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# Factors Affecting Social Media Adoption among Wood Products Consumers in the United States



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## Abstract

*As a result of the rise of the digital market, social media has emerged as one of the most popular marketing tools. Consumers today increasingly rely on social media when shopping, and thus it can influence consumer behavior and purchasing decisions. Similarly, a growing number of wood products companies are using a variety of social media approaches for their marketing efforts as they seek to remain competitive in the digital marketplace. Although previous studies have examined social media use by wood products companies, none have examined social media use by wood products consumers. Wood products companies can design more effective social media marketing efforts if they understand the decision process of potential customers with regards to social media. Thus, a survey was conducted in 2017 to investigate factors affecting social media adoption among wood products consumers in the U.S. in the context of private social media use or business-to-consumers (B2C) context. The results show that social media adoption by consumers is influenced by the ease of use and perceived usefulness of social media, product characteristics, demographic characteristics (e.g., gender, age, income) and situational factors (e.g., community type). Understanding the factors that motivate wood products consumers' social media adoption is important when developing and designing social media marketing strategies that target consumers' needs.*

**Keywords:** Social media, wood products, digital market

## 1 Introduction

Digital technology has paved the way to the development and growth of a digital economy and the rise of the digital marketplace. One of the popular tools that have emerged as a result of the rise of the digital market is the use of social media as a marketing tool. "Social media is a broad term that refers to software tools that create user-generated content that can be shared" (O'Reilly, 2005) that has paved a way to social media marketing, a

form of internet marketing that utilizes social networking websites as a marketing tool (TechTarget, 1999-2018). Globally, the use of social media has been rising annually, reaching 2.66 billion in 2018 (eMarketer, n.d.), paving the way to the increase in the use of social media marketing, which is therefore becoming an integral element of 21<sup>st</sup>-century business (Felix et al. 2017).

Social media has drastically revolutionized traditional marketing approaches and brought marketers to a new era (Muthiah and Kannan 2015) that has changed how marketers and consumers communicate. The use of social media in marketing has offered benefits to both businesses and consumers. For example, for businesses, social media marketing has resulted in increased brand recognition, improved brand quality, increased sales, increased user interactivity by stimulating users to post or share contents, increased inbound traffic, reduced marketing costs, improved search engine rankings, and increased understanding of consumer behavior and preferences

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(Palmer and Koenig-Lewis 2009, Chikandiwa et al. 2013, Schweidel and Moe 2014, Ashley and Tuten 2015). On the consumer side, social media allows consumers to gather and share information and to evaluate brands/products through product reviews during the purchasing process; promotes efficiency; and offers convenience, broader selection of products, competitive pricing and cost reduction (Bayo-Moriones and Lera-Lopez 2007, Chappuis et al. 2011, Qualman 2013, Hudson et al. 2016). Consumers today are therefore relying more on using social media technology in their shopping experience (Pookulangara and Koesler 2011). As a result, social media are increasingly influencing consumer behavior and purchasing decisions (Jashari and Rustemi 2017). Thus, social media does not only impact how companies promote their products, but also how consumers make decisions when they buy products. It is therefore important to understand how consumers use social media in their buying process and how such tools are influencing the way they behave. Such information can provide important inputs to companies to design more effective social media marketing efforts.

The current study investigates the factors affecting social media adoption among wood products consumers in the U.S. within the B2C marketing context (i.e., private purchasing context). Understanding the factors that influence individuals' adoption of social media when buying wood products for personal use will provide important baseline information on social media networking use by these consumers. Marketers in the wood products industry who are interested in using social media as a platform to market their products to private wood products consumers (i.e., B2C) can use this information as a guide in the development of marketing campaigns that are attractive to current and potential consumers. Understanding the factors that influence consumer adoption and the frequency of use of social media tools can assist marketers in selecting the type of social media to use and determining how to best structure their social media content (Sago 2013).

## 2 Background Literature

### 2.1 Social Media Adoption

Most studies on social media adoption have focused on companies/organizations in relation to social media use in marketing, benefits of social media, and factors affecting adoption (Sinclair and Vogus 2011, Mandal

and McQueen 2012, Thackeray et al. 2012, Durkin et al. 2013, Nah and Saxton 2013, Dahnil et al. 2014, Lorenzo-Romero et al. 2014, Ainin et al. 2015, Ndekwa and Katunzi 2016, Wood and Khan 2016, Abubakar et al. 2017, Matikiti et al. 2018). Fewer studies have looked at social media adoption on the consumer side. These studies have looked at the impacts of social media on consumer behavior and purchase intentions (Pookulangara and Koesler 2011, Hajli 2014, Muthiah and Kannan 2015, Jashari and Rustemi 2017) and factors affecting social media adoption or the intention to use (Parra-Lopez et al. 2011, Lin et al. 2011, Akar and Mardikyan 2014).

With regards to the wood products industry, there are limited studies that have examined social media adoption. Most of the related studies focused on internet usage in general (i.e., e-commerce). For example, Vlosky (1999) examined the application of internet-based technologies for conducting business in the top 100 companies (by product volume) in the solid wood products and pulp and paper sectors of the wood products industry in the United States and Canada. His findings showed that less than 50% of the companies surveyed made use of internet-based technology. Arano and Spong (2012) examined e-commerce adoption among West Virginia wood products firms and showed that only 47% have adopted e-commerce in their business. Montague (2011) examined the application of social network media among the Appalachian hardwood manufacturers and only 9% of those surveyed used social media as a marketing tool.

These studies have shown that wood products companies have been lagging behind in the use of e-commerce in their businesses and more so in the application of social media as a marketing tool. More recently, Montague et al. (2016) investigated social media use in the wood products industry in the U.S., and their results showed that close to 58% of respondents currently use some form of social media, and that the most common social media tool implemented was Facebook. Further analysis determined that respondents' adoption of social media was influenced by company age, net sales revenue, product type, Website content, perceived importance of e-commerce, and perceived ease of social media use as a marketing tool. About 94% of the respondents thought that social media was an effective tool for marketing (Gazal et al. 2016). Although these studies show the importance of social media use for the wood products industry, none have examined social media use by wood products consumers. Understanding consumer use of

social media when purchasing wood products can provide important inputs to wood product companies so they can design a more effective social media marketing campaign. Thus, this study examines social media use by wood products consumers in the U.S.

## 2.2 Conceptual Framework

There are a number of theoretical models that explain consumers' intention to adopt a new technology. One of the most accepted models is the Technology Acceptance Model (TAM) by Davis (1989) that is used to examine factors affecting the acceptance of information technology by organizations, as well as individuals. This model assumes that usefulness and perceived ease of use determine an individual's intention to adopt a new technology. If a technology is perceived to be useful and easy to use, it is more likely an individual will adopt the technology. Davis et al. (1992) later modified this model to include an "enjoyment" construct. Other models have evolved from this earlier model and have incorporated other factors in explaining adoption intention. Other exogenous factors that were added to the TAM model to explain technology adoption include consumer traits (e.g., demographic: gender, age, education, etc.; and personality characteristics: expertise, self-efficacy, etc.), situational factors (e.g., geographical distance, lack of mobility, etc.), product characteristics, previous experience, and trust in the new technology (Dabholkar and Bagozzi 2002, O'Cass and Fenech 2002, Venkatesh et al. 2003, Monsuwe et al. 2004, Venkatesh and Bala 2008).

With respect to social media, previous studies also have used the TAM model in examining characteristics of social media users (Hsu and Lin 2008, Hossain and de Silva 2009, Steyn et al. 2010, Casalo et al. 2010). This study extends the TAM model by looking at social media adoption by wood products consumers and considering it to be as an adoption of "new technology", which can be influenced by a number of factors. Factors identified in the TAM model and variations of the TAM model were examined to build a more comprehensive model that explains the social media adoption behavior of wood products consumers. "Adoption" of social media refers to usage of any social media tool (e.g., Facebook, Twitter, YouTube, Blogs, Forums, Daily Deals, etc.) to gather any information about wood products consumers have purchased in the last 5 years. It also is important to point out that this study focuses on wood products consumers' social media adoption when they purchase

wood products for private use or consumers' use of social media tools to gather information about wood products they purchased in the last 5 years for personal use (B2C context).

## 3 Data and Methods

### 3.1 Survey Data

The targeted sample for this study are wood products consumers in the U.S. Thus, an online survey was conducted in the fall of 2017 to collect information on social media use among U.S. consumers who purchased wood products in the last 5 years. To avoid confusion regarding what comprised wood products, survey respondents were given the definition of wood products as "any material derived from trees for direct consumption most notably, products used for fuel, building, renovation, DIY projects, furnishing, and decoration". Further, consumers were asked which types of consumer products they purchased in the last 5 years. We categorized the product types into two: industrial wood products for DIY projects (lumber-type products such as boards, parallel laminated veneer; and pallets, panel-type products like plywood, particleboard, and oriented strand board) and consumer wood products (furniture, flooring, cabinets and novelties). The DIY phrase was added to the industrial product category description to make sure only consumers purchasing products for private use responded to the survey and not businesses who might have purchased industrial-type products for professional use.

The survey was conducted by Survey Sampling International (SSI), which is a company that provides market research data collection services. SSI uses panel-based online surveys for data collection. Currently, it maintains about 17 million panel participants in over 90 countries (SSI 2018). An online panel is "a sample of persons who have agreed to complete a survey via the Internet" that is selected mostly through probability sampling or in some cases through nonprobability-based recruitment (AAPOR 2007). SSI's system for providing a sample that is representative of the target population involves using "a three-stage randomization process in matching a participant with a survey they are likely to be able to complete. First, participants are randomly selected from SSI's panels to be invited to take a survey, and these participants are combined with others entering SSI's Dynamix™ sampling platform after responding to online messaging. A set of profiling questions is randomly

selected for them to answer (these are methodologically correct questions, never affirmation questions) and upon completion, participants are matched with a survey they are likely to be able to take, using a further element of randomization" (SSI 2018). Panel-based online survey research has grown rapidly in the past decade and has been used in many fields (e.g., market research, social research, psychological research, medical research, etc.) to collect survey data (Callegaro et al. 2014). It also has been employed in a number of studies related to forest products marketing. For example, Aguilar and Cai (2010) and Cai and Aguilar (2014) have used SSI data to look at the effects of environmental labeling consumer preferences for wood products and perception of consumers about corporate social responsibility in the wood products industry.

SSI administered the survey questionnaire for West Virginia University to a random sample drawn from its online panel of the U.S. population 18 years and older. Drawing from the studies of Aguilar and Cai (2010) and Cai and Aguilar (2014), 1,000 observations were targeted for this study. In addition, this sample was targeted to achieve a 3% sampling error at 95% confidence level. SSI continued to collect responses until the targeted number of responses were met. Information collected from the survey included the types of wood products purchased in the last 5 years, social media use in general, social media use related to wood products purchasing decisions, and demographic characteristics.

### 3.2 Empirical Model

Following the TAM model and its modifications, an empirical model was developed to examine factors affecting social media adoption among wood products consumers. It is hypothesized that adoption of social media among wood products consumers is influenced by perceived usefulness, perception of ease of use, product characteristics, consumer traits, and situational factors. The empirical model is therefore expressed as:

$$\begin{aligned} \text{SOCIAL\_MED} = & \beta_0 + \beta_1 \text{USE} + \beta_2 \text{EASE} + \\ & \beta_3 \text{PRODUCT1} + \beta_4 \text{PRODUCT2} + \beta_5 \text{MALE} + \\ & \beta_6 \text{AGE} + \beta_7 \text{EDUC} + \beta_8 \text{INCOME} + \beta_9 \text{RACE} + \\ & \beta_{10} \text{COMMUNITY} + \beta_{11} \text{MASS} + \varepsilon \end{aligned} \quad (1)$$

where  $\beta_j$  are the model coefficients and  $\varepsilon$  is the error term. The dependent variable (SOCIAL\_MED) is measured as "1" if the consumer used social media to gather information about wood products and as "0" if not.

For the independent variables, perceived usefulness (USE) was represented by a variable that measures consumers' perception about the usefulness of using social media to acquire information on products/services and getting information about deals/promotions. It is hypothesized that if wood products consumers find social media useful in their wood products purchasing process, they will be more likely to adopt social media. Previous studies have shown that perceived usefulness is a significant determinant of the adoption of new technology (Davis 1989, Davis et al., 1992, Venkatesh and Davis 1996, Wang et al. 2003, Green and Pearson 2011, Sago 2013). Perceived ease of use is also a significant determinant of technology adoption (Davis 1989, Agarwal and Prasad 1999, Venkatesh and Morris 2000, Wang et al. 2003). Individuals are more likely to use a new technology if it is easy to use (Jayasingh and Eze 2010, Green and Pearson 2011). Time spent on social media sites was used as a variable to represent perceived ease of use (EASE). Time spent on social media was used as a measure of ease of use based on the findings of Cha (2010) and Peslak et al. (2012) regarding the positive association of perceived ease of use and amount of time spent on social networking sites. That is, if people think social media is easy to use or they find it easy to use, then they spend more time on it. In addition, according to Parra-Lopez et al. (2011), the experience acquired from using and trying can reduce the perception of risks, thus favoring future use, because accumulated experience leads to a more extensive knowledge base and more solid technological abilities. In this process, the tools become simpler to use and thus favor the "perception of ease of use" (Torkzadeh and Lee 2003). Therefore, it is hypothesized that the more time wood products consumers spend on social media, the more likely they will use this platform in their wood products purchasing process.

Variables representing product type included three categories, defined as follows: PRODUCT1 – the consumer purchased consumer products only (e.g., furniture, flooring, cabinets, novelties); PRODUCT2 – the consumer purchased industrial products for DIY only (e.g., lumber, pallets, panel type products); or BOTH – the consumer purchased consumer products and DIY-only industrial products. The baseline category (i.e., BOTH) was dropped from the model to avoid perfect collinearity. Thus, the estimated coefficients of the two variables left in the model were interpreted relative to the baseline category. In the context of online shopping, Monuwe et al. (2004)

mentioned that a consumer's decision to shop online is influenced by the type of product under consideration, as there are certain products that are more suitable for online shopping. Similarly, it is hypothesized that the type of wood products being considered for purchase will influence the decision of wood products consumers to adopt social media.

Among consumer traits, demographic variables such as gender (MALE), age (AGE), income (INCOME), education (EDUC), and race (RACE) were included in the empirical model. Studies have shown that the adoption of new media technologies is associated with gender, age, income, and education (Burke 2002, Porter and Donthu 2006, Zhang et al. 2009, Carey and Elton 2010, Chen 2010). With regards to age, younger and middle-aged groups are more likely to adopt new technology. This is also true regarding social media adoption (Gerlich et al. 2012). Based on the findings from other studies, it also is hypothesized that younger wood products consumers are more likely to adopt social media. Similarly, those with higher incomes and higher education are more likely to use social media when they purchase wood products. Studies have shown that those with higher incomes adopt technology sooner and those with more education adopt technology more readily (Madden and Savage 2000, Burke 2002, Leung 2001, Lin 2004, Peter et al. 2006, Cha 2010). With regards to gender, the evidence is mixed (Carey and Elton 2010). Earlier studies have shown that males are more likely to adopt a new technology than are females (LaRose and Atkin 1988, Jeffres and Atkin 1996, Laukkanen and Pasanen 2008). More recent studies are now showing that women are more likely to use new media technology like social media (Leung 2001, Burke 2002, Sohn and Lee 2007). With regards to race, studies have shown that communities of color are more active on social media than are whites (Lopez et al. 2013, Smith 2014). It also hypothesized that whites are less likely to adopt social media than other races when it comes to purchasing wood products.

Monsuwe et al. (2004) suggested that situational factors have to be taken into account to fully understand consumers' motivation to engage in online shopping, such as mobility, geography, attractiveness of alternatives, etc. Similarly, the adoption of social media can, therefore, be affected by these factors. Two situational factors were included in the model: consumer's community type (COMMUNITY), or rural versus urban residents, and time spent on mass media (MASS). With regards to

community type, research shows that urban residents are more likely to use social media than are rural residents (PEW Research Center 2018a). This study also hypothesized that urban wood products consumers are more likely to adopt social media than are suburban or rural consumers. Time spent using mass media (TV, radio, magazine) can be used as a proxy for "attractiveness of alternatives". Mass media are viewed as alternatives to social media as sources of product information (Mangold and Faulds 2009, Libai et al. 2010, Bruhn et al. 2012). It is hypothesized that consumers who spend more time using mass media are less likely to use social media.

Descriptions of the independent variables are shown in Table 1.

### 3.3 Analysis

Binary logistic regression was used to estimate the model parameters because of the binary nature of the dependent variable. Logistic regression is based on the cumulative logistic probability function and estimates the probability of a certain action, given a set of categorical characteristics (Pindyck and Rubinfeld 1981):

$$P_i = E(Y = 1) \mid X_i = \frac{1}{1 + e^{-(\alpha + \beta_i X_i)}} \quad (2)$$

where  $P_i$  is the probability that a consumer adopts social media,  $\beta_i$  the model coefficients, and  $X_i$  the independent variables. LIMDEP (Version 8.0) software was used to estimate the model parameters. Summary statistics were also calculated for the variables included in the model and other variables collected from the survey.

## 4 Results and Discussion

### 4.1 Survey Results

A total of 1,082 responses were collected from the survey. However, 154 respondents did not purchase any wood products in the last 5 years, resulting in a total of 928 usable responses. Some advantages of probability-based internet panel data, such as we used in this study, are that it is cost-effective and able to access large and diverse samples quickly (Hays et al. 2015); however, there are issues with regards to how the sample selected is representative of the population and nonresponse bias (Couper 2000). To address the issue of nonresponse bias, we followed the approach used by Cai and Aguilar (2014). The responses of those who completed/finished the survey questionnaires and those who did not complete the

**Table 1. Description of the variables used in the empirical model that examines the factors affecting social media adoption among wood products consumers in the U.S.**

Variables	Definition	Citations/References
Perceived Usefulness		
USE	Consumers' perception about usefulness of social media in acquiring information about products/services in obtaining deals/promotions; 1 = Yes and 0 = No	Davis 1989, Davis et al.1992, Venkatesh and Davis 1996, Wang et al. 2003, Green and Pearson 2011, Sago 2013
Ease of Use		
EASE	Time spent on social media sites per week; 0 = 0 hour, 1 = 1-3 hours, 2 = 4-6 hours, 3 = 7-9 hours, and 4 = 10 hours or more	Torlzadeh and Lee 2003, Cha 2010, Jayasingh and Eze 2010, Green and Pearson 2011, Peslak et al. 2012, Parra-Lopez et al. 2011
Product Types		
PRODUCT1	Purchased consumer products (furniture, flooring, cabinets and novelties) only in the last 5 years; 1 = Yes and 0 = if otherwise	Monsuwe et al. 2004
PRODUCT2	Purchased industrial products for DIY only (lumber-type products such as boards, parallel laminated veneer; and pallets, panel-type products like plywood, particleboard, and oriented strand board) in the last 5 years; 1 = Yes and 0 = if otherwise	
Demographics		
MALE	1 = Male and 0 = Female	LaRose and Atkin 1988, Jeffres and Atkin 1996, Maden and Savage 2000, Leung 2001, Burke 2002, Lin 2004, Peter et al. 2006, Porter and Donthu 2006, Sohn and Lee 2007, Laukkanen and Pasanen 2008, Zhang et al. 2009, Carey and Elton 2010, Cha 2010, Chen 2010, Gerlich et al. 2012, Lopez et al. 2013, Smith 2014
AGE	Consumer age; 1 = 18-29 years, 2 = 30-49 years, 3 = 50-64 years and 4 = 65 years and over	
EDUC	Highest educational attainment; 1 = High school or less, 2 = Some college or associates degree, and 3 = college graduate or more	
INCOME	Annual household income in U.S. Dollars U(\$); 0 = less than \$30,000 and 1 = \$30,000 and more	
RACE	1 = Caucasian and 0 = other (Hispanic, Black or African American, Native American/American Indian, Asian/Pacific Islander, other race)	
Situational Factors		
COMMUNITY	Community Type; 1 = Urban and 0 = other	Mangold and Faulds 2009, Libai et al. 2010, Bruhn et al. 2012, Goss 2016, PEW Research Center 2017, PEW Research Center 2018a
MASS	Hours spent on mass media per week; 0 = 0 hours, 1 = 1-3 hours, 2 = 4-6 hours, 3 = 7-9 hours and 4 = 10 hours or more	

survey questionnaires were compared in terms of their responses to the question of whether they used social media in their purchasing decisions related to wood products. The result of the Kolmogorov-Smirnov test (K-S test) indicates that the samples came from the same distribution (K-S statistic = 0.71). Thus, the responses of those who completed the survey questionnaires are judged to be not statistically different from those that did not complete the survey questionnaires regarding social media use in wood products purchasing decisions.

To address whether our sample is representative of the U.S. population, we compared the socio-demographic characteristic of our sample to US Census data. Cai and Aguilar (2014) used the same approach, since the response rate could not be calculated, given the nature of the online panel data used. In most cases, our sample is comparable to the US Census data. For example, a little over 50% of our sample was female (50.32%), which is also the case with the US Census data, where 50.80% of the US population is female (US Census

Bureau 2016). With respect to annual household income, 57.65% of our sample reported income over \$50,000, which is almost identical to the US census data of 57%. With respect to race, our sample is also comparable to that of the US Census data —73.80% of our sample was white compared to 76.90% for the US census data. Our sample is slightly more educated than the census data. About 80.39% of our sample reported having some college degree or higher, while the US Census Bureau (2016) reported about 60.25% of the US population having the same educational attainment. This may suggest that our sample would be more likely to use the internet and social media.

### 4.2 Social Media Use among Wood Products Consumers

A little over half (54%) of the U.S. wood products consumers surveyed indicated using social media to gather information about wood products. This is relatively lower, compared to the U.S. average of overall social media users, which is at 69% (PEW Research Center 2018a). Since consumers are starting to use social media to gather information about wood products, this lower usage indicates that social media can become an important marketing platform for wood products companies to reach their consumer base. A study by Gazal et al. (2016) indicates that about 58% of wood products companies

in the U.S. have used some form of social media, which is comparable to the consumer side found in this study. In terms of types of social media, Facebook, YouTube, and Twitter were listed as the top three social media sites/types used by the respondents, averaging 85%, 63% and 42%, respectively. However, the top three social media sites utilized by wood products companies were Facebook, LinkedIn, and Twitter (Gazal et al. 2016, Montague et al. 2016). Although Facebook and Twitter are popular among both wood products producers and consumers, this study shows that there is an opportunity for wood products marketers to expand their marketing efforts through YouTube. More wood products consumers (63%) rely on YouTube than LinkedIn (26%) to gather information about wood products, and currently, YouTube is underutilized by producers as a marketing tool. In fact, in addition to Facebook, YouTube now dominates the social media landscape among American users (PEW Research Center 2018b).

### 4.3 Factors Affecting Social Media Adoption

The results of the logistic regression model (Table 2) indicate that a number of factors affect the decision of wood products consumers to use social media when they gather information about wood products. Specifically, the intention of wood products consumers to use social

**Table 2. Results of the empirical model that examines the factors affecting social adoption among wood products consumers in the U.S.**

Variable <sup>a</sup>	Parameter Estimate (SE)	P Value	Marginal Effects	Means (SD)
Constant	-0.530 (0.398)	0.182	-	-
USE	1.912 (0.168)	<0.001	0.222	0.502 (0.500)
EASE	0.323 (0.073)	<0.001	0.056	2.201 (1.249)
PRODUCT1	-1.247 (0.239)	<0.001	-0.230	0.142 (0.349)
PRODUCT2	-2.700 (0.561)	<0.001	-0.439	0.060 (0.236)
MALE	0.800 (0.170)	<0.001	0.140	0.497 (0.500)
AGE	-0.466 (0.095)	<0.001	-0.080	2.231 (0.956)
EDUC	0.113 (0.113)	0.314	0.020	2.263 (0.766)
INCOME	0.355 (0.207)	0.086	0.062	0.786 (0.410)
RACE	-0.060 (0.191)	0.754	-0.010	0.738 (0.440)
COMMUNITY	0.344 (0.176)	0.050	0.060	0.356 (0.479)
MASS	-0.063 (0.069)	0.355	-0.011	2.773 (1.290)

Likelihood Ratio = -432.373  
 Chi-square Value = 294.923  
 P Value = 0.000  
 Total number of observations = 890  
<sup>a</sup> See table 1 for variable definitions.

media is driven by their perceptions regarding ease of use and usefulness, as well as by other exogenous factors.

Wood products consumers' adoption of social media is strongly influenced by their perceptions about the usefulness and ease of use of social media tools. In terms of usefulness, the results indicate that consumers who think social media can be used to acquire information on products/services, as well as deals/promotions, are more likely to use the platform when shopping for wood products. This means that they may find social media to be a useful medium to gather information about wood products, thereby improving their shopping experience. Usefulness refers to the individual's perception that using a technology will improve or enhance performance (Davis 1989). For the variable representing ease of use, wood products consumers who spend more time on social media sites per week are more likely to use social media to gather information about wood products. According to Davis (1989), ease of use is the perception of the individual that using the technology will be free of effort. In the context of this study, the more time consumers spend on social media the more familiar they become with how it works, thereby making it easier for them to use this platform when shopping for wood products. Repeated use of a technology leads to an increasing knowledge base regarding how the technology works, thereby making its application simple (Parra-Lopez et al. 2011). Usefulness and ease of use are generally known to be positively related to technology adoption, and the same is true for social media use among wood products consumers.

The PRODUCT 1 and PRODUCT 2 were found to significantly affect the decision to use social media. Specifically, consumers who purchased consumer products only are 23% less likely to use social media than are those who purchased both consumer and industrial products, and those who purchased industrial/DIY products only are 44% less likely to use social media than are those who purchased both consumer and industrial products in the last 5 years. Since certain products are more suitable for online shopping (Monuwe et al. 2004), it follows this is also true when consumers use social media for information gathering as part of on-line shopping. The results of this study indicate that consumers who purchased both consumer and industrial wood products for DIY use social media when they gather information about these products. Consumers use social media when they have a variety of products to purchase because it makes

for more efficient shopping. Social media typically can provide product information without necessitating that consumers physically go to stores, and therefore can significantly help consumers in their purchasing process. In fact, almost everyone (99%) who used social media agreed that social media had helped them in all aspects of their purchasing process (i.e., preliminary search, comparing products, finding discounts and promotions, and speeding up the buying process). Among wood products companies, the focus of social media marketing was only on consumer products (Gazal et al. 2016). This study indicates that wood products marketers may benefit from expanding their use of social media marketing to include industrial products for DIY use (e.g., lumber, pallets, panels, etc.).

Among the demographic variables, gender, age, and income were found to be significant predictors of social media adoption. The results showed that younger consumers were more likely to adopt social media. For example, as age increased, the probability of using social media decreased by 8%. Age is considered to be one of the most significant demographic factors affecting technology adoption (Fang et al. 2011). This finding is consistent with other studies regarding the negative relationship between age and technology adoption in general (Wood 2002, Rogers et al. 2017), as well as age and social media adoption (Cha 2010, Lin et al. 2011, Gerlich et al. 2012, Jashari and Rustemi 2017). Most of the social media users in the U.S. belong to the younger age group (PEW Research Center 2018a). Younger generations are usually more technologically savvy, so it is expected that they are more likely inclined to use social media when they research a product. In addition, older consumers may perceive the benefits of using a new technology (e.g., internet or social media) to be less than the cost of investing in the skill to do it (Ratchford et al. 2001). While majority of the social media users in the U.S. are female (PEW Research Center 2018a), the results of this study showed that males were 14% more likely to use social media to gather information about wood products, compared to females. As mentioned earlier, the effect of gender on technology adoption is mixed. However, according to Burke (2002), men usually express greater interest in using various types of technology when shopping, compared to women, who usually prefer catalog shopping. Men are usually known to adopt new technology earlier (Jeffres and Atkins 1996) but women usually catch on (Cha 2010). While there are

more women now who use social media, this study shows that males are still more inclined to use social media when shopping for wood products, suggesting that the use of social media among wood products consumers is still in its early stages. In terms of income, the results of this study were consistent with other studies that show a positive relationship between income and social media adoption (e.g., Maden and Savage 2000, Burke 2002, Leung 2001, Lin 2004, Peter et al. 2006, Cha 2010). Specifically, those with an annual household income of \$30,000 or more are 6.2% more likely to use social media than those with less than \$30,000 annual household income. In fact, the majority of the social media users in the U.S. belong to the higher income category (PEW Research Center 2018a). This is because those who have higher incomes are more likely to have multiple devices that enable them to easily go online (Anderson 2017) and therefore can access services such as social media.

While education and race were not significant in our model, these two demographic categories had the expected signs, as other studies have shown. Education had a positive sign, which means that consumers with higher education are more likely to use social media (Burke 2002, Lin 2004, Peter et al. 2006, Cha 2010, Gerlich 2012). Race had a negative sign, which means that whites are less likely to use social media than those who belong to other races. Other studies have shown that those who belong to communities of color are more likely to use social media than are whites (Lopez 2013, Smith 2014).

With respect to the situational factors examined in the model, community type was found to be significant in consumers' decision to use social media. Consumers who live in urban areas were 6% more likely to use social media when shopping for wood products than were those who live in suburban or rural areas. Social media is also more common among urban users in the U.S. than in the suburban or rural areas (PEW Research Center 2018a, Goss 2016). One reason for this is that consumers who live in urban areas usually have better internet access and are therefore more able to access social media tools. While rural America has made large gains in adopting digital technology in recent years, this group still lags behind urban users when it comes to using digital technology like broadband, smartphones, and other devices (PEW Research Center 2017). The variable representing "attractiveness of alternatives" or in this case the time spent per week using mass media (TV, radio, magazines, newspapers, etc.) was not significant, but

had the expected sign, which is negative. That is, wood products consumers who spent more time using these different media were less likely to use social media when gathering information about wood products.

## 5 Summary and Conclusions

The interaction of consumers and marketers through social media is growing in importance with the rapid increase in social media use and its popularity. Around seven of ten Americans use some form of social media (PEW Research Center 2018a). As social media use continues to grow, more consumers will rely on these tools when making purchases. This provides retailers an opportunity to expand their marketing campaigns to a wider range of consumers. Wood products companies have always been slow to adopt new technology, but a recent study by Gazal et al. (2016) shows that social media use has grown significantly since Montague's initial study in 2011. On the consumer side, no known prior study has looked at social media adoption among wood products consumers. Wood products companies and marketers should benefit by focusing on how wood products consumers use social media when making wood products purchasing decisions. Such information is important in assessing the features of their social media marketing efforts that will help attract consumers to their products. It is important for companies to know whether consumers are technology ready (e.g., if they use social media or are not familiar with it) in order to create a successful marketing campaign through social media (Paquette 2013). Understanding technological readiness can determine if marketing via social media would be a good fit for the company's target market. The goal of this study is to look at social media adoption among wood products consumers by examining factors that affect the adoption of social media among wood products consumers. With consumers now increasingly creating content about brands (e.g., product reliability ratings, on-line product reviews), information previously under the sole control of companies (Heinonen 2011), it becomes even more important that marketing departments are tuned into consumer motives and perceptions.

This study shows that the majority (88%) of wood products consumers have used some form of social media, and about 54% have used the platform to gather information about wood products. Thus, this indicates that most wood products consumers are technology

ready, in terms of social media. This, therefore, offers an opportunity for wood products companies to focus on social media marketing in addition to their traditional marketing practices. The study also shows that social media adoption is influenced by the perceived usefulness and the ease of use of social media, product characteristics, demographic characteristics (e.g., gender, age), and situational factors (e.g., community type, attractiveness of alternatives). Understanding these factors is important in order to target what consumers need. For example, this study shows that the ease of use and perceived usefulness are strong predictors of social media adoption. Thus, wood products companies should benefit from designing their social media sites so that they are easy to use and can provide useful information about their products (e.g., pictures, visual displays of products, videos). This study shows that the visual element of products/ads was the number one attribute that attracted consumers who were using social media. With regards to product types, manufacturers of the most commonly purchased consumer and industrial wood products can benefit from social media marketing, since consumers tend to use social media when gathering information about these products. Other external factors for wood products marketing teams to be aware of when they design their social media campaigns include customer demographics and situational factors. For example, the study shows that younger consumers, male consumers, higher earners, and those who live in urban areas are more likely to rely on social media. By having these consumer groups in mind, a more targeted social media campaign can be developed. Since most wood products consumers rely on social media to gather information about wood products, companies selling wood products may strive to become active participants in social media in order to remain competitive in the digital marketplace.

## 6 References

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