková et al. 2016). Consumer behavior is linked to various psychological

factors which can influence the decision-making process when choosing products. This includes motivation, perception, learning attitude, and personal characteristics (Olšiaková et al. 2016).

Consumers have become more aware of environmental practices used in product production. The public has become greatly concerned about climate change and the conservation of forest diversity, therefore prompting consumers to become more conscious of how they choose products (McFarlene 2005, Winkel 2013). Pitti et al. (2020) also notes that unique aesthetics and characteristics play a key role in driving demand for urban and reclaimed wood products.

Reclaimed wood material has been proven to be more sustainable than its modern counterparts, which effectively makes room for market expansion (Banchemo 2019). Previous research studies indicate that reclaimed wood is an exponentially growing market that could double or triple in the next few decades (Banchemo 2019), which offers plenty of opportunity for industry to capitalize on this momentum. Unfortunately, although the mentioned benefits of salvaged wood are popular, there are still some barriers that hinder wood companies from taking full advantage of this material (Pitti et al. 2020). One primary barrier might be the industry's lack of awareness on consumer knowledge in certain categories, particularly regarding the economic and environmental benefits of salvaged materials. Awareness and knowledge are critical components to market growth and can change the attitude and behavior of how consumers feel about certain products (Abdolvand et al. 2016). Knowledge has a direct influence on human action and can impact the decision-making process (McEachern & Warnaby 2008; Guo & Meng 2008; Ishak & Zabil 2012). Understanding the mind of the consumer can help industry officials make proper decisions on promoting the environmental friendliness and economic benefit of their products and services.

Another barrier that might hinder companies from taking full advantage of reclaimed wood could be the advertisement or marketing strategies. Due to the newly established nature of both the supply and demand of urban and reclaimed wood products, literature specific to marketing practices in these industries is limited (Pitti et al. 2019). Current knowledge indicates that there is a market for salvaged lumber as there is consumer demand, but there is a lack of an in depth understanding on consumer perspectives. Insufficient marketing efforts might cause a disconnect between the customer and industry. This could potentially weaken the consumer and manufacturers relationship and the industry's overall reputation. Having that same awareness could assist in advertisement efforts. Understanding the consumer mind could effectively improve marketing strategies. However, to the author's knowledge there is no knowledge of how consumers feel about the reclaimed lumber industry. There is also no knowledge regarding consumer perceptions on the use of reclaimed lumber in wood products. Further research on the subject could provide insight to help influence consumer demand in the reclaimed wood market and aid in the world's sustainable living agenda.

Objectives

There are two primary objectives of this study: 1) to assess consumer perceptions of the reclaimed wood industry and 2) to evaluate consumer perceptions on the use of reclaimed wood in wood products. To further breakdown the objectives, the following questions were considered:

- i. How knowledgeable are consumers of reclaimed wood and the industry?
- ii. What are consumers opinions of the reclaimed lumber industry?
- iii. What are consumer perceptions and opinions of reclaimed lumber?
- iv. Would consumers be willing to buy products made from reclaimed lumber?

This study hopes to shed light on the benefits of using reclaimed wood in wood products for industry and academia use. Study results could potentially lead to the generation of more employment opportunities in the industry, raise awareness to the sustainable approach reclaimed wood offers, as well as provide more profitability in the wood products market. Academia could also benefit from this study by providing more opportunities for other researchers to expound upon this topic.

Importance of Study

Currently, there are no known studies that can provide information regarding consumer perceptions on reclaimed wood or perceptions regarding the reclaimed wood industry. However, there are a few on marketing reclaimed wood. The benefits of salvaged lumber have been identified, but this has not been examined in depth. Considering the world has shifted towards an eco-friendlier environment, more research can identify how this industry can aid the sustainability movement. This study will provide insight toward ways to further benefit environmental sustainability and the wood products market.

Consumers have the biggest influence when it comes to marketing. Therefore, their opinions are very important to this research study. The more informed consumers become about reclaimed wood, the more potential there is for increase demand of reclaimed wood products. These findings can explain the benefits of using reclaimed wood, which can ultimately enhance a company's credibility and civic reputation. This work may also pique company interest in becoming actively involved in similar projects across the U.S. These projects may include acquiring salvaged lumber while creating jobs and diminishing landfill wastes.

Overall, the significance of this study supplies new information gathered directly from consumers that could shed light on consumer perceptions on an evolving industry and its

products. These findings will provide data on market potentials and can potentially serve as a basis for future project development.

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CHAPTER II

PERCEPTIONS OF INDUSTRY

Introduction

The wood products industry is one of the leading contributors to the U.S. economy. Accounting for approximately 4 percent of the total U.S. manufacturing GDP, it is one of the country's most important sectors (Forth 2018). As of 2018, the industry has produced about \$210 billion in products annually (Forth 2018). Not only are wood products companies recognized for their economic contributions, but also as commendable employers. They are noted as one of the top ten employers in the manufacturing sector employing nearly 900,000 people (Forth 2018). This places the industry on the same scale as the automotive, chemicals, and plastic industries (Forth 2018). Individuals living in rural communities especially benefit from these employment opportunities.

Rural communities are typically known to have limited employee opportunities and lower wages (Tennessee Department of Health 2022). This is primarily due to the geographic location of rural areas. Most rural areas are located on the outskirts of well-known cities or towns. These places are also smaller compared to larger cities. Most jobs and public services, such as schools and hospitals, are typically located within the city. These amenities attract people who then migrate to the cities looking for such services (Nambiar 2021). Thus, aiding in overpopulation in these big cities unlike in rural areas which have considerably lower population densities (Tennessee Department of Health 2022). Rural communities also grow in slower rates than their

metropolitan counterparts. The amount of undeveloped land and forest allows for agricultural enterprises to take root in these regions and provide jobs to individuals of the community. Most of the wood products industry's economic development efforts focus on retaining and expanding jobs in these rural areas (DeHoop et al. 2005).

While the wood products industry contributes to a good portion of this country's economic development, it is also seen as an environmentally friendly business. The industry is considered one of low environmental impact due to wood being a renewable resource (USDA Extension Foundation 2022). Wood is a versatile raw material with highly favorable carbon storage properties. Wood naturally possesses the ability to sequester carbon which is chemically stored in the wood (Falk 2009; Falk et al. 2013). This happens in the form of carbon dioxide (CO₂) as a byproduct of photosynthesis. The carbon from CO₂ usually stays in the wood up until the natural end of its life cycle. So, unlike its other counterparts, the use of wood products helps to reduce the carbon footprint. It also requires less energy consumption and fossil fuel to produce wood products than to manufacture concrete and steel (Southern Forest Products Association 2022). Unlike other materials, the primary energy needed to produce wood products derives from renewable energy reserves (Adhikari and Ozarska 2018). Which is another reason why the wood products industry is so important.

Being the leading generator and user of renewable energy, most of the wood waste generated by wood products companies is used as fuel (U.S. Forest Service 2021). This waste is used as an energy source to help power wood production facilities by production of steam and electricity (EIA 2022). This process helps companies to save money on the fuel and electric expenses necessary to power said facilities. It also helps to reduce greenhouse gas (GHG) emissions. The use of wood chips in coal-burning power plants has helped to reduce sulfur

dioxide (SO₂) emissions (EIA 2022). Even several power plants in the electric power sector primarily burn wood to generate electricity in their facilities (EIA 2022). So not only is wood good for standard structural uses, but it also provides a good source of energy.

While the industry holds great contributions to the U.S. economy and the environment, there is always room for improvement. As a driver for sustainability, the wood products industry has the chance to further their involvement in the sustainability movement and provide more jobs for people with the use of reclaimed wood. Reclaimed wood is material salvaged from abandoned buildings and other waste streams and repurposed into new wood products. It is an important resource with the potential for more innovative uses to support the sustainability agenda. Most reclaimed wood comes from demolition processes for vacant and abandoned buildings. But there are other sources of reclaimed lumber as well. This includes old barns, decommissioned watercraft, train stations, box cars, mills, and wine barrels (Sustainable Lumber Co. 2019).

Salvaged lumber often has unique qualities that attracts consumers and drives market demand. These qualities offer various advantages that the wood products industry can capitalize on. A few advantages of utilizing reclaimed wood are environmental friendliness, increase in job exposure, and minimization of the amount of landfill waste generated from demolition practices. The environmental friendliness is attributed to wood's carbon sequestration abilities up until the end of its natural life cycle. Recovering and repurposing lumber from waste streams gives wood a "second life" and decreases the amount of landfill waste. Most wood from demolition processes is sent to landfills where the wood then deteriorates and emits GHGs during decomposition. Thus, wood reuse promotes the continuation of carbon storage which helps to

reduce the carbon footprint. This is important as global warming is a prevalent topic in today's social climate.

The economic benefit of reclaimed wood is the direct impact it has on local communities. Salvaging efforts help employ people locally by creating jobs for those suffering from employment barriers. This includes felony convictions, past addictions, and lack of a high school diploma (Northern Research Station 2018). This helps people to re-establish their credibility in a workplace while also giving them hope. Community-driven efforts and local partnerships help drive economic development, breakdown employment barriers, and reduce the amount of crime centered around vacant buildings all while improving lives (Northern Research Station 2018).

Prior studies have already documented the benefits of salvaged lumber and the impact of use. But no in-depth analysis has been done regarding consumer opinions. Thus, the purpose of this study. The primary focus of this study was to determine current consumer perceptions of the wood products industry, wood products, and the use of reclaimed wood.

Methodologies

Questionnaire development

The data used in this study was collected through an online questionnaire. The questionnaire was designed based upon relevant topics found in research articles and from informal conversation with industry professionals. Thus, survey questions could adopt a general or specific approach as required by the objectives of this study. The first section included questions relative to demographics. This was necessary to understand the demographic make-up of the respondents. The second section included general questions about the industry while the third section was regarding reclaimed wood products as a whole. Other sections included open-

ended responses in which consumers were asked what they thought of when hearing the term “reclaimed wood.” Other open-ended responses asked that respondents list any wood products companies that they were familiar with. Respondents were also given a chance to provide any additional commentary near the end of the survey. Most responses ranged from survey design improvements to positive reception of the knowledge provided.

The survey was programmed online via the global platform Qualtrics. Qualtrics is an online survey platform that provides digital survey software to create and collect survey data (Qualtrics 2020). The questionnaire consisted of a total of 44 questions (see Appendix A). Questions were organized in multiple formats that included five-point Likert scale, open-ended response, dichotomous (yes or no), categorical (ranking) and multiple-choice. The demographics section consisted of a total of nine questions. These questions included age, gender, race/ethnicity, state of residence, community of residence (suburban, urban, or rural), educational background, and marital status. The age range of respondents was 18 years of age or older as most consumers are above legal age.

Survey questions regarded topics focusing on reclaimed lumber, wood products, and the use of reclaimed wood in the wood products industry. Some questions referenced the industry specifically, while the majority focused on consumer opinion on usage of salvaged lumber in the industry. Before the finalized version was sent out, colleagues were asked to review the survey. This was to ensure that the questionnaire was concise and not missing any relevant information. Each question was formatted according to Dillman’s method of design (Dillman et al. 2014).

Institutional Review Board

Per Mississippi State University’s policies, any research involving human subjects must be approved by the Institutional Review Board (IRB) before research procedures begin. The IRB

and the Mississippi State University Office of Research Compliance review research project procedures to ensure the protection and safety of the human involved in the research. This study was reviewed by the MSU IRB and approved on August 10, 2021, prior to dissemination.

Data collection

The online survey was distributed by Dynata, formerly known as Research Now Survey Sampling International (SSI), a company that provides data collection services for marketing research studies. Dynata serves both large and small businesses, colleges/universities and “nearly 6,000 market research, media and advertising agencies, publishers, consulting and investment firms and corporate customers in North America, South America, Europe, and Asia-Pacific” (Dynata 2020). The company’s goal is to improve [their] clients’ business and market understanding by connecting them to the interests, opinions and actions of real people to strengthen the clients’ market research and advertising activities (Dynata 2020). Dynata also has privacy policies compliant with General Data Protection Regulation (GDPR) and California Consumer Privacy Act (CCPA) standards.

Dynata offers a variety of recruitment methodologies to help meet unique project requirements. One such method is panel-based sampling, which helps identify and recruit respondents to participate in the survey taking process. Each recruitment channel delivers a different population with slightly different results (Dynata 2020). Each survey is distributed to a specific panel based upon the clients’ study requirements. Some study requirements might include specific demographics and a set quota for the number of responses. Within this survey, respondents are allowed a one-time, single response. The survey is then closed once the target quota is met with the complete number of responses.

In order to make sure that the sample data provided from Dynata’s services is representative of the target population, quality control techniques are put in place. Examples of these quality control measures include, “digital fingerprinting which confirms identity and identifies suspicious behavior” and “fraud detection software which identifies duplicate or fraudulent respondents” (Dynata 2020). This helps validate responses in the sample. To ensure that the sample reflects the target population, Dynata analyzes sample needs and client requirements. Dynata balances the sample for clients on outbound, inbound, and completes quotas, using a wide range of targeting criteria from simple demographics to more complex behavioral and attitudinal profiling (ResearchNow 2019). After sample selection, email invites are randomized automatically to negate bias. This allows for more diversity and representation in the panel process.

In recent years, online participant panels have grown in popularity. The value of online panel sampling increases its popularity. The use of internet surveys is a cost-effective tool that enables quick access to large and diverse samples (Hays et al. 2015). Internet surveys are also less time consuming than traditional methods used to obtain data for analysis (Hays et al. 2015). The standardization of the data collection process also offers an easier replication process of other studies (Hays et al. 2015). For respondents, online surveys allow for a smoother survey taking process without facing question fatigue (Farrell and Peterson 2010; Dillman et al. 2014). The ability to quickly access large and diverse samples aids in the increase potential for differing response opinions.

Bias potential

There is always some degree of bias presented in published studies (Pannucci and Wilkins 2010). Bias can occur in various phases of research including planning, data collection,

analysis, and publication (Pannucci and Wilkins 2010). This is especially true in online surveys. Therefore, it is imperative to consider the possibility of bias potential in this study. One form of survey bias to consider is non-response bias. Non-response bias can occur when prospective respondents choose not to participate in the survey study. This can potentially influence bias because those who chose not to respond might offer a different perspective than their counterparts who actively responded (Moattar 2020). This can create misleading conclusions without the “full story”.

One way this study sought to reduce bias potential was by setting parameters on the demographics. For example, the quotas for specific categories such as gender and race were set based upon the actual estimates of the 2020 U.S. Census. This was to ensure that the sample was as representative of the population as possible. Since this study had two “waves” of responses, another way this research sought to reduce bias potential was to test early respondents against late respondents. This is a standard procedure for testing non-bias response. Other studies have adopted this approach to calculate the non-response bias from online surveys in which the number of non-respondents is unknown (Cai and Aguilar 2014; Montague et al. 2019; Stout et al. 2020). The basic assumption of this procedure is that the number of late respondents represent the number of non-respondents (Lin and Schaffer 1995; Montague et al. 2019). Responses to the question whether respondents were knowledgeable of the wood products industry was used to test bias. The Kolmogorov-Smirnov test (K-S test) resulted in a K-S statistic of 0.12 which confirms that the two samples came from the same distribution, thus indicating that there was no statistical difference amongst respondents who completed the survey early and those who completed it later.

Pre-testing the survey

This survey had to undergo one round of pre-testing before distribution of the final version. Pre-testing is always recommended when adopting a survey approach 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. The pre-test method of choice for this survey, 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 was administered by the panel-based sample company Dynata. The survey was issued to approximately 125 respondents for a “soft launch” prior to the full field launch. The pre-test began on August 24, 2021 and was completed on August 25, 2021. For this study, the pre-test was used to test if respondents could easily answer questions and to receive feedback on potential improvements regarding questionnaire design. At the end of the survey, respondents were asked (if desired) to provide feedback in the open-ended box. Feedback from respondents in the soft launch allowed for corrections to be made in the final questionnaire. From the pre-test, 86 responses were deemed usable. Approximately 29 responses were discarded because those respondents did not fully participate, nor complete the questionnaire. This was determined based upon the numerous amounts of provided commentary with no context in the open-ended responses.

Following the end of survey commentary provided in the open-ended section of the 86 initial responses, a few changes were made. These alterations were intended to make the answering process easier on respondents. Of these changes, definitions were reduced for lighter reading and some questions rearranged. One question underwent a complete format change while

the wording was revised in others. These survey changes were the result of the final version of the questionnaire.

Sample collection

The only requirement for this study was that respondents were a minimum of 18 years of age or older. A quota was set for the demographics based upon the U.S. Census. Dynata distributed the survey to a random sample of U.S. citizens from an online panel. The original goal was to reach a target number of 1,500 responses. Responses were collected until the target number was reached. The 86 pre-test responses were included in the 1,516 final total. Full field testing of the first wave occurred from August 26, 2021, to September 1, 2021.

From the first wave of responses, only 1,444 were considered usable completes. This included the initial 86 usable responses incurred from the pre-test. A second wave was launched in attempt to fulfill the 1,500-response quota. The second wave occurred from September 1, 2021, to September 2, 2021. The second wave garnered a total of 72 usable responses. The overall total number of complete responses from both waves was 1,660. However, approximately 144 responses were removed because it was determined that those respondents just selected random responses. Some respondents did not offer viable responses and rushed through the survey. This filtration resulted in a total of 1,516 usable responses.

Data analysis measures

The statistical program SAS Analytics Software[®] was used to analyze survey data. Within this project, descriptive statistics such as frequencies, means, and modes were calculated for each individual question. The chi-square (χ^2) test of independence was calculated to identify associations between respondent demographics and select questions. Analysis of variance

(ANOVA) was used to identify significant associations between select demographics and Likert-like statements.

The chi-square test is one of the most suitable functions to use for this study as the level of measurement for this data is nominal or ordinal. The sample size of this study is large, subjects were randomly selected, and the data also violates the assumptions of equal variance or homoscedasticity (McHugh 2013). This non-parametric test was performed on yes-or-no, multiple choice questions, and questions on the 5-point ranking scale. The demographic variables tested in relation to these questions were age, gender, race/ethnicity, education, community type, and geographic region of residence.

As a parametric test, one-way ANOVA is another suitable method to use for this study to test if there are significant differences amongst population means. This test was performed on 3 Likert-scale questions. An important statement was selected from each question and paired with 3 demographic variables. These variables were gender, race, and education. The significance level for this study was $\alpha = 0.05$.

Results and Discussion

Demographics

In the questionnaire, each respondent was asked to provide standard demographic information. This included gender, age, race, region, community type, and level of education. Of the questionnaires sent out, 1,516 responses were deemed usable. The demographic breakdown of the 1,516 usable survey responses showed that 51 percent of respondents were female ($n = 772$), and 49 percent were male ($n = 740$). This corresponds with the 2020 U.S. Census data where females make up 51 percent of the population and males make up 49 percent (U.S. Census 2020). The other 4 respondents preferred not to answer regarding their gender. Prior to survey

distribution, respondents were categorized by six different age groups: 18-24 years old, 25-34 years old, 35-44 years old, 45-54 years old, 55-64 years old, and 65 or above. Of the respondents, this study found that the largest group were individuals 65 or above (22%). The second largest groups were individuals 35-44 years of age (19%) and 45-54 years of age (19%). These groups were followed closely by the 55-64 years (17%) and the 25-34 years (16%). Overall, the number of survey respondents among age groups was relatively equal except for individuals between the ages of 18 and 24 (7%), as seen in **Table 2.1**.

Table 2.1 Age group percentage of survey respondents.

Age Group	Percent (%)
18-24	7
25-34	16
35-44	19
45-54	19
55-64	17
65 or above	22

*Percent values are rounded to the nearest whole number.

In terms of racial background, 76 percent of respondents identified as Caucasian (white), 10 percent as African American (black), 8 percent as Asian, and 6 percent identified as Other. The racial makeup of this study corresponds with the 2020 U.S. Census which reported 76 percent Caucasian, 13 percent African American, and 6 percent Asian (U.S Census 2020). The current educational background revealed that 29 percent of respondents held a bachelor’s degree, 24 percent held advanced degrees, 19 percent held a high school degree or less, 15 percent had some college (no degree), and 13 percent held an associate’s or technical degree. This differs slightly from the 2020 U.S. Census where individuals identified as having a high school degree or less made up the largest percentage (38%). The second largest group being those holding a bachelor’s degree (22%), followed by individuals with some college (17%), those with

professional degrees (13%), and individuals who received an associate's or technical degree (10%).

When asked about their marital status, over half of respondents identified as married (55%), approximately 24 percent as single, 10 percent as divorced, 7 percent as living with a partner, and 4 percent as widowed. When asked to indicate their region of residence, 40 percent stated that they lived in the South, 21 percent in the Northeast, 20 percent in the West, and 19 percent in the Midwest. The majority of respondents also stated that they live in suburban communities (47%), while 33% reside in urban communities, and 20% in reside in rural communities.

Knowledge of industry

To understand current knowledge levels among consumers, respondents were asked to describe how knowledgeable they are regarding the wood products industry. The majority (59%) of the responses indicated a somewhat knowledgeable audience. The other half (41%) indicated that they held no knowledge whatsoever. A Pearson's chi-squared test detected significant association between respondent's knowledge of the industry and race. Respondents who identified as Caucasian were more likely to have prior knowledge of the wood products industry than their counterparts. Results suggest that wood products knowledge/awareness is not equal amongst racial groups, thus prompting room for improvement. The wood products industry, traditionally, has been known as a Caucasian-dominated field. This might be a reason why individuals who identified as Caucasian might be more knowledgeable on the subject (Stout et al. 2020). In addition to race, chi-square tests between other demographics (gender, age, education, community type, and region) and respondent's knowledge levels resulted in statistically significant associations.

Respondents who stated that they did have some knowledge regarding the industry ($n = 901$) were asked to identify from where/whom they had learned about the industry. Most respondents had heard about the industry through family (31%) or friends (22%) followed by online (17%), TV (15%) and social media (14%). It's no surprise that family and peers play a huge role in informal learning. In an age where social sharing and "influencing" are prominent in everyday living, people seem to value the information they learn from their peers (Emporia State University 2020). Younger generations have even adopted new collaborative mindsets from encouraged informal knowledge sharing (Emporia State University 2020). Word-of-mouth is popular and can influence what a person knows without doing extensive research.

Respondents learning information online is unsurprising. The Internet is a highly important source of information with a wide coverage and extremely fast access (Al Hassan 2015). Within seconds, knowledge can be at anyone's fingertips. Since its debut, people have become more comfortable with utilizing the Internet as an information outlet. Cable television is also another outlet of information sharing. For many people, they learn with TV programs like HGTV and the DIY Network which both feature non-stop renovations that cover a wide range of projects and budgets (D'Costa 2015). From hardwood floors to high end kitchen cabinets, wood renovations are common with these programs. Likewise, with social media. Most people use social media platforms to network with friends, or for entertainment pleasures. However, social media is also heavily used to gather information and information gathering is listed as one of the top three reasons for social media use (Montague et al. 2019). With different gossip blogs and news outlets having major presence on various social media platforms, consumers are learning more information daily through social media alone. Other options listed scored relatively low

compared to others as seen in **Figure 2.1**. For those who chose “Other,” the majority of the respondents themselves had career experience working in the field.

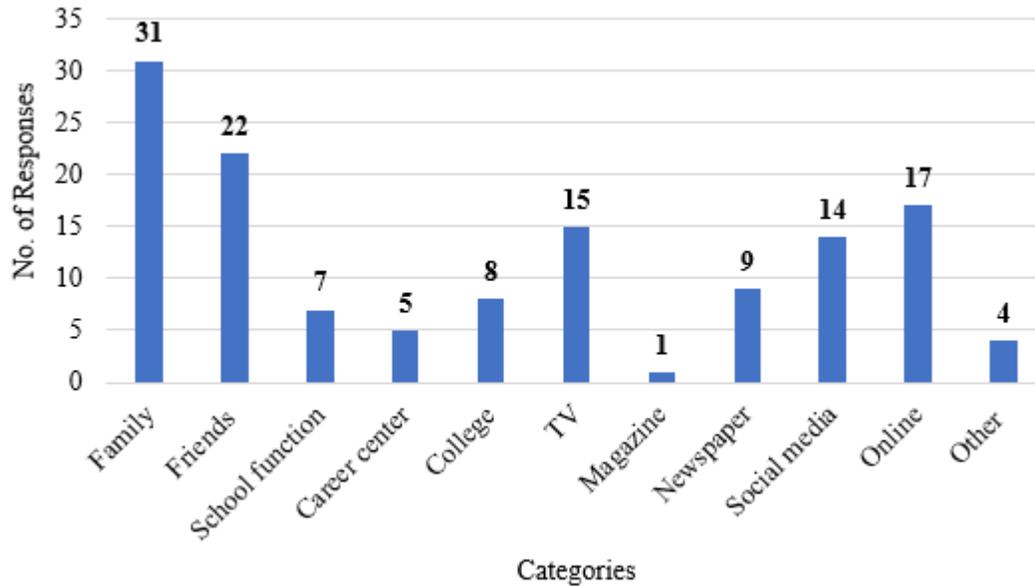


Figure 2.1 Percentages of where respondents had learned about the wood products industry.
*Percentages rounded to the nearest whole number.

To further understand how respondents learned about the industry, they were then asked if they have any immediate family who had any experience working in the field. A large number of respondents (68%) did not have any family working within the field. Twenty-six percent did have family members with experience in the field, while the remaining 6 percent were unsure. This large percent of responses could suggest that most respondents are learning their information from word-of-mouth within families, amongst friends, or from reading information online. Perhaps people indulged in self-learning during the COVID-19 pandemic as most people have taken an interest in DIY (Do It Yourself) projects/home renovations. Self-learning and the

desire to learn how to accomplish a project could easily influence where people gather their information.

Respondents were also asked whether they were familiar with at least one wood products company in general. Nearly half (49%) of respondents stated that they were not familiar with one wood products company. Thirty-three percent acknowledged that they were familiar with at least one company, while 18 percent were unsure. The respondents who chose “yes” ($n = 500$) were then asked to list that company. Frequent responses mentioned notable companies such as Weyerhaeuser, Georgia Pacific, Home Depot, Lowe’s, 84 Lumber, and YellaWood. Weyerhaeuser and Georgia Pacific are known as two of the largest wood products companies in the world bringing in nearly \$7.1 billion in revenue (Kolmar 2021). Therefore, it makes sense that Weyerhaeuser and Georgia Pacific were some of the frequently mentioned companies. Those same respondents were also asked if they knew whether these companies worked with salvaged lumber. Almost half of respondents (49%) stated that they were unsure. The remaining responses were split between “yes” (24%) and “no” (27%) as shown in **Figure 2.2**. The reason most respondents are unsure could be because most of the companies mentioned either do not utilize reclaimed wood, or do not broadcast their use.

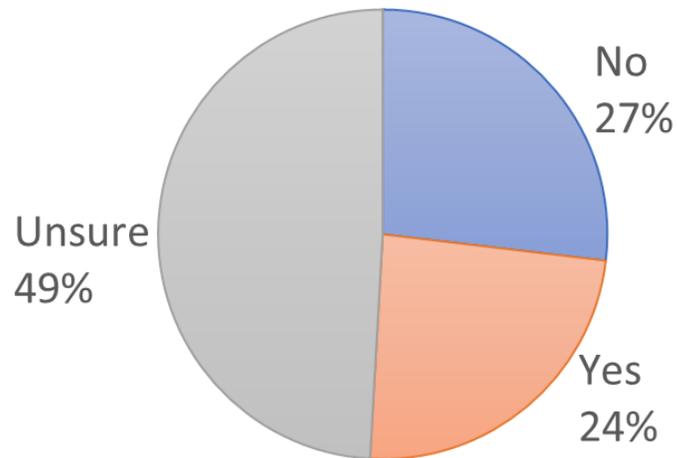


Figure 2.2 Percentage of respondents who know of a company working with salvaged lumber
*n= 774. Percent values are rounded to the nearest whole number.

Respondents were then asked to identify when they last purchased a wood product. The majority of respondents (46%) had purchased a wood product less than six months prior to their participation in the survey. Eighteen percent of respondents could not remember when they last made a purchase. Similarly, 18 percent of respondents indicated that they had made a purchase within six months to a year prior to participation in the survey. Thirteen percent of respondents made purchases 2-5 years prior to the survey. The remaining 6 percent stated that they had made purchases more than 5 years ago. This is on par with the increase in wood products sales during the pandemic. Citizens across the nation went from hoarding toilet paper to buying lumber for DIY projects, which caused a skyrocket in prices on forest products (Zhang & Stottlemeyer 2021). In short, people’s lifestyles changed a lot during the pandemic. Due to stay at home orders in March of 2020, people globally had to work from home. Staying at home for a large portion of the pandemic encouraged many people to perform home repairs or upgrades for amenities such as outdoor decks or purchasing new wooden furniture (Zhang & Stottlemeyer 2021). For those

who responded that they did not purchase wood products within the last year or so, perhaps they are unsure of what is classified as a forest product. One necessity that most people cannot live without is toilet paper. This seemed especially true during the early stages of the pandemic when consumers were experiencing uncertainty and nervousness and perhaps buying more toilet paper than they should (Moore 2020). With families staying home for longer periods of time, toilet paper is a common need. Considering they would have had to purchase toilet paper within the last few weeks, perhaps those respondents do not realize that they are consumers of wood products. This could signify a lack of knowledge or awareness amongst consumers as suggested in similar studies (Stout et al. 2018). This is similar to previous research that shows that consumers seem to only identify lumber as wood products (Stout et al. 2020).

To get an idea of the type of wood products consumers use, respondents were asked which products they were most willing to buy. Responses indicated that consumers were more willing to buy furniture (37%) and paper (25%) than anything else. Options such as kitchen cabinets (6%), fuelwood/charcoal (3%) and composites (OSB, particleboard, flake board) (2%) seemed to be less popular. One percent of the respondents stated that they would be willing to buy other wood products not listed. These products include items such as birdhouses, kitchen table sets (which would be classified as furniture), and wood pellets. Paper being one of the most preferable products indicates that respondents understand the importance of this product in their lives. To reiterate earlier statements, perhaps some respondents might be unaware of toilet paper fitting into the wood products category.

Knowledge of reclaimed wood

Before asking statement related questions, respondents were asked general questions about reclaimed wood. When asked if they had ever heard of reclaimed wood before, majority of

respondents (55%) stated “yes.” Thirty-three percent stated that they had not heard of it, while the other 12 percent remained uncertain. Additionally, respondents were asked if they knew what reclaimed wood was. The results of that question were nearly equal with 44 percent ($n = 664$) stating “yes,” and 37 percent ($n = 560$) replying “no.” The remaining 19 percent identified as “unsure.” Respondents were also asked if they were aware that reclaimed wood was a separate industry of its own. Over half of the respondents (60%) indicated that they were unaware of this, with the remaining 40 percent indicating that they were aware.

Perception of job exposure

After examining their levels of knowledge, respondents were given information regarding the benefits of reclaimed wood. One such benefit included potential job creation in low-income neighborhoods. Respondents were told that the reclaimed wood industry increases job exposure for individuals who have a hard time finding labor and were then asked whether learning this information changed their initial perceptions of reclaimed wood. The majority of respondents (69%) agreed that their initial perceptions had changed as shown in **Figure 2.3**.

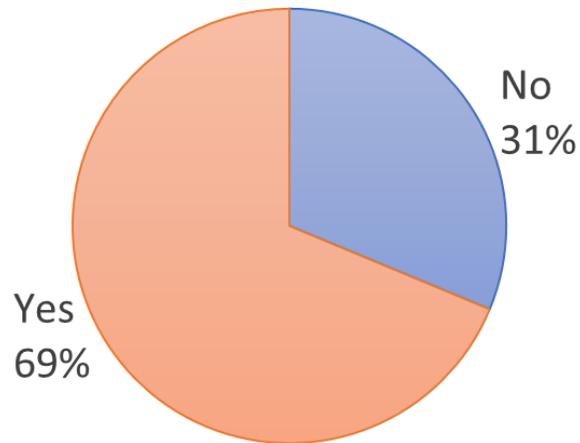


Figure 2.3 Percentage of respondents whose initial perceptions changed after learning about the amount of job exposure reclaimed wood offers *n= 1516.

Percent values are rounded to the nearest whole number.

Initial responses prior to being given information indicated that respondents already had a positive view of reclaimed wood. However, after learning about the potential to create job exposure, responses showed an increasingly more positive outlook on reclaimed lumber. This indicates that majority of respondents seem to have a firm belief in the importance of good environmental practices and sustainability. In addition, **Table 2.2** shows that a mean of 4.28 indicates that majority (88%) of respondents were more inclined to agree with the statement “reclaimed wood can be profitable for communities.” General agreement with that statement shows that most respondents do see the value of reclaimed wood. One person even expressed thanks for this survey stating that working with reclaimed lumber is how they’ve financially supported themselves. Of the respondents, a little over half (51%) indicated that they have personally thought about recycling wood. Previous studies have indicated that recycling is a cultural norm in America and that American consumers care about recycling and the

environment (Carton Council 2016). This suggests that respondents’ disregard for wood as a recyclable is a result of not being informed.

Table 2.2 Respondents’ perceptions about reclaimed wood.

Statement	Mean (mode)	Proportion (%) assigning a rating of				
		5 (strongly agree)	4	3	2	1 (strongly disagree)
Reclaimed wood can be profitable for communities	4.28 (5)	44	44	9	2	1
I have personally thought about recycling wood	3.36 (4)	20	31	25	13	11
I have often thought about what happens to wood once demolished from old buildings	2.99 (3)	16	33	27	14	10
Demolition practices should not recycle wood from old buildings	1.62 (1)	6	9	12	29	44

*Values are based on a five-point scale, where 5 = strongly agree and 1 = strongly disagree. Proportions are rounded to the nearest whole number.

Likewise, the majority of respondents fluctuated between agreeing (33%) and remaining neutral (27%) about whether they thought about the afterlife of wood once demolished from old buildings (mean = 2.99). It appears that respondents do not consider wood to be a recyclable material because they are not aware that it can be. This further proves the point that these efforts should be promoted better. Seventy-three percent of respondents were also more likely to disagree (mean = 1.62) with the statement “demolition practices should not recycle wood from old buildings.” This means that respondents do think wood should be recycled from these waste streams instead of being demolished. One respondent even described salvaging efforts as an “amazing idea” since there is a lot of wood in residential areas “in great shape that [they] don’t know what to do with.” While there is already documentation on the impacts of salvaging

practices, these results indicate greater potential for implementation of reclaimed wood within the industry.

Perception of industry sustainability and waste reduction practices

Before being asked to rank a series of statements, respondents were given more information regarding how beneficial reclaimed wood can be. Respondents were told that the reclaimed wood industry decreases the amount of waste that goes into landfills. Then they were asked if learning this changed their original perceptions of the industry. Sixty-seven percent of respondents indicated that learning this information did impact their initial perceptions of the reclaimed wood industry. The remaining 33 percent did not agree (**Figure 2.4**). These results could suggest that respondents lacked an initial understanding of how beneficial this industry is. Perhaps there is a disconnect in how companies within the industry promotes themselves.

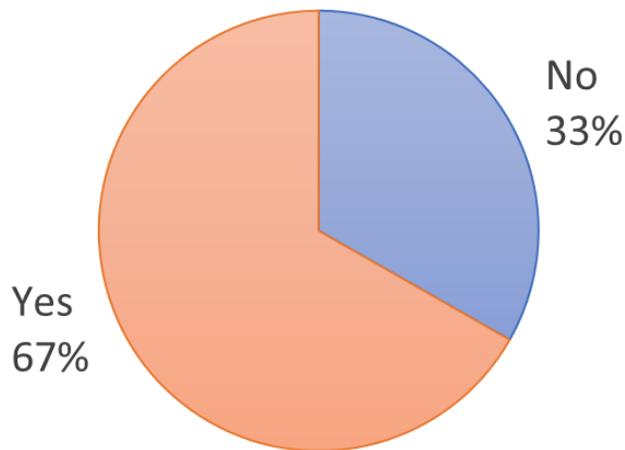


Figure 2.4 Percentage of respondents whose initial perceptions changed after learning about decrease in landfill waste *n= 1516.

Percent values are rounded to the nearest whole number.

To gain a better understanding of their perceptions of the wood products industry, respondents were asked to consider topics concerning the industry’s relationship with the environment and its waste practices (**Table 2.3**).

Table 2.3 Respondents’ perceptions towards the industry’s relationship with the environment.

Statement	Mean (mode)	Proportion (%) assigning a rating of				
		5 (strongly agree)	4	3	2	1 (strongly disagree)
Reusing wood from demolition sites helps reduce landfill waste	4.37 (4)	51	38	8	2	1
I understand why wood products are important to our world	4.27 (4)	43	44	10	2	1
Cutting down trees for wood products is damaging to forests	3.91 (4)	33	37	21	6	3
The wood products industry does not harm the environment	2.75 (3)	17	23	30	18	12
Recycling wood does not have an impact on communities	1.72 (2)	9	11	14	30	36
Recycling wood does not have an impact on the environment	1.66 (2)	10	14	13	25	38

*Values are based on a five-point scale, where 5 = strongly agree and 1 = strongly disagree. Proportions are rounded to the nearest whole number.

Approximately, 89 percent of respondents agreed that reusing wood from demolition sites helps reduce landfill waste. Eighty-seven percent of respondents agreed that they understand the importance of wood products in the world. In addition, 70 percent agreed that cutting down trees causes damage to natural forests rating it a 4 or 5 on the scale. One respondent stated that “tree companies have destroyed hundreds of acres of beautiful pine forests that once surrounded [her] property. So, [she’s] all for minimizing this destructive and heartbreaking practice”. While that

seems to be a common perception, it must be noted that historically the forest products industry has always been concerned about reforestation. Reforestation efforts are a top priority for national forest management following planned timber harvests or catastrophic events (U.S. Forest Service 2022). So, most of the trees harvested are promptly replanted (U.S. Forest Service 2022). Perhaps this person should not solely place the blame on wood products companies. The reason for cutting operations could be because of the neighboring owner's decision. Perhaps the owner wanted to remove timber for construction purposes or profit. Placing full blame on the wood products industry might reflect respondents' lack of knowledge.

When asked whether they thought the wood products industry harms the environment, 40 percent agreed that the industry did not harm the environment. While 30 percent were neutral. Seemingly respondents did not know how to feel about that statement. This could be because they do not know much information regarding the industry's environmental practices, thus being unable to hold a strong opinion. This brings up the issue of the industry's current promoting and marketing practices. Additionally, sixty-six percent of respondents disagreed with the statement "recycling wood does not have an impact on communities." Likewise, sixty-three percent of respondents also disagreed with the statement "recycling wood does not have an impact on the environment." This implies that the respondents do believe recycling wood is impactful. It appears they believe this impact to be positive as one respondent stated, "When I said that there were impacts of reclaimed wood on environment and communities, I meant in a positive way".

Perceptions of industry marketing practices

Urban and reclaimed wood firms can vary in terms of stature, credibility, facility management, exporting practices, and length of operation (Pitti et al. 2019). Customer profile can also vary ranging from high-volume corporate customers, such as architecture and design

firms, down to the individual buyer (Pitti et al 2019). Based upon target audience, marketing practices can differ. Thus, there is a need to determine if these campaigns are effectively reaching consumers. To gauge their perceptions on marketing practices of reclaimed wood within the industry, respondents were given a series of statements. Each respondent was asked to indicate their level of agreement for each statement. These results are presented in **Table 2.4**.

Table 2.4 Respondents’ attitudes towards the reclaimed wood industry’s marketing practices.

Statement	Mean (mode)	Proportion (%) assigning a rating of				
		5 (strongly agree)	4	3	2	1 (strongly disagree)
Knowing how wood products benefit the environment would be beneficial to consumer opinion	4.20 (4)	38	47	13	1	1
Wood products companies should create awareness of their environmental friendliness	4.08 (4)	34	46	16	3	1
Reclaimed wood should be marketed better	4.07 (4)	31	48	18	2	1
Salvaged lumber is not marketable, because it might not be financially beneficial in the long run	1.99 (2)	6	10	27	31	27
I have seen advertisements that promote the use of reclaimed wood	1.91 (2)	10	17	19	28	26

*Values are based on a five-point scale, where 5 = strongly agree and 1 = strongly disagree. Proportions are rounded to the nearest whole number.

Of the respondents, 85 percent agreed that knowing about the environmental benefits of wood products would be beneficial to consumer opinion. Additional comments support these sentiments. One respondent stated that information regarding reclaimed wood is “really good for the general population to be aware of to help save [the] planet.” Another stated that “climate change can literally exterminate us, [so it is best to] sustain the environment.” Others referred to this information as “thought provoking.” Eighty percent of respondents also agreed that wood

products companies should increase awareness of how environmentally friendly their companies are. The majority of respondents (58%) disagreed with the statement “Salvaged lumber is not marketable, because it might not be financially beneficial in the long run.” This suggests that reclaimed wood is marketable and that consumers would be more inclined to consider purchase if it were properly advertised.

Approximately, 54 percent of respondents stated that they have not seen any advertisements promoting the use of reclaimed wood. Thus, leading 79 percent of respondents to agree that reclaimed wood should be marketed better. A previous study (Pitti et al. 2019) indicated that majority of the active reclaimed wood firms had been operating for less than 10 years. Being fairly new in the industry could pose some challenges. Perhaps the industry could further explore how this barrier might affect marketing techniques implemented thus far. Further analysis of variance (ANOVA) test suggests that neither the amount of education, gender, nor race play a role in the way respondents viewed marketing practices.

Importance of the wood products industry

Respondents were asked to rank how important they believed the wood products industry to be on a five-point Likert scale. Leaning more towards a value of “4” or “5,” 81 percent of respondents were more inclined to consider the industry to be important (mean = 4.13). Only a small percentage of respondents selected values “1 or 2,” which label the industry as extremely unimportant (1%) or somewhat unimportant (3%). Fifteen percent of respondents felt neutral about this. There was a significant association between education level and industry importance, and between community type and industry importance. People with bachelor’s and master’s degrees were more inclined to understand the significance of the industry. Likewise, respondents

in suburban communities were more inclined to understand the significance of the industry. Although, this difference could be due to majority of respondents being from suburban communities. Further research amongst equal populations might provide insight on whether individuals think differently amongst these three community types. Based upon responses from the “additional comments” section, the majority of respondents thought this survey was extremely informative and even regarded reclaimed wood as a “cool” or “great” topic. One respondent stated that they were “very impressed by the old growth benefit” of wood. Another requested that more lumber surveys be published. Others were thankful that this survey addressed topics that helped them become more aware of wood products. Overall, respondents identify and realize the importance of the industry.

Conclusion

Data regarding how knowledgeable U.S. consumers are of the wood products industry and their perceptions on reclaimed wood practices were collected through an online survey in 2021. The 1,516 responses provided insight on consumer perceptions of the wood products industry and its current reclaimed wood practices. Although there is a known market for reclaimed wood, there has been limited research pertaining to consumer opinions on usage. Additional consumer research could be beneficial for industry officials to develop and adopt new approaches for promotional and marketing practices.

Results from this study suggest that consumers do possess some knowledge about the wood products industry. However, while 59% of respondents seem to be aware of the industry, only 44% know anything about reclaimed wood. Based upon responses, there seems to be a lack of knowledge on how reclaimed wood can influence economic development in communities. Many indicated being unaware of the opportunities and positive impacts associated with the

reclaimed wood industry. The majority of the respondents were introduced to new information through this survey. This is indication that the industry could benefit from incorporating new innovative strategies for the use of reclaimed wood in their marketing campaigns. Results also suggest that there are present day outlets that offer opportunities for the industry to take advantage of. These outlets exist through social media, the internet, and television as most respondents identified these platforms as secondary sources for learning information.

There also appears to be a knowledge gap amongst the different racial and gender groups of respondents. As a primarily Caucasian and male dominated field, Caucasian males were more likely to be more knowledgeable than their counterparts regarding the general industry. This reflects a need for more extension, outreach, inclusion, and diversity opportunities in this field. Perhaps this could be considered a priority in that diverse teams offer a greater perspective, generate better ideas, and see around corners that allow proper preparation to address challenges (Pierce 2020).

Overall, results of this study, show that the industry would benefit from spreading more awareness of wood products and the role it plays in the world. Current research shows the importance of the reclaimed wood industry and how this material can provide more opportunities and economic benefits globally. This could be even more effective with better marketing practices towards consumers. Although the industry technically does not market to consumers, perhaps understanding this impact on consumers could lead to more improvements for diversity, inclusion, and outreach within the industry. Building positive relationships between consumer and industry could strengthen the market and thus be beneficial in the long run.

Future research and study improvement

- Further research could be done to see how the COVID-19 pandemic affected consumer perceptions/ knowledge of wood products before shutdown and after shutdown. Since COVID first peaked in early 2020, a lot of consumers have been focusing on DIY projects and home renovations. Perhaps they have become more informed in doing so.
- Maybe further research with equal representation from all three community types could be done to see if there is a difference in the way individuals from urban, suburban, and rural communities think about wood products.
- Perhaps actual data tables can be added in the questioning process, so respondents' have factual information to base their opinions upon. This seemed to be a problem for a few respondents. One respondent believed this study to be manipulative since no valid data was provided as a source.
- Another consideration for future studies is the length of the survey design. A few respondents thought it was lengthy and time consuming.
- Although the repetition of a few questions was important to gauge perceptions before and after learning additional information, some believed this to be redundant and unnecessary. In the future, other studies could express the purpose of repeated questions in survey studies so that consumers are aware.

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CHAPTER III

PERCEPTIONS OF PRODUCT

Introduction

Wood is one of the most versatile natural resources on the planet and it plays an important role in daily life. For centuries wood has been used for building construction, furniture, medicinal use and tools. But there are other benefits and uses to wood as well. While wood has various economic and environmental impacts in society, there also psychological benefits.

Previous studies have suggested that wood can have a positive impact on a person's psychological health. This cumulative evidence is based upon studies where occupants were asked to self-report the outcomes of inhabiting green buildings (Lowe 2020). Green buildings are described as any building that has been designed to reduce or eliminate negative impacts and can create positive impacts on [the] climate and natural environment (World Green Building Council 2022). To summarize, green buildings help in improving the quality of life. This includes wood buildings. In a study conducted at the University of British Columbia on wood and human health, results suggested that the presence of wood surfaces in a room can lower the body's sympathetic nervous system (FP Innovations 2014). The result of this is a decrease in blood pressure and heart rate, which in turn reduces stress (Lowe 2020). Another study explores the type of emotions wood and plastic evoke. In this study, wood was found to elicit more positive emotions than plastic (Demattè et al. 2018). Even studies in healthcare settings decorated with wood interiors and furnishings have shown evidence that patients are more likely to experience

reduced stress and better well-being compared to similar facilities devoid of natural furnishings (Ohta et al. 2008). So, not only is wood beneficial for the environment but it can also benefit health.

Another benefit of wood is that it's an environmentally friendly alternative compared to plastics and metals. Wood is the more viable option between steel, concrete, and aluminum, because it requires substantially less fossil fuel energy in the manufacturing process (Hyne Timber 2022). The use of wood helps mitigate the number of pollutants emitted during manufacturing (Hyne Timber 2022). Wood is also known for its carbon storage properties. Trees naturally absorb atmospheric carbon dioxide (CO₂) and store it throughout the tree up until the end of its life cycle. Carbon also stays present when timber is removed and used to make forest products, which aids in the long-term reduction of greenhouse gas (GHG) emissions. Thus, as a sustainable material, timber is considered one of low environmental impact.

Functionally, wood also makes a good thermal insulator. Wood's natural insulating abilities allow for it to be 10 times more effective than that of concrete and masonry, and 400 times that of solid steel (Forestry Innovation Investment 2022). Because of its thermal capabilities, buildings made using timber require less energy for heating and cooling than their counterparts (Planet Ark 2022). This includes engineered wood products such as cross laminated timber (CLT), glulam, and laminated veneer lumber (LVL) (Planet Ark 2022). This results in reduced energy bills as not much energy is needed. Wood is also a recyclable material, which is the main topic observed in this research study.

There is still a need for wood even after its initial use, whether as scraps in wood waste or salvaging lumber. Repurposing wood has many positive impacts on the economy and the environment. This includes the increase in job exposure, the reduction of landfill waste, and the

capability to provide aesthetically pleasing products for consumers. However, the use of this material is not greatly publicized, unless in academia. Previous studies have discussed reclaimed wood properties and how using it fits into the sustainability agenda. But there has been no research study, to the author's knowledge, on consumer attitudes towards the use of this resource. Therefore, the primary focus of this study was to determine consumers' initial perceptions on the use of reclaimed wood in the wood products industry.

Methodologies

Questionnaire development

The data used in this study was collected through an online questionnaire. The questionnaire was designed based upon relevant topics found in research articles and from informal conversation with industry professionals. Thus, survey questions could adopt a general or specific approach as required by the objectives of this study. The first section included questions relative to demographics. This was necessary to understand the demographic make-up of the respondents. The second section included general questions about the industry while the third section was regarding reclaimed wood products as a whole. Other sections included open-ended responses in which consumers were asked what they thought of when hearing the term "reclaimed wood." Other open-ended responses asked that respondents list any wood products companies that they were familiar with. Respondents were also given a chance to provide any additional commentary near the end of the survey. Most responses ranged from survey design improvements to positive reception of the knowledge provided.

The survey was programmed online via the global platform Qualtrics. Qualtrics is an online survey platform that provides digital survey software to create and collect survey data (Qualtrics 2020). The questionnaire consisted of a total of 44 questions (see Appendix A).

Questions were organized in multiple formats that included five-point Likert scale, open-ended response, dichotomous (yes or no), categorical (ranking) and multiple-choice. The demographics section consisted of a total of nine questions. These questions included age, gender, race/ethnicity, state of residence, community of residence (suburban, urban, or rural), educational background, and marital status. The age range of respondents was 18 years of age or older as most consumers are above legal age.

Survey questions regarded topics focusing on reclaimed lumber, wood products, and the use of reclaimed wood in the wood products industry. Some questions referenced the industry specifically, while the majority focused on consumer opinion on usage of salvaged lumber in the industry. Before the finalized version was sent out, colleagues were asked to review the survey. This was to ensure that the questionnaire was concise and not missing any relevant information. Each question was formatted according to Dillman's method of design (Dillman et al. 2014).

Institutional Review Board

Per Mississippi State University's policies, any research involving human subjects must be approved by the Institutional Review Board (IRB) before research procedures begin. The IRB and the Mississippi State University Office of Research Compliance review research project procedures to ensure the protection and safety of the human involved in the research. This study was reviewed by the MSU IRB and approved on August 10, 2021, prior to dissemination.

Data collection

The online survey was distributed by Dynata, formerly known as Research Now Survey Sampling International (SSI), a company that provides data collection services for marketing research studies. Dynata serves both large and small businesses, colleges/universities and "nearly

6,000 market research, media and advertising agencies, publishers, consulting and investment firms and corporate customers in North America, South America, Europe, and Asia-Pacific” (Dynata 2020). The company’s goal is to improve [their] clients’ business and market understanding by connecting them to the interests, opinions and actions of real people to strengthen the clients’ market research and advertising activities (Dynata 2020). Dynata also has privacy policies compliant with General Data Protection Regulation (GDPR) and California Consumer Privacy Act (CCPA) standards.

Dynata offers a variety of recruitment methodologies to help meet unique project requirements. One such method is panel-based sampling, which helps identify and recruit respondents to participate in the survey taking process. Each recruitment channel delivers a different population with slightly different results (Dynata 2020). Each survey is distributed to a specific panel based upon the clients’ study requirements. Some study requirements might include specific demographics and a set quota for the number of responses. Within this survey, respondents are allowed a one-time, single response. The survey is then closed once the target quota is met with the complete number of responses.

In order to make sure that the sample data provided from Dynata’s services is representative of the target population, quality control techniques are put in place. Examples of these quality control measures include, “digital fingerprinting which confirms identity and identifies suspicious behavior” and “fraud detection software which identifies duplicate or fraudulent respondents” (Dynata 2020). This helps validate responses in the sample. To ensure that the sample reflects the target population, Dynata analyzes sample needs and client requirements. Dynata balances the sample for clients on outbound, inbound, and completes quotas, using a wide range of targeting criteria from simple demographics to more complex

behavioral and attitudinal profiling (ResearchNow 2019). After sample selection, email invites are randomized automatically to negate bias. This allows for more diversity and representation in the panel process.

In recent years, online participant panels have grown in popularity. The value of online panel sampling increases its popularity. The use of internet surveys is a cost-effective tool that enables quick access to large and diverse samples (Hays et al. 2015). Internet surveys are also less time consuming than traditional methods used to obtain data for analysis (Hays et al. 2015). The standardization of the data collection process also offers an easier replication process of other studies (Hays et al. 2015). For respondents, online surveys allow for a smoother survey taking process without facing question fatigue (Farrell and Peterson 2010; Dillman et al. 2014). The ability to quickly access large and diverse samples aids in the increase potential for differing response opinions.

Bias potential

There is always some degree of bias presented in published studies (Pannucci and Wilkins 2010). Bias can occur in various phases of research including planning, data collection, analysis, and publication (Pannucci and Wilkins 2010). This is especially true in online surveys. Therefore, it is imperative to consider the possibility of bias potential in this study. One form of survey bias to consider is non-response bias. Non-response bias can occur when prospective respondents choose not to participate in the survey study. This can potentially influence bias because those who chose not to respond might offer a different perspective than their counterparts who actively responded (Moattar 2020). This can create misleading conclusions without the “full story”.

One way this study sought to reduce bias potential was by setting parameters on the demographics. For example, the quotas for specific categories such as gender and race were set based upon the actual estimates of the 2020 U.S. Census. This was to ensure that the sample was as representative of the population as possible. Since this study had two “waves” of responses, another way this research sought to reduce bias potential was to test early respondents against late respondents. This is a standard procedure for testing non-bias response. Other studies have adopted this approach to calculate the non-response bias from online surveys in which the number of non-respondents is unknown (Cai and Aguilar 2014; Montague et al. 2019; Stout et al. 2020). The basic assumption of this procedure is that the number of late respondents represent the number of non-respondents (Lin and Schaffer 1995; Montague et al. 2019). Responses to the question whether respondents were knowledgeable of the wood products industry was used to test bias. The Kolmogorov-Smirnov test (K-S test) resulted in a K-S statistic of 0.12 which confirms that the two samples came from the same distribution, thus indicating that there was no statistical difference amongst respondents who completed the survey early and those who completed it later.

Pre-testing the survey

This survey had to undergo one round of pre-testing before distribution of the final version. Pre-testing is always recommended when adopting a survey approach 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. The pre-test method of choice for this survey, 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 was administered by the panel-based sample company Dynata. The survey was issued to approximately 125 respondents for a “soft launch” prior to the full field launch. The pre-test began on August 24, 2021 and was completed on August 25, 2021. For this study, the pre-test was used to test if respondents could easily answer questions and to receive feedback on potential improvements regarding questionnaire design. At the end of the survey, respondents were asked (if desired) to provide feedback in the open-ended box. Feedback from respondents in the soft launch allowed for corrections to be made in the final questionnaire. From the pre-test, 86 responses were deemed usable. Approximately 29 responses were discarded because those respondents did not fully participate, nor complete the questionnaire. This was determined based upon the numerous amounts of provided commentary with no context in the open-ended responses.

Following the end of survey commentary provided in the open-ended section of the 86 initial responses, a few changes were made. These alterations were intended to make the answering process easier on respondents. Of these changes, definitions were reduced for lighter reading and some questions rearranged. One question underwent a complete format change while the wording was revised in others. These survey changes were the result of the final version of the questionnaire.

Sample collection

The only requirement for this study was that respondents were a minimum of 18 years of age or older. A quota was set for the demographics based upon the U.S. Census. Dynata distributed the survey to a random sample of U.S. citizens from an online panel. The original goal was to reach a target number of 1,500 responses. Responses were collected until the target

number was reached. The 86 pre-test responses were included in the 1,516 final total. Full field testing of the first wave occurred from August 26, 2021, to September 1, 2021.

From the first wave of responses, only 1,444 were considered usable completes. This included the initial 86 usable responses incurred from the pre-test. A second wave was launched in attempt to fulfill the 1,500-response quota. The second wave occurred from September 1, 2021, to September 2, 2021. The second wave garnered a total of 72 usable responses. The overall total number of complete responses from both waves was 1,660. However, approximately 144 responses were removed because it was determined that those respondents just selected random responses. Some respondents did not offer viable responses and rushed through the survey. This filtration resulted in a total of 1,516 usable responses.

Data analysis measures

The statistical program SAS Analytics Software[®] was used to analyze survey data. Within this project, descriptive statistics such as frequencies, means, and modes were calculated for each individual question. The chi-square (χ^2) test of independence was calculated to identify associations between respondent demographics and select questions. Analysis of variance (ANOVA) was used to identify significant associations between select demographics and Likert-like statements.

The chi-square test is one of the most suitable functions to use for this study as the level of measurement for this data is nominal or ordinal. The sample size of this study is large, subjects were randomly selected, and the data also violates the assumptions of equal variance or homoscedasticity (McHugh 2013). This non-parametric test was performed on yes-or-no, multiple choice questions, and questions on the 5-point ranking scale. The demographic variables

tested in relation to these questions were age, gender, race/ethnicity, education, community type, and geographic region of residence.

As a parametric test, one-way ANOVA is another suitable method to use for this study to test if there are significant differences amongst population means. This test was performed on 3 Likert-scale questions. An important statement was selected from each question and paired with 3 demographic variables. These variables were gender, race, and education. The significance level for this study was $\alpha = 0.05$.

Results and Discussion

Demographics

In the questionnaire, each respondent was asked to provide standard demographic information. This included gender, age, race, region, community type, and level of education. Of the questionnaires sent out, 1,516 responses were deemed usable. The demographic breakdown of the 1,516 usable survey responses showed that 51 percent of respondents were female ($n = 772$), and 49 percent were male ($n = 740$). This corresponds with the 2020 U.S. Census data where females make up 51 percent of the population and males make up 49 percent (U.S. Census 2020). The other 4 respondents preferred not to answer regarding their gender. Prior to survey distribution, respondents were categorized by six different age groups: 18-24 years old, 25-34 years old, 35-44 years old, 45-54 years old, 55-64 years old, and 65 or above. Of the respondents, this study found that the largest group were individuals 65 or above (22%). The second largest groups were individuals 35-44 years of age (19%) and 45-54 years of age (19%). These groups were followed closely by the 55-64 years (17%) and the 25-34 years (16%). Overall, the number of survey respondents among age groups was relatively equal except for individuals between the ages of 18 and 24 (7%), as seen in **Table 3.1**.

Table 3.1 Age group percentage of survey respondents.

Age Group	Percent (%)
18-24	7
25-34	16
35-44	19
45-54	19
55-64	17
65 or above	22

*Percent values are rounded to the nearest whole number.

In terms of racial background, 76 percent of respondents identified as Caucasian (white), 10 percent as African American (black), 8 percent as Asian, and 6 percent identified as Other. The racial makeup of this study corresponds with the 2020 U.S. Census which reported 76 percent Caucasian, 13 percent African American, and 6 percent Asian (U.S Census 2020). The current educational background revealed that 29 percent of respondents held a bachelor’s degree, 24 percent held advanced degrees, 19 percent held a high school degree or less, 15 percent had some college (no degree), and 13 percent held an associate’s or technical degree. This differs slightly from the 2020 U.S. Census where individuals identified as having a high school degree or less made up the largest percentage (38%). The second largest group included those holding a bachelor’s degree (22%), individuals with some college (17%), those with professional degrees (13%), and individuals who received an associate’s or technical degree (10%).

When asked about their marital status, over half of respondents identified as married (55%), approximately 24 percent as single, 10 percent as divorced, 7 percent as living with a partner, and 4 percent as widowed. When asked to indicate their region of residence, 40 percent stated that they lived in the South, 21 percent in the Northeast, 20 percent in the West, and 19 percent in the Midwest. The majority of respondents also stated that they live in suburban communities (47%), with 33% residing in urban communities, and 20% in rural communities.

Uses of wood

Wood has always played an important role throughout the history of civilization. From being used as fuel, tools, weapons, building materials and many more, wood has been and is a staple part of our society (D'Costa 2015). Therefore, it is important that respondents understand that there are many uses of wood.

To gain insight on consumers' level of knowledge, questions pertaining to wood usage were presented to respondents. When asked how many uses wood has, 40 percent stated that they believe there to be over 5,000 uses. The second largest group of respondents (26%) were individuals who stated that there are approximately 250 uses. Sixteen percent of respondents indicated that there are approximately 1,750 uses for wood. Eleven percent suggested that there are approximately 3,000 uses. Additionally, only 6 percent believe there to be less than 10 uses. The majority of respondents seem to be aware that wood has various usage purposes. Some respondents might have been thinking in general terms. Perhaps they were more inclined to associate the uses of wood with categories such as construction, flooring, furniture, or paper. Maybe some respondents are unaware that wood (as waste or biomass) can be used as fuel for energy and many more. A chi-squared test revealed that there was significant association between education level and uses. Respondents with some college education or higher were more likely to state that wood has about 1,750-5,000 uses. This suggests that formal education could have had an impact on how respondents chose to answer this question. Similarly, individuals 45 years of age or older seemed to be aware that there are over 5,000 uses of wood. This could be due to knowledge acquired over the years from being older and more experienced. Thirty-two percent of individuals who reside in urban communities (32% of $n = 498$) were slightly more inclined to believe that wood has significantly lower amounts of uses. However, another 30

percent of respondents living in urban areas (30% of $n = 498$) acknowledged that there are over 5,000 uses. The close division in numbers could indicate that people in urban communities are still learning about the value of wood even after its initial lifecycle. In the past few decades, various collaborative efforts in northern urban communities have formed strategies with local partnerships to sustainably salvage and up-cycle urban trees (Urban Timber 2022). From places like Baltimore, Maryland to Columbus, Ohio, many cities have built an urban wood network dedicated to saving trees from waste streams to give them a second life (Urban Wood Network 2017). This is all learned from experience and these entities are still working to promote and demonstrate the use of urban wood.

Knowledge of reclaimed wood

Before discussing how they felt about reclaimed wood products, respondents were asked to indicate their level of knowledge regarding reclaimed wood in general. When asked if they had ever heard of the term “reclaimed wood,” 55 percent of respondents stated that they had heard of it before. Thirty-three percent, however, acknowledged that they had never heard of it at all. The remaining 12 percent indicated that they were uncertain if they had ever heard of the term or not. Respondents between the ages of 35-54 and 65 or above were more likely to have heard of reclaimed wood than any other age groups. Individuals residing in the South were also more likely to have heard of reclaimed wood than their counterparts in other regions across the U.S. This is likely because a large portion of survey respondents are citizens living in the South. Likewise, individuals residing in urban and suburban neighborhoods were more likely to have heard of reclaimed wood than respondents in rural areas. Respondents in urban communities might be more informed due to various salvaging efforts going on in urban areas across the

country, as mentioned previously. There also seems to be unequal representation amongst consumers and their community types.

Approximately 44 percent of respondents stated that they did know of reclaimed wood, while 37 percent had no knowledge on the subject. Nineteen percent of respondents were unsure of what reclaimed wood was. Respondents with a bachelor's or master's degree were more likely to have more extensive knowledge of reclaimed wood than other educational groups.

In a separate question, respondents were asked to state the first thing that comes to their mind when hearing the term "reclaimed wood." The majority of respondents used synonyms to describe their thought process. These terms included words such as refurbished, recycled, refinished, repurposed, and reused wood. Other respondents stated that nothing came to mind when thinking of reclaimed wood. Other words that respondents used in association with reclaimed wood were "sustainability" and "environmentally friendly". Based upon the quality of responses, context clues might have played a role in how respondents interpreted the use and meaning of reclaimed wood. Overall, most people seem to have a positive general idea on the concept of reclaimed wood.

Respondents were then asked whether they were aware that reclaimed wood was a separate industry of its own. The majority of the respondents were not aware of this, with 60 percent choosing "no" and 40 percent stating "yes". Of that 40 percent, male respondents were more likely to have been aware than their female counterparts. This could be because of the traditional nature of the industry which is recognized as a male-dominated field. Gender diversity in forest products has become a recognized issue within the last decades (Stout et al. 2018; Hansen et al. 2016). Likewise, respondents identifying as Caucasian were more likely to be more aware than every other race. Previous studies also indicate the lack of diverse racial presence

within the industry and in university class settings and how this may impact consumer knowledge of wood products (Sample et al. 2015; Stout et al.2020).

Additional questions focused on where respondents think reclaimed wood comes from and what they think it can be used for. Respondents were given a list of nine options to choose from regarding where reclaimed wood can be found. Of the various options given, respondents seemed more inclined to favor specific options over others. The top five picks were abandoned barns (70%), lumber yards (65%), abandoned factories/warehouses (63%), abandoned buildings (62%), and used fences (61%). Wine barrels (59%) were also a popular response. However, most respondents did not seem to think abandoned boxcars (35%) and abandoned coal mines (12%) were feasible selections. Historically, coal mining sites have been known to have potentially negative impacts on local environments. This includes disruption of ecosystems, and contamination from leaching of acid and trace elements from discarded materials (Sloss 2013). Perhaps this might be a reason why respondents do not see wood from abandoned mines as feasible. The negative connotations and contamination issues associated with coal mines might imply the possibility of lumber toxin exposure. Although, various environmental policies have been put in place to mitigate these issues, some people still might have doubts. This may be especially true in this current social climate. Environmental activist groups hold relevant positions of influence that have impacts on public opinion.

In regard to what reclaimed wood can be used for, the number of responses were relatively close. Furniture (85%) was noted as being the most popular response. Shelving (75%), doors (74%), and hardwood flooring (73%) were relatively equal. Other options listed included décor (68%), kitchen cabinets (67%), and structural elements (53%). Two respondents stated that

reclaimed wood could be used to make fuel and jewelry, while another stated that reclaimed wood has unlimited uses.

Perception of product use

General questions about products made from salvaged lumber were asked to further probe the minds of consumers. In doing so, respondents were asked to evaluate a series of statements. The statements in this section were asked two times. The first time they were asked was treated as the “before” and the second time treated as the “after.” The first round of statements acts as respondents’ initial attitude towards the concept of using reclaimed wood in wood products before learning further information. These statements are also a part of a dual study. Regarding the statement “I think recycling wood for new products is a sustainable approach,” the majority of respondents found that they agreed with that with an initial response of 85 percent (**Table 3.2**).

Table 3.2 Respondents’ initial attitudes towards using reclaimed wood in wood products.

Statement	Mean (mode)	Proportion (%) assigning a rating of				
		5 (strongly agree)	4	3	2	1 (strongly disagree)
I think recycling wood for new products is a sustainable approach	4.23 (4)	43	42	12	2	1
I do not care about wood products in general	2.21 (2)	4	9	23	31	33
I do not see how using reclaimed wood is beneficial	1.93 (2)	5	7	11	32	45

*Values are based on a five-point scale, where 5 = strongly agree and 1 = strongly disagree. Proportions are rounded to the nearest whole number

After learning information about the positive economic impact that reclaimed wood has on communities, the percentage of respondents increased (86%) (**Table 3.3**). Similarly, when

prompted to answer how they initially felt about the statement “I do not care about wood products in general,” the majority (64%) of respondents seemed to disagree (mean = 2.21). However, after being provided more information respondents seemed to feel more strongly for this statement. With a mean of 1.85, sixty-five percent of respondents were more inclined to strongly disagree with that statement. Likewise, with the statement “I do not see how using reclaimed wood is beneficial” the majority of respondents’ initial perceptions changed during the second round of questioning. Originally, the majority of respondents (77%) were more likely to disagree with that statement (mean = 1.93). After further questioning, respondents were more likely to strongly disagree (78%) with that statement (mean = 1.75). Results suggest that learning additional information influenced how respondents answered the second round of questions. Additionally, respondents seemed to already have a positive view of reclaimed wood products. This indicates more potential for reclaimed wood products in the market.

Table 3.3 Respondents’ attitudes towards using reclaimed wood in wood products after learning more information.

Statement	Mean (mode)	Proportion (%) assigning a rating of				
		5 (strongly agree)	4	3	2	1 (strongly disagree)
I think recycling wood for new products is a sustainable approach	4.26 (4)	45	41	10	3	1
I do not care about wood products in general	1.85 (2)	5	9	21	31	34
I do not see how using reclaimed wood is beneficial	1.75 (2)	4	7	10	30	48

*Values are based on a five-point scale, where 5 = strongly agree and 1 = strongly disagree. Proportions are rounded to the nearest whole number.

Regarding learning more about reclaimed wood, 70 percent of respondents acknowledge they were willing as shown in **Table 3.4**. Additional comments referred to the survey topic as being “unique” and expressed interest in learning more. Approximately, 80 percent of respondents expressed that they would be willing to buy furniture from old buildings or barns. Seventy-four percent of respondents also agree that reclaimed wood offers an aesthetic touch. Some people also seem to express interest in the material because of nostalgia or the history behind a piece of wood. One respondent even stated that most of the furniture they own is made of reclaimed wood salvaged from an old barn on their parent’s property. This individual shows high regard for the material and states that “[they] made furniture out of beautiful memories.”

Table 3.4 Respondents’ attitudes towards reclaimed wood products.

Statement	Mean (mode)	Proportion (%) assigning a rating of				
		5 (strongly agree)	4	3	2	1 (strongly disagree)
I would like to learn more about reclaimed wood	3.43 (4)	27	43	22	5	3
I would be willing to buy furniture from old barns, buildings, etc.	4.09 (4)	35	45	15	3	2
Reclaimed wood offers an aesthetic touch to my surroundings	3.54 (4)	32	42	22	3	1
I would not be willing to pay more for reclaimed wood with a sustainability certification	3.04 (3)	11	25	35	17	12
I would be more willing to purchase wood from a company using reclaimed wood than one that cuts down trees	3.83 (4)	26	41	27	4	2

*Values are based on a five-point scale, where 5 = strongly agree and 1 = strongly disagree. Proportions are rounded to the nearest whole number.

In terms of willingness to pay for reclaimed wood with a sustainability certification, most respondents were split between agreement (36%) or being neutral (35%). For some, certification

might not matter, or they simply would not be as lenient in purchasing expenses. Majority of respondents agreed with the statement “I would be more willing to purchase wood from a company using reclaimed wood than one that cuts down trees.” An ANOVA test revealed that neither gender, race, nor education influenced how respondents chose to answer this statement.

Respondents were then prompted to answer questions geared towards the durability of reclaimed wood (**Table 3.5**). Forty-four percent of respondents declared that they would not be concerned with the durability of reclaimed wood. Thirty percent however, disagreed. One respondent personally described their doubts stating, “[their] main concerns would be with durability, and [they] would be hesitant or at least question it if the wood was made for a long-term product.” This person then went on to explain that they would be more wary of reclaimed wood used for structural purposes as opposed to a door or furniture. In another statement, sixty-one percent determined that products made from reclaimed wood are durable. The majority of respondents (48%) took a neutral stance with the statement “recycled wood has a higher deterioration rate.” Similarly, with the statement “wood from old barns, buildings, etc. is not as durable as fresh cut wood” most respondents (37%) were neutral. Respondents (41%) also neither agreed nor disagreed with the statement “reclaimed wood is full of defects.” Overall, some people are still skeptical about the durability of reclaimed lumber while others are not. This suggests that there is not enough evidence to support these statements. Thus, causing respondents to have mixed opinions.

Table 3.5 Respondents' perceptions towards the durability of reclaimed wood.

Statement	Mean (mode)	Proportion (%) assigning a rating of				
		5 (strongly agree)	4	3	2	1 (strongly disagree)
I would not be concerned with the durability of reclaimed wood	3.15 (4)	13	31	26	20	10
Products made from reclaimed wood are durable	3.90 (4)	25	46	27	1	1
Recycled wood has a higher deterioration rate	2.50 (3)	9	15	48	19	9
Wood from old barns, buildings, etc. is not as durable as fresh cut wood	2.60 (3)	7	16	37	26	14
Reclaimed wood is full of defects	2.34 (3)	7	12	41	27	13

*Values are based on a five-point scale, where 5 = strongly agree and 1 = strongly disagree. Proportions are rounded to the nearest whole number.

Reclaimed wood purchases and willingness to buy

Going beyond respondent's level of knowledge regarding reclaimed wood, there was interest in knowing their previous purchases and willingness to buy more wood products in the future. Questions were asked regarding ownership of products fashioned from reclaimed wood and personal satisfaction with said item.

Approximately 43 percent of respondents stated that they did not own a product made from reclaimed wood. Thirty-two percent remained unsure while 25 percent did have wood products at home made from reclaimed wood. Of the individuals that indicated "yes" ($n = 374$), the top 3 most purchased reclaimed wood products were furniture (16%), shelving (9%), and décor (9%) as shown in **Figure 3.1**. Other responses included decking, a fireplace mantle, a cutting board, and wood bricks.

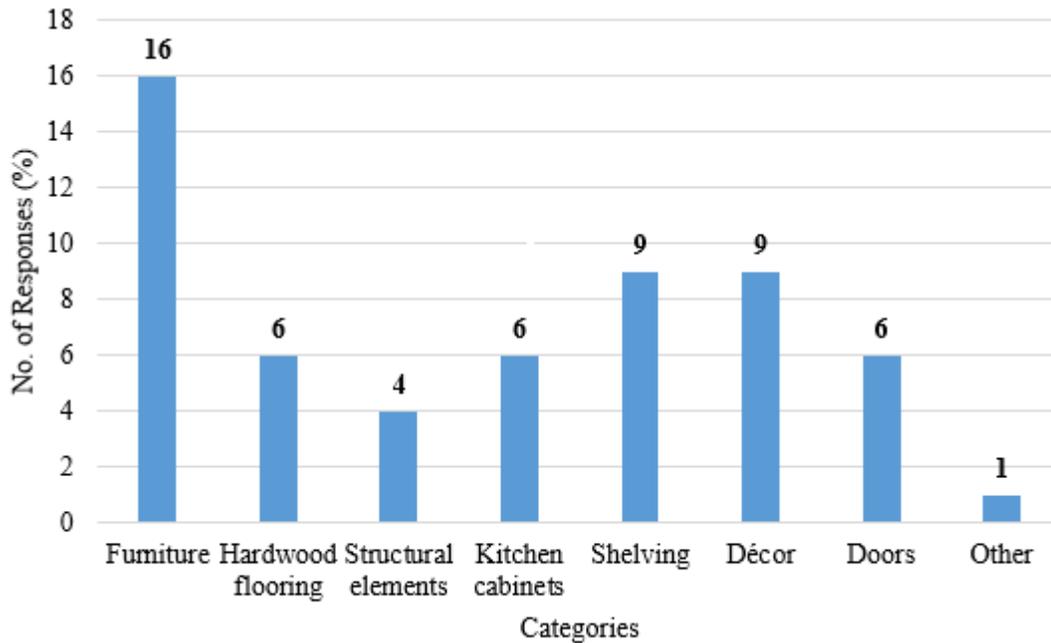


Figure 3.1 Reclaimed wood products respondents own *n= 374.

Percent values are rounded to the nearest whole number.

When asked to rate their satisfaction with the durability of those products, 91 percent stated that they were satisfied with their purchase, 5 percent unsatisfied, and 4 percent neutral. Responses indicate that reclaimed wood products are highly favorable amongst consumers within the market.

After being given detailed information regarding reclaimed wood, respondents were asked to select which wood products they would be willing to purchase if made from salvaged lumber (**Figure 3.2**). Out of the presented options, the most popular choices were furniture (71%), shelving (62%), doors (57%), and hardwood flooring (54%).

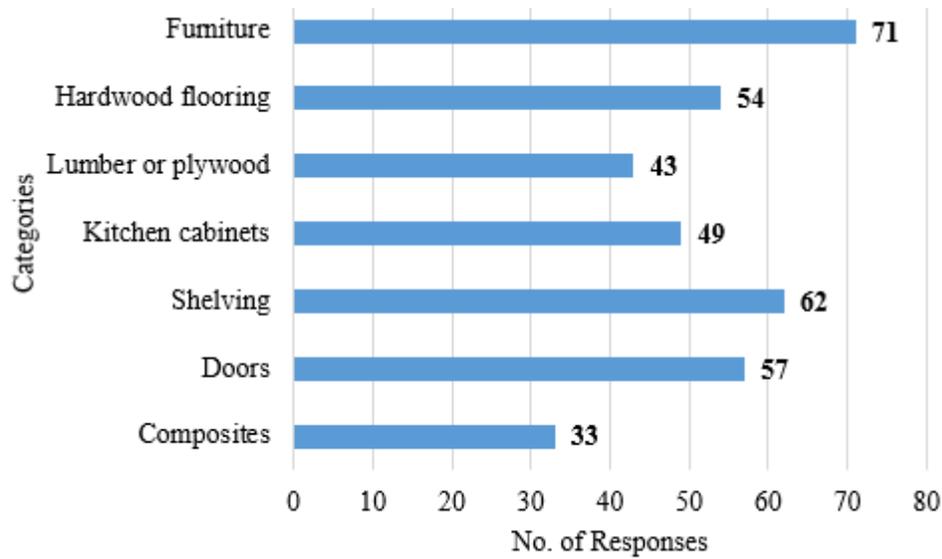


Figure 3.2 Products respondents would be willing to buy if made from salvaged lumber * $n = 1516$.

Percentages rounded to the nearest whole number.

Respondents were then asked to select why they would purchase a wood product made from recycled wood. The top 3 responses indicate a necessity for sturdy, aesthetically pleasing materials as well as respondents concern for the environment (**Figure 3.3**). Other responses suggest that if reclaimed wood products were cheaper, then that would be a good reason to purchase.

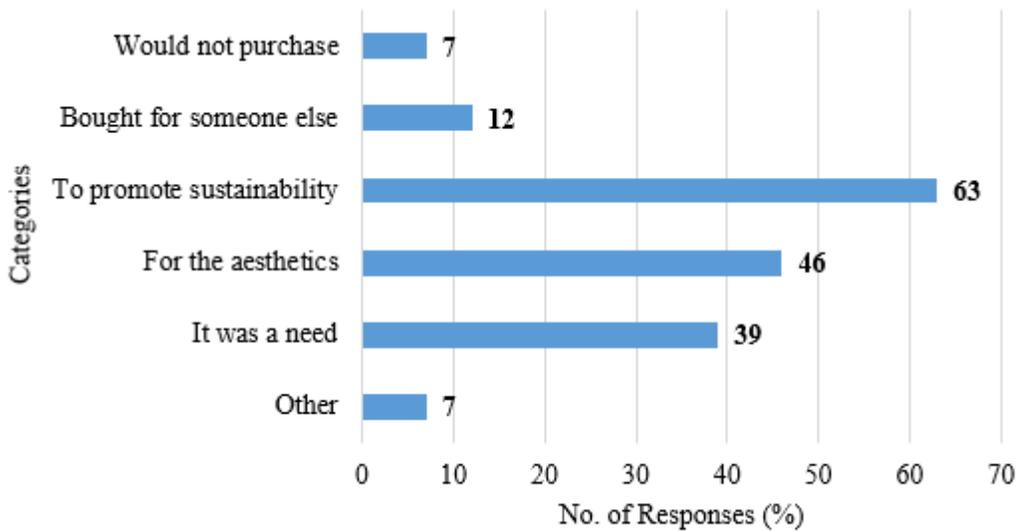


Figure 3.3 Why respondents would purchase a reclaimed wood product.

*Percentages rounded to the nearest whole number.

When asked to indicate how apprehensive they would be to purchase a wood product made entirely of recycled lumber, the majority of respondents indicated they would be “unapprehensive” (40%). However, 34 percent identified as being neither apprehensive nor unapprehensive. The remaining 26 percent indicated that they would be “apprehensive.” This could be related to durability concerns as expressed by a few respondents.

Near the end of the survey, respondents were also asked to state whether they think it important to know where their wood products come from. The majority of respondents (70%) believe this is important to know. A chi-squared test between demographics and importance of origin resulted in significant association for age and community type respectively. Based upon the information provided throughout the survey, it is possible that respondents have become even more environmentally conscious than they previously were. Cumulative responses from the “additional comments” section show that the majority of respondents thought this survey was

extremely informative and enlightening. One respondent stated that “reclaimed wood could have a big impact on [the] environment.” Another stated that they had never talked about this topic before and that it was “thought provoking.” Others were thankful that this survey addressed topics that helped them become more aware of wood products. Overall, respondents seem to understand the importance of the industry and the benefit of wood products.

Conclusion

Results from this study provide insight on respondents’ initial views before and after learning information about the benefits of reclaimed wood in the industry. Since there is not much information available to understand the depth of consumerism in reclaimed wood products, these results might help reclaimed wood companies form a blueprint to spread awareness to their general audience. Taking the opinions of consumers into consideration, could help the market to thrive and improve the industry’s overall impact.

Results indicate that U.S. consumers do not seem to have strong knowledge of reclaimed wood practices and the benefits offered. Out of the 1,516 responses, only 44% of respondents seem to know anything about reclaimed wood. People in rural communities appeared to be less informed than any other group. As salvaging efforts are becoming prominent in cities across the country, urban communities have an advantage on what they know. While these partnerships could happen in rural and suburban neighborhoods, it might not be as necessary as in urban areas. These reclaimed and urban wood networks thrive off wood waste generated from construction efforts and vacant facilities in heavily populated areas. Rural areas are not as populated and more spread out. Perhaps it is best to find other creative ways to promote that awareness on social media platforms or the internet. Even if most respondents do not know much about reclaimed wood, they still have good comprehension skills. Responses suggest that context

helped respondents understand the term “reclaimed wood.” However, context clues can only get them so far. That is why it is important to properly publicize this resource material and the numerous ways it can be utilized.

Consumers may not be well-versed on salvaging efforts, but they do seem to have substantial knowledge of wood in general. Most respondents understand that wood has broad uses. Individuals with higher education seem especially knowledgeable of this. This could possibly be because of spending more time in environments that support higher learning. This is an indication that more formal education could have an impact on what people know. Perhaps reclaimed wood firms would benefit from taking advantage of sharing information in the early stages of education. It might be even more beneficial considering that this current generation is keen on social and environmental change (Cone Communications 2017).

Evidence suggests that the modern-day consumer is looking for sturdy, aesthetically pleasing, and sustainable products for everyday use. After learning more information about this material, respondents seem to view reclaimed wood products in a positive light. Because of advancements within the sustainability movement consumers are eager to learn more about this material and find more ways to support the sustainability agenda. More importantly, respondents have expressed interest in salvaging efforts within their communities. Understanding this could potentially lead to more local economic impacts across the country and within the industry. There are already efforts happening in places across the country and utilizing these results could potentially expand the network in the future. Most respondents also seem eager to purchase reclaimed products whether to either promote sustainability or for the aesthetics. To increase consumer satisfaction, the industry should also take an interest in advertising the durability of their products, as most respondents seemed indifferent on apprehension.

Overall, results of this study, show that most consumers view reclaimed wood products in a positive light. However, there is still room for improvement. One cannot do better unless they know to do better, and that is what this research provides. With having access to respondents' attitudes regarding the use of reclaimed wood, the durability of these products, and environmental impacts, reclaimed wood companies can now understand their target audience better. Utilizing this information can help the industry to strategize effective ways for consumers to learn more about this material and boost sales in the market.

Future research and study improvement

- Further research could be done to see how the COVID-19 pandemic affected consumer perceptions/ knowledge of wood products before shutdown and after shutdown. Since COVID first peaked in early 2020, a lot of consumers have been focusing on DIY projects and home renovations. Perhaps they have become more informed in doing so.
- Maybe further research with equal representation from all three community types could be done to see if there is a difference in the way individuals from urban, suburban, and rural communities think about wood products.
- Perhaps actual data tables can be added in the questioning process, so respondents' have factual information to base their opinions upon. This seemed to be a problem for a few respondents. One respondent believed this study to be manipulative since no valid data was provided as a source.
- Another consideration for future studies is the length of the survey design. A few respondents thought it was lengthy and time consuming.
- Although the repetition of a few questions was important to gauge perceptions before and after learning additional information, some believed this to be redundant and

unnecessary. In the future, other studies could express the purpose of repeated questions in survey studies so that consumers are aware.

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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.****

Demographic Questions

1. What is your age group? **(Please select one).**
 - Under 18
 - 18-24
 - 25-34
 - 35-44
 - 45-54
 - 55-64
 - 65 or above

2. Please indicate your gender. **(Please select one).**
 - Male
 - Female
 - Non-conforming gender identity
 - Other: _____

3. Are you a U.S. citizen?
 - Yes
 - No

4. In which state do you currently reside? _____

5. In what type of community do you reside? **(Please select one.)**
 - Urban
 - Rural
 - Suburban

6. Which best describes your race/ethnicity? **(Please select one).**
- Black/ African American
 - Caucasian (White)
 - Native American/ American Indian
 - Asian American
 - Pacific Islander/ Native Hawaiian
 - Other (Multi-ethnicity): _____
 - Prefer not to answer
7. Are you of Hispanic or Latino origin?
- Yes
 - No
 - Prefer not to answer
8. Which best describes your current marital status? **(Please select one).**
- Single, never married
 - Married
 - Divorced/Separated
 - Widowed
 - Living with a partner
9. What is the highest level of education you have completed? **(Please select one).**
- Less than high school
 - Some high school, no degree
 - High school degree, or an equivalent (e.g. GED)
 - Some college, no degree
 - Vocational/ Trade/Technical school
 - Associate degree
 - Bachelor's degree
 - Master's degree
 - Professional degree (PhD, MD, DDS, etc.)

Starting Statements

10. How knowledgeable are you of the wood products industry? **(Please select one).**
- Not at all
 - Somewhat knowledgeable
 - Very knowledgeable

IF “KNOWLEDGABLE” IN QUESTION 10, CONTINUE TO QUESTION 11.
IF “NOT AT ALL,” GO TO QUESTION 13.

11. **(If knowledgeable in Q10)** From where/whom did you learn about the wood products 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 _____

12. Do you have any **immediate** family (mother, father, etc.) that has experience working in the wood products industry?

- Yes
- No
- Unsure

13. How many uses do you think wood can be used for?

- Less than 10
- Approximately 250
- Approximately 1,750
- Approximately 3,000
- Over 5,000

14. When was the last time you purchased a product made from wood? **(Please select one).**

- Less than 6 months ago
- 6 months to a year ago
- 2-5 years ago
- 5+ years ago
- I don't remember

15. Which wood product would you be most willing to buy?

- Paper
- Furniture
- Lumber and plywood
- Kitchen cabinets
- Flooring
- Fuelwood/ Charcoal
- Composites (OSB, Particleboard, Flake board)
- Other _____

16. Have you ever heard of reclaimed wood before?

- Yes
- No
- Unsure

17. Do you know what reclaimed wood is?

- Yes
- No
- Unsure

18. Are you aware that reclaimed wood has an industry of its own?

- Yes
- No

19. When you hear the term 'reclaimed wood,' what is the first thing that comes to mind?

20. Where do you think salvaged lumber (**another term for reclaimed wood**) comes from?

(Select all that apply).

- Abandoned factories and warehouses
- Abandoned barns
- Used wine barrels
- Abandoned coal mines
- Abandoned boxcars
- Abandoned buildings
- Lumber yards
- Used fences
- Other: _____

21. What do you think reclaimed wood can be used for? (Select all that apply).

- Furniture
- Hardwood flooring
- Structural elements (i.e. beams, walls, etc.)
- Kitchen cabinets
- Shelving
- Doors
- Decor
- Other: _____

Rating Statements

DEFINITION: The question below asks about a specific type of wood called reclaimed wood or salvaged lumber. Reclaimed wood is referred to as old, processed lumber taken from old buildings, lumber yards, wine barrels, etc. and refurbished for use in new buildings or wood products. This wood primarily comes from demolition or sites undergoing deconstruction.

Demolition sites use heavy machinery to disassemble physical structures which leads to potential lumber damage. Deconstruction can minimize the damage. Deconstruction is the disassembling of the physical structure while maintaining the original physical properties and structural integrity of wood.

Reclaimed wood is a sustainable alternative to ‘new’ wood used in building infrastructure and furniture. Reclaimed wood primarily comes from old growth forests and can offer more sturdiness, species diversity, and an aesthetic touch to wood products. With this definition of reclaimed wood, answer the following questions.

22. Based on your **current knowledge** of **reclaimed wood**, answer the following statements to the best of your ability:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I rarely think about where my wood products come from.					
Reclaimed wood is beneficial for the economy.					
Reclaimed wood does not have an impact on sustainability.					
Reclaimed wood is expensive.					
I do not see the purpose of reclaimed wood.					
Reclaimed wood can be a profitable market.					

23. Based on the previous definition, indicate how you feel regarding the concept of **using reclaimed wood**:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I do not see how using reclaimed wood is beneficial.					
Demolition practices should not salvage wood from old buildings.					
Reclaimed wood can be profitable for communities.					
I do not care about wood products in general.					
Using recycled wood for new products is a sustainable approach.					
I have often thought about what happens to wood once demolished from old buildings.					
I have personally thought about recycling wood.					

(Reclaimed wood is a valuable resource with many benefits. Such benefits include positive environmental impacts, reduces greenhouse gas emission, reduced forestland pressure, income generation from salvaged lumber sales, and potential job creation.)

24. The reclaimed wood industry **increases job exposure** for individuals who have a hard time finding labor. Does learning this information change your original perceptions?
- Yes
 - No

25. Knowing that the reclaimed wood industry **increases job exposure** for individuals who have a hard time finding labor, answer the following statements to the best of your ability:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I do not see how using reclaimed wood is beneficial.					
Demolition practices should not recycle wood from old buildings.					
Reclaimed wood can be profitable for communities.					
I do not care about wood products in general.					
I think recycling wood for new products is a sustainable approach.					
I have often thought about what happens to wood once demolished from old buildings.					
I have personally thought about recycling wood.					

26. The reclaimed wood industry **decreases** the amount of waste that goes into landfills.
Does learning this information change your original perceptions?
- Yes
 - No

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

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Reusing wood from demolition sites helps reduce landfill waste.					
Recycling wood does not have an impact on the environment.					
Recycling wood does not have an impact on communities.					
The wood products industry does not harm the environment.					
I understand why wood products are important to our world.					
Cutting down trees for wood products is damaging to forests.					

28. Consider marketing advertisements you have seen. Indicate how strongly you agree or disagree with the following statements about **marketing practices** regarding reclaimed wood:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I have seen advertisements that promote the use of reclaimed wood.					
Reclaimed wood should be marketed better.					
Salvaged lumber is not marketable, because it might not be financially beneficial in the long run.					
Wood products companies should create awareness of their environmental friendliness.					
Knowing how wood products benefit the environment would be beneficial to consumer opinion.					

29. Indicate how strongly you agree or disagree with the following general statements about **wood products** made from salvaged lumber:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I would like to learn more about reclaimed wood.					
I would be willing to buy furniture from old barns, buildings, etc.					
Reclaimed wood offers an aesthetic touch to my surroundings.					
I would not be willing to pay more for reclaimed wood with a sustainability certification.					
I would be more willing to purchase wood from a company using reclaimed wood than one that cuts down trees.					

30. Indicate how strongly you agree or disagree with the following general statements about the **durability** of wood products made from salvaged lumber:

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
I would not be concerned with the durability of reclaimed wood.					
Products made from reclaimed wood are durable.					
Recycled wood has a higher deterioration rate.					
Wood from old barns, buildings, etc. is not as durable as fresh cut wood.					
Reclaimed wood is full of defects.					

Validation Test

31. Based upon previous questions, please indicate your level of agreement regarding the use of reclaimed wood (Please select **disagree** for this question).

- Strongly disagree
- Disagree
- Neither agree nor disagree
- Agree
- Strongly agree

Ending Statements

32. Are you familiar with **at least one** company within the wood products industry?

- Yes
- No
- Unsure

IF "YES" TO QUESTION 32, CONTINUE TO QUESTION 33.
IF "NO," GO TO QUESTION 35.

33. (If yes to Q32) Can you list that company?

34. Do you know if this company works with salvaged lumber?

- Yes
- No
- Unsure

35. To your knowledge, do you have any wood products at home made from reclaimed wood?

- Yes
- No
- Unsure

IF "YES" TO QUESTION 35 CONTINUE TO QUESTION 36.
IF "NO" OR "UNSURE," GO TO QUESTION 38.

36. (If yes to Q35) Please select what wood products you have that are made from reclaimed wood (select all that apply).

- Furniture
- Hardwood flooring
- Structural elements (i.e. beams, walls, etc.)
- Kitchen cabinets
- Shelving
- Decor
- Doors
- Other: _____

37. How satisfied were you with the durability of that (those) product(s)?

- Extremely dissatisfied
- Somewhat dissatisfied
- Neither satisfied nor dissatisfied
- Somewhat satisfied
- Extremely satisfied

38. Now knowing about reclaimed wood, which wood product would you be more willing to buy if it was made entirely of salvaged lumber? (Select all that apply).

- Furniture
- Hardwood flooring
- Lumber or plywood
- Kitchen cabinets
- Shelving
- Doors
- Composites (OSB, Particleboard, Flake board)
- Other: _____

39. Why would you purchase a wood product made from recycled wood?

- It was a need
- For the aesthetics
- To promote sustainability
- Bought for someone else
- I would not purchase a product made from recycled wood
- Other: _____

40. Please indicate how apprehensive you would be to purchase a wood product made entirely of recycled lumber.

Least  Most

Extremely unapprehensive Somewhat unapprehensive Neutral Somewhat apprehensive Extremely apprehensive

41. Do you think it is important to know where your wood comes from?

- Yes
- No

42. Please indicate how important you consider the reclaimed wood products industry to be.

Least  Most

Extremely unimportant Somewhat unimportant Neither important nor unimportant Somewhat important Extremely important

43. Do you have any additional comments to add regarding the survey?