

# **Electronics Utilization by Consumers: Antecedents and Impact on Consumer Positivity**

**Gregory S. Black**  
**Metropolitan State University of Denver**

**Clayton L. Daughtrey**  
**Metropolitan State University of Denver**

**Mick Jackowski**  
**Metropolitan State University of Denver**

**Ann B. Murphy**  
**Metropolitan State University of Denver**

*A sample of consumers, ranging in age from late teens to 65, is used to examine the impact of demographic antecedents on consumer electronic utilization variables (age, household income, undergraduate major, and ethnicity). Then, the impact of these electronic utilization variables on positive consumer characteristics is examined (cultural openness, deal proneness, value judgment, self-esteem, and shopping enjoyment). Strong support indicates the various impacts the antecedents have on consumer electronic utilization. Findings also suggest the influence of these electronic utilization variables on positive consumer characteristics. The non-findings are discussed, and future research is suggested to further examine the relationships included in this study's research model.*

*Keywords: electronic utilization, cultural openness, deal proneness, value judgement, self-esteem, shopping enjoyment, positive consumer characteristics*

## **INTRODUCTION**

When asked how they use their mobile phones, recent anecdotal evidence suggests young consumers rarely consider them traditional telephones. They seldom mention they use them for phone calls. The mobile phone replaces watches and keeps consumers connected to Facebook, Twitter, Instagram, Snapchat, and other social media platforms. Consumers use mobile phones for surfing the internet by “googling” for information and shopping. Consumers who are students even use their mobile phones to do homework and can access software such as Word and Excel. Consumer who are business professionals can accomplish work with their mobile phones. Consumers use mobile phones as an alternative communication method that can be done in real time and is not as distracting as talking on the phone. Thus, consumers use their

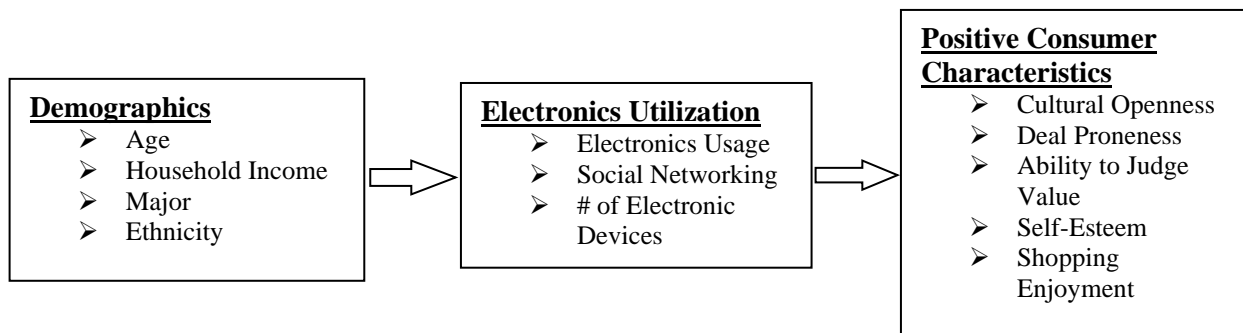
mobile phones to replace land-line phones, laptop and desktop computers, watches, mp3 players, gaming systems, and other electronic devices.

Even those of us who did not grow up as members of these latest generations have welcomed the mobile phone and other electronic devices into our lives. As early as 1983, this electronics explosion and the advent of the Internet were identified as a marketing megatrend (Sheth, 1983). As consumers increasingly rely upon these devices, critical questions should be asked. We assume younger consumers utilize electronics more, but what factors other than age impact consumer electronic utilization? What impact does this electronic utilization have on consumers and their behavior? Previous research shows that certain electronic utilization harms consumers (e.g., Frank, 2010). However, are there any positive impacts on consumers? One purpose of this study is to examine the impact of certain consumer demographics on electronic utilization. The other purpose is to consider the impact of three consumer electronic utilization variables on positive consumer characteristics.

## LITERATURE REVIEW AND HYPOTHESES

Consumer electronics utilization is measured with three related, but different variables. The difference in the variables makes it possible to examine different aspects of electronics usage, from simple utilizations, such as television watching and word-processing on a computer, to more involved utilizations, such as social networking and online shopping. The three variables in electronics utilization are measured using self-reporting and they include electronics usage, social networking, and number of electronic devices owned or used. Electronics usage is measured by having respondents indicate the total time spent on an exhaustive list of electronic activities, including internet surfing, TV watching, social media usage, etc.

**FIGURE 1**  
**MODEL OF EFFECTS OF ELECTRONICS USAGE ON POSITIVE CONSUMER CHARACTERISTICS**



When a high percentage of consumers consider themselves to be addicted to social media (Allahverdi, 2022), it is important to examine that portion of consumer electronics utilization separately. Thus, social networking is separated from the total electronics usage to analyze separately and is measured in self-reported time. Finally, the number of electronic devices is derived by respondents selecting from a comprehensive list of possible electronics devices they either own or at least use (e.g., university computer labs, work computers). Nine resulting hypotheses are generated and examined in this study.

Figure 1 presents the model that is assessed in this research. This model shows several associations that are hypothesized as causal relationships between consumer demographics and consumer utilization of electronics. Another set of hypotheses suggests causal relationships between consumer utilization and positive consumer outcomes.

## **Consumer Demographics Impact Electronics Utilization**

Research links demographics with electronic usage. Younger consumers are more likely to utilize online banking and financial services (e.g., Arora and Sandhu, 2018; Chellapalli and Kumar, 2016; El-Masri, 2020). Younger consumers are more likely to use electronics rather than read a book (Molina, Campana, and Ortega, 2016). Generation Z is more likely to use an electronic wallet than are previous generations (Persada et al., 2021). Younger consumers use mobile phone services more completely to include all the functions that take the consumer online (Lee, 2009). Younger consumers are also more likely to shop for vehicles online (Finlay, 2011). Younger consumers spend time on social media more frequently and for longer periods (Perčić, Perić, and Kutlača, 2019). Age is also associated with general online shopping with younger consumers being more likely to engage in more intensive online shopping (Agarwal, Subudhi, and Mohapatro, 2021). Younger consumers are even more likely to develop a sense of e-loyalty than are older consumers (Floh and Treiblmaier, 2006). Findings from these studies make it clear that consumer age impacts electronics usage. Thus, the following hypothesis is offered.

***H<sub>1</sub>:** As consumers age, their electronics utilization decreases in three areas: a) electronics usage, b) social networking, and c) number of electronic devices.*

Consumer income contributes to willingness to use electronic payment options (Arango-Arango and Suárez-Ariza, 2017; Bruggink, 2015). Increased consumer income also leads to a higher likelihood of using electronic banking services (Ali and Ghildiyal, 2023; Arora and Sandhu, 2018; Karpowicz, 2016). Income is linked to mobile phone adoption (Ali and Ghildiyal, 2023; Madden and Coble-Neal, 2004) and usage (Dzansi, Chipps, and Lartey, 2022). Consumer income is also a factor leading to more fully using the features and abilities of mobile technology (Burrell and Oreglia, 2015). Consumer income is also a factor in mobile phone ownership leading to internet usage (Qureshi and Xiong, 2021). Income increases online gaming (Chen, Lee, and Wang, 2012). Higher incomes also have an impact on increased online gambling, chatting, and utilization of pornography (Müller et al., 2014). This evidence suggests consumer household income impacts electronics utilization. Consequently, the following is hypothesized.

***H<sub>2</sub>:** As consumers' household income increases, their electronics utilization increases in three areas: a) electronics usage, b) social networking, and c) number of electronic devices.*

Samson (2014) found that 8.1% of students in a School of Business used library e-resources when compared to students in other areas of study, while another study found that students have equal preference for e-devices regardless of major (Selby, Carter, and Gage, 2014). Electronics usage is more prevalent among English majors than business majors (Alfarwan, 2019). One study found that over 50% of business majors use social media as their primary social networking tool (Ha et al., 2018). In India, 91% of business students use social media (Bharucha, 2018). Specific to business schools, research conducted at Virginia Tech University found that marketing students were the heaviest social media users, followed by undergraduates in finance and business information systems (Wertalik, 2017). According to Chi, Tang, and Tang (2023), college major is linked to social media usage. Evidence exists that certain college majors are more attractive to consumers who are more involved with social media (Taylor, 2011). Thus, a college major appears to impact a consumer's propensity to spend time on social media; therefore, the following hypothesis is examined in this research.

***H<sub>3</sub>:** There are differences in consumer electronics utilization, depending on consumer undergraduate majors, in three areas: a) electronics usage, b) social networking, and c) number of electronic devices.*

Ethnicity plays a role in shopping for consumer electronics in supercenters (Carpenter, 2008). More specifically, Easton, Cicchirillo, and Mabrey (2015) found no significant differences in internet usage between Hispanics, Blacks, and Whites. However, they did discover that Whites watched more network television than Hispanics or Blacks. Although inequalities in device ownership and internet access have

lessened, a first-level divide still exists, primarily for low-income or ethnically and racially diverse families, especially concerning internet access (Bell, Aubele, and Perruso, 2022). This study found that although 92.3% of Asian households have access to broadband internet, only 77.7% of Black households enjoy that same access. Black young consumers are less likely to have access to a smartphone with internet access than are White young consumers (Villanti et al., 2017). Black and Hispanic consumers are less likely to use nutrition and restaurant information online than White consumers (Vaccaro and Huffman, 2018). Black, Hispanic, and Asian young consumers more frequently create online content than do White young consumers (Correa and Jeong, 2011). Other research indicates a higher prevalence of LinkedIn use by Black young consumers (Villanti et al., 2017). Specific to political social media news use, both Black and Hispanic consumers have relatively high TV news consumption, and Black consumers participate in more online political activities than White consumers (Wang and Peters, 2023). Despite some recent research suggesting differences in ethnic groups in electronic usage found in earlier studies is becoming more equalized (Anderson, 2019), the following hypothesis is examined.

*H4: There are differences in consumer electronics utilization, depending on consumer ethnicities, in three areas: a) electronics usage, b) social networking, and c) number of electronic devices.*

### **Consumer Electronics Utilization Produces Positive Outcomes**

Electronics utilization includes electronic devices, including cell phones, televisions, computers, gaming systems, etc. Usage of such devices can have positive impacts on consumers. Fortin (2000) found that electronic usage leads to being more prone to finding deals. Webb, Kohlbacher, and Prieler (2017) found watching television leads to higher life satisfaction. Holtzman et al. (2021) found using cell phone technologies positively impacts long-distance relationships' success. Crosswhite, Rice, and Asay (2014) found that consumers can more accurately express feelings in texts. Zemestani et al. (2021) found positive affect to young consumers from playing online games. Bickle and Shim (1993) showed consumer shoppers who utilize more electronics increase their satisfaction with their shopping experience. Ome and Menendez (2022) found that texting increases children's reading ability. Thus, in general, electronic utilization can potentially produce certain positive consumer outcomes, such as cultural openness, deal proneness, ability to judge value, self-esteem, and shopping enjoyment.

A working definition of consumer cultural openness is inclination by consumers to engage in and search out information and proficiencies in cultures other than their own (Saef et al., 2019). The more consumers learn about other cultures, the more positive they are toward those cultures (Hausmann et al., 2013). More opportunities to interact with people from other cultures leads to more cultural openness (Sharma, Shimp, and Shin, 1995), and social media provides those opportunities. Cultural knowledge within organizations leads to cultural competency and further contributes to the reduction of biases when dealing with businesspeople from other cultures (Hannah, Norman, and Johnson, 2023). Cultural knowledge training also reduces biases toward people from other cultures in general (Marovic, 2020). International travel often results in more cultural knowledge, leading the travelers to more cultural openness (Staffieri, Cavagnaro, and Rowson, 2017). Generally, the internet has become a major player in consumer knowledge of other cultures (Robey and Dickter, 2022), while social media plays an even more important role in cultural knowledge and openness (Anderson, Albinsson, and Ducarroz, 2023). Research on the specific variable of cultural openness has been largely neglected. Thus, examination of the following hypothesis will extend knowledge of this important positive consumer characteristic in academic literature.

*H5: As consumers increase their electronics utilization in three areas (electronics usage, social networking, and number of electronic devices), their cultural openness increases.*

Consumer deal proneness can be described as a perception consumers can get good value from a specific shopping experience (Putrevu & Ratchford, 1997; Roy, 1994; Westbrook and Black, 1985). Deal prone consumers have a psychological disposition to respond favorably to promotional offers (DeVecchio, 2005) and this includes promotional offers presented on electronic media. On its own, promotion type has

no impact on either brand loyalty or perceived value. Its influence is activated in interaction with deal proneness and influences only those consumers presenting high deal proneness (Prados-Pena, Crespo-Almendros and Porcu, 2022). However, marketers should be careful because attempts to persuade deal-prone consumers to upgrade to premium services will be unsuccessful and may lead to negativity (Biraglia et al., 2022). Consumer deal proneness is linked to increased reliance on the internet for online shopping, especially for mothers ordering groceries online (Handley, 2012). The Internet makes it easier for consumers to search for good hotel deals, thus increasing the likelihood of seeking out the best deals (Chen, Phelan, and Chang, 2016). The internet has spurred a growth in targeted promotions that offer different prices to various segments of consumers via price promotions of different values (DeVecchio, 2003). Exposure to more price-related online promotions leads consumers to be more deal-prone. Consumers with a tendency toward deal-proneness are more likely to switch to mobile devices for payments (Wang and Peters, 2023; Handarkho and Harjoseputro, 2020). With these trends in mind, the following hypothesis is offered to further examine electronics utilization and its impact on consumer deal proneness.

**H<sub>6</sub>:** *As consumers increase their electronics utilization in three areas (electronics usage, social networking, and number of electronic devices), their deal proneness increases.*

Consumer ability to judge value is described as consumers being able to approximate the value of a consumption experience based on factors such as product, brand name, product utility, value of interaction with salespeople, etc. (Putrevu & Ratchford, 1997). Consumers with more online experience are better at judging online product reviews (Schindler and Bickart, 2012). Consumer online purchasing behavior is impacted by the quality of a company's website (Visich, Gu, and Khumawala, 2012; Zhang et al., 2022). Despite these few tangentially related examples of research linking electronics utilization with consumer ability to judge value, information is important in consumer value judgement (e.g., Hollis, 2020; Rodin, 1975). Various media, including TV (Boronat et al., 2018), social media (e.g., Kondort et al., 2023; Sun, Gao, and Rui, 2021; Vasiliu et al., 2023), the internet in general (e.g., Chatzidakis and Mitussis, 2007; Zeng and Reinartz, 2003), and other electronics, provide information to consumers that will help them judge value. Therefore, the following hypothesis is examined and if supported, offers new insight into consumers.

**H<sub>7</sub>:** *As consumers increase their electronics utilization in three areas (electronics usage, social networking, and number of electronic devices), their ability to judge value improves.*

Consumer self-esteem refers to the extent to which consumers have a positive attitude about themselves (Clark and Goldsmith, 2005; Rosenberg, 1965). A measure of consumer self-esteem is brand engagement in self-concept, the level at which individuals view themselves in conjunction with brands they value (Sprott, Czellar and Spangenberg, 2009). Social media is associated with consumer self-esteem (Nadkarni and Hofmann, 2012). Consumers with lower self-esteem regard social media as a safer place to express themselves than people with higher self-esteem (Forest and Wood, 2012). Low self-esteem consumers also spend increased time using instant messaging (Ehrenberg et al., 2008). Consumer self-esteem is also linked to playing video games (e.g., Barnett et al., 1997; Beard et al., 2017; Shen, Xie, and Wu, 2023; van der Schyff et al., 2023), watching television (Lewis, 2021; Nairn and Oprea, 2021), and mobile telephone usage (Kong et al., 2022). The following hypothesis is posited by bringing these previous findings to this research.

**H<sub>8</sub>:** *As consumers increase their electronics utilization in three areas (electronics usage, social networking, and number of electronic devices), their self-esteem improves.*

Consumer shopping enjoyment is the level of pleasure a consumer experiences during shopping (Menon and Kahn, 2002; Shim & Gehrt, 1996; Sproles & Kendall, 1986). It has been linked to positive consumer behavior, such as the adoption of beneficial technology (Giao, Vuong, and Quan, 2020). Shopping enjoyment is also linked to consumer intention to purchase online (Camoiras-Rodriguez and Varela, 2020). It is also associated with consumer likelihood to shop online (Lim and Kim, 2022; Venkatesh, Speier-Pero,

and Schuetz, 2022). Companies develop websites to assure consumers experience online shopping enjoyment (Koufaris, Kambil, and Labarbera, 2001; Xue, Parker, and Hart, 2023). Mobile apps are also carefully designed to enhance consumer shopping enjoyment (De Canio, Fuentes-Blasco, and Martinelli, 2021). The gain of consumer knowledge that can be accomplished through the internet increases shopping enjoyment (Shen, 2012). Consumer shopping enjoyment is also linked to shopping via television infomercials (Maher, Marks, and Grimm, 1997). Consumers who may have negative experiences in brick-and-mortar retailers because of pushy salespeople and other factors tend to enjoy online shopping more (Riquelme, and Román, 2014). There is clearly a link between electronics utilization and consumer shopping enjoyment. Consequently, this final hypothesis is assessed.

*H<sub>9</sub>: As consumers increase their electronics utilization in three areas (electronics usage, social networking, and number of electronic devices), their shopping enjoyment increases.*

## **METHODOLOGY**

### **Sample and Data Collection**

Data were collected from undergraduate students enrolled in various undergraduate marketing classes at two large public universities in the West and Southwest. Participants volunteered to fill out a questionnaire they were allowed to take home and return the next class day, 48 hours later. After students submitted their questionnaire, each was asked to find two additional consumers to complete the questionnaire and were offered extra credit for these additional two questionnaires. After discarding the incomplete questionnaires and those that were otherwise deemed not usable, responses from 221 respondents are used for this study. The responding consumers range in age from 17 to 65 and are nearly evenly split between birth gender, with 110 females and 111 males. No respondent identified as a gender other than birth gender. All but 17 respondents have some college education.

### **Variables and Measures Used**

Demographic variables are measured using single-item self-reported information. These variables include consumer age, household income, major, and ethnicity. Age is the actual self-reported age of the consumer. Household income is measured by giving consumers ranges of incomes from which to select, to alleviate possible discomfort for reporting actual household income and to overcome lack of knowledge of exact household income. For data analysis, the mid-point of these ranges is used. Respondents selected their majors from a list including accounting, economics, finance, management, marketing, general business, and non-business. For data analysis, numbers were assigned to each major to allow comparison statistical analysis between each pair.

For ethnicity, respondents were selected from a list including Asian, Black, Hispanic, Middle Eastern, Native American, White, and Other. For data analysis, numbers were assigned to each major to allow comparison statistical analysis between each pair. Ethnicity categories were selected based on the categories used by the U.S. Census Bureau (U.S. Census Bureau, 2022), and American Psychological Association (American Psychological Association, 2022) capitalization guidelines were adhered to. The exception is Middle Eastern as the U.S. Census Bureau includes Middle Eastern in the White category; however, it is valuable for this research to consider Middle Eastern as a separate and independent ethnicity. The ethnic category of Other is used in this study to capture the respondents not fitting into the groups used in the study to capture a large enough sample size for statistical analysis.

**TABLE 1**  
**RELIABILITY AND SCALE REDUCTION OF MULTI-ITEM MEASURES**

<b>Variable Measured</b>	<b>Original # of Items</b>	<b>Reduced # of Items</b>	<b>Cronbach's Alpha</b>	<b>Sources</b>
Cultural Openness	7	5	.912	Sharma, Shimp & Shin, 1995
Deal Proneness	6	3	.848	Putrevu & Ratchford, 1997; Roy, 1994; Westbrook & Black, 1985
Ability to Judge Value	7	7	.671	Putrevu & Ratchford, 1997
Self-Esteem	10	5	.957	Rosenberg, 1965
Shopping Enjoyment	4	4	.723	Shim & Gehrt, 1996; Sproles & Kendall, 1986

The three variables in electronics utilization are measured using self-reporting, including electronics usage, social networking, and number of electronic devices. Electronics usage is measured by having respondents indicate the total time spent on an exhaustive list of electronic activities, including internet surfing, TV watching, social media usage, etc. All these times are totaled to measure electronics usage. Social networking is separated from the total electronics usage to analyze separately and is measured in self-reported time. Finally, the number of electronic devices is derived by respondents selecting from a complete list of possible devices they own or use (e.g., university computer labs, work computers).

The five variables measured for positive consumer characteristics include multiple-item measures from previous consumer studies found in marketing literature. These variables include cultural openness, deal proneness, ability to judge value, self-esteem, and shopping enjoyment. All these variables are measure using a five-point Likert scale. Table 1 shows a summary of these measures.

Cultural openness originally included seven items (Sharma, Shimp and Shin, 1995), but was reduced to five items for this study using reliability analysis. The resulting five-item scale was deemed reliable for this study ( $\alpha = .912$ ) (Cronbach, 1951). Deal proneness originally included six items (Putrevu and Ratchford, 1997; Roy, 1994; Westbrook and Black, 1985)), but was reduced to three items for this study using reliability analysis. The resulting five-item scale was deemed reliable for this study ( $\alpha = .848$ ) (Cronbach, 1951). The ability to judge value originally included seven items (Putrevu and Ratchford, 1997) and all items are retained for this study to maximize reliability. The resulting five-item scale was deemed reliable for this study ( $\alpha = .671$ ) (Cronbach, 1951). Self-esteem originally included ten items (Rosenberg, 1965), but was reduced to five items for this study using reliability analysis. The resulting five-item scale was deemed reliable for this study ( $\alpha = .957$ ) (Cronbach, 1951). Finally, shopping enjoyment originally included four items (Shim & Gehrt, 1996; Sproles & Kendall, 1986) and all items are retained for this study to maximize reliability. The resulting five-item scale was deemed reliable for this study ( $\alpha = .723$ ) (Cronbach, 1951).

## RESULTS

Statistical testing for the first two hypotheses was done with OLS regression and is summarized in Table 2. Because of the negative test statistic ( $t = -4.149$ ) and the p-value ( $p \leq .01$ ), age has a negative impact on electronics usage. Likewise, the negative test statistic ( $t = -2.357$ ) and the p-value ( $p \leq .05$ ) show that age negatively impacts social networking. Finally, the negative test statistic ( $t = -2.193$ ) and the p-value ( $p \leq .05$ ) indicate age hurts number of electronic devices. Thus,  $H_1$  is fully supported.

Interestingly, the negative test statistic ( $t = -3.617$ ) and the p-value ( $p \leq .01$ ) household income harms electronics usage. Likewise, the negative test statistic ( $t = -2.606$ ) and the p-value ( $p \leq .01$ ), show household income negatively impacts social networking.

Finally, household income has no significant impact on the number of electronic devices. Therefore, statistical analyses offer no support for H2.

**TABLE 2  
RESULTS OF HYPOTHESES 1 AND 2 TESTING**

<b>Hypothesis</b>	<b>Dependent Variables</b>	<b>Independent Variables</b>	<b>Test Statistic</b>	<b>p-value</b>
1a	Age	Electronics Usage	-4.149	≤ .01
1b	Age	Social Networking	-2.357	≤ .05
1c	Age	# of Electronic Devices	-2.193	≤ .05
2a	Household Income	Electronics Usage	-3.617	≤ .01
2b	Household Income	Social Networking	-2.606	≤ .01
2c	Household Income	# of Electronic Devices	0.506	> .10

Statistical testing for H<sub>3</sub> was done with t-testing to be able to compare the means of each pair of majors. The findings are summarized in Table 3. First, marketing majors were compared with all other majors included in the study. Marketing majors own or use more electronic devices than management majors (t = 4.627, p ≤ .05), but there are no differences between the two majors for electronics usage or social networking. Marketing majors spend less time than finance majors on both total electronics usage (t = 3.073, p ≤ .10) and social networking (t = 2.916, p ≤ .10), but there is no difference between the two majors on a number of electronic devices. Marketing majors spend more time than accounting majors on all three electronic utilization variables, including total electronic usage (t = 5.649, p ≤ .05), social networking (t = 6.929, p ≤ .05), and number of electronic devices (t = 2.842, p ≤ .10). Marketing majors own or use more electronic devices than economics majors (t = 4.207, p ≤ .05), but there are no differences between the two majors for electronics usage or social networking. Finally, there are no significant differences between marketing majors and general business or non-business majors on the three electronics utilization variables.

Next, management majors are compared to all majors. Management majors own or use fewer electronic devices than marketing majors (see the paragraph above).

**TABLE 3  
RESULTS OF HYPOTHESIS 3 TESTING**

<b>Hypothesis</b>	<b>Dependent Variables</b>	<b>Independent Variables - Test Statistic</b>		
		<b>Electronics Usage</b>	<b>Social Networking</b>	<b># of Electronic Devices</b>
H3	Major (Mktg vs Mgmt)	2.209	0.050	4.627**
	Major (Mktg vs Fin)	3.073***	2.916***	0.396
	Major (Mktg vs Acctg)	5.649**	6.929**	2.842***
	Major (Mktg vs Econ)	1.379	0.025	4.207**
	Major (Mktg vs Gen Bus)	0.019	0.625	1.191
	Major (Mktg vs Non-Bus)	0.611	0.890	1.105
	Major (Mgmt vs Fin)	11.156*	2.285	4.543**
	Major (Mgmt vs Acctg)	1.761	6.546**	0.026
	Major (Mgmt vs Econ)	0.343	0.063	0.313
	Major (Mgmt vs Gen Bus)	0.706	0.350	2.754***
	Major (Mgmt vs Non-Bus)	1.108	2.173	2.472



Hypothesis	Dependent Variables	Independent Variables - Test Statistic		
		Electronics Usage	Social Networking	# of Electronic Devices
	Major (Fin vs Acctg)	15.007*	16.851*	3.580***
	Major (Fin vs Econ)	3.394***	1.642	7.446**
	Major (Fin vs Gen Bus)	0.571	0.051	0.886
	Major (Fin vs Non-Bus)	8.364*	8.200*	1.669
	Major (Acctg vs Econ)	0.052	6.095**	0.401
	Major (Acctg vs Gen Bus)	6.840**	11.277*	2.498***
	Major (Acctg vs Non-Bus)	3.830***	4.517**	0.812
	Major (Econ vs Gen Bus)	2.651***	2.529***	7.258**
	Major (Econ vs Non-Bus)	0.853	0.090	1.407
	Major (Gen Bus vs Non-Bus)	0.207	1.520	1.513

\* Significant at  $p < .01$

\*\* Significant at  $p < .05$

\*\*\* Significant at  $p < .10$

Management majors spend less time than finance majors on both total electronics usage ( $t = 11.156, p \leq .01$ ) and number of electronic devices owned or used ( $t = 4.543, p \leq .05$ ), but there is no difference between the two majors on social networking. Management majors spend more time than accounting majors on online social networking ( $t = 6.546, p < .05$ ), but there are no differences between the two majors on electronic usage or number of electronic devices. Management majors own or use fewer electronic devices than general business majors ( $t = 2.754, p \leq .10$ ), but there are no differences between the two majors on electronic usage or social networking. Finally, no significant differences exist between management majors and economics or non-business majors on any of the three electronics utilization variables.

Finance is the next major that is compared to all other majors. In the previous paragraphs, finance majors were shown to spend more time on total electronic usage and in online social networking than marketing majors. Finance majors were also shown to spend more time on total electronic usage and own or use more electronic devices than management majors. Finance majors spend more time than accounting majors on both total electronic usage ( $t = 15.007, p \leq .01$ ) and social networking ( $t = 16.851, p \leq .01$ ), but they own or use fewer electronic devices ( $t = 3.580, p \leq .10$ ). Finance majors exceed economics majors on both time spent on total electronic usage ( $t = 15.007, p \leq .01$ ) and number of electronic devices used or owned ( $t = 16.851, p \leq .01$ ), but there is not difference between the two majors on social networking. Finance majors spend more time than non-business majors on both total electronic usage ( $t = 8.364, p \leq .01$ ) and social networking ( $t = 8.200, p \leq .01$ ), but there is no difference between the two majors on the number of electronic devices. Finally, there are no significant differences between finance majors and general business majors on any of the three electronics utilization variables.

Accounting majors are compared to the other majors next. In the previous paragraphs, accounting majors were already compared to marketing majors (less than marketing on electronic usage, social networking and number of electronic devices), management majors (less than management on social networking), and finance majors (less than finance on electronic usage and social networking. Accounting majors spend less time than economics majors on social networking ( $t = 6.095, p \leq .05$ ), but there are no differences between the majors on either total electronic usage or number of electronic devices. Accounting majors score less than general business majors on all three electronics utilization variables, including both total electronics usage ( $t = 6.840, p \leq .05$ ), social networking ( $t = 11.277, p \leq .01$ ), and number of electronic devices ( $t = 2.498, p \leq .10$ ). Accounting majors spend time than non-business majors on total electronics usage ( $t = 3.830, p \leq .10$ ), but more time on social networking ( $t = 4.517, p \leq .05$ ), and there is no difference between the two majors on number of electronic devices.

Economics majors have already been compared to marketing, management, finance, and accounting majors above. These previous analyses suggest economics majors spend less time on electronic usage than finance majors; they spend more time in online social networking than accounting majors; and they spend less or use fewer electronic devices than marketing and finance majors. In addition, economics majors score lower than general business majors on total electronic usage ( $t = 2.651, p \leq .10$ ) and number of devices used or owned ( $t = 7.258, p \leq .05$ ), while they spend less time in online social networking than general business majors ( $t = 2.529, p \leq .10$ ). Finally, there are no significant differences between economics majors and non-business majors on any of the three electronics utilization variables.

General business majors have already been compared to marketing, management, finance, accounting, and economics majors above. This previous analyses indicates that general business majors score higher in total electronics usage than accounting and economics majors; they also score higher than accounting majors and lower than economics social networking; they also score higher than management, accounting, and economics majors in a number of electronic devices owned or used. Finally, there are no significant differences between general business majors and non-business majors on any of the three electronics utilization variables.

Non-business majors have been compared to all other majors included in this study in the above paragraphs. To summarize, non-business majors score lower than finance and accounting majors for total time spent on electronic devices. In addition, for time spent in online social networking, non-business majors score higher than accounting majors and lower than finance majors. Finally, there are no significant differences between non-business majors and any other major on number of electronic devices.

Statistical testing for H4 was done with t-testing to be able to compare the means of each pair of ethnicities. The findings are summarized in Table 4. First, the study compared White consumers with all other ethnicities. For total time spent on electronic devices, White consumers score higher than Native-American consumers ( $t = 2.571, p < .10$ ) and lower than Asian ( $t = 7.247, p < .01$ ), Black ( $t = 7.472, p < .01$ ), and Hispanic consumers ( $t = 11.296, p < .01$ ). For time spent in online social networking, White consumers score higher than Native American consumers ( $t = 2.743, p < .10$ ), while scoring lower than Asian ( $t = 12.363, p < .10$ ) and Black consumers ( $t = 87.414, p < .01$ ). For number of electronic devices owned or used, White consumers score higher than Black ( $t = 3.697, p < .05$ ) and Hispanic consumers ( $t = 5.143, p < .05$ ), but lower than Native American consumers ( $t = 4.0581, p < .05$ ). There are no differences between White consumers and Middle Eastern consumers or Other consumers for the three electronic utilization variables.

Next, the study compared Hispanic consumers with all other ethnicities. For total time spent on electronic devices, Hispanic consumers score higher than Middle Eastern

( $t = 5.402, p < .05$ ), Native American ( $t = 6.441, p < .05$ ), White (shown above), and Other consumers ( $t = 5.193, p < .05$ ). For time spent in online social networking, Hispanic consumers score higher than Middle Eastern ( $t = 3.465, p < .10$ ), Native American ( $t = 6.420, p < .05$ ), and Other consumers ( $t = 3.429, p < .10$ ), while scoring lower than Asian ( $t = 3.881, p < .10$ ) and Black consumers ( $t = 66.668, p \leq .01$ ). For number of electronic devices owned or used, Hispanic consumers score lower than Black ( $t = 6.747, p \leq .05$ ), Native American ( $t = 4.417, p \leq .05$ ), and White consumers (shown below).

Asian consumers were next compared with all other ethnicities included in the study. For total time spent on electronic devices, Asian consumers score higher than White consumers (shown above). For time spent in online social networking, Asian consumers score higher than Hispanic (shown above), Native American ( $t = 2.928, p \leq .10$ ), and Other consumers ( $t = 4.421, p \leq .05$ ), while scoring lower than Black consumers ( $t = 10.001, p \leq .01$ ). For number of electronic devices owned or used, Asian consumers score lower than Black ( $t = 3.311, p \leq .10$ ) and Native American consumers ( $t = 4.071, p \leq .10$ ). There are no differences between Asian consumers and Middle Eastern consumers for the three electronic utilization variables.

**TABLE 4**  
**RESULTS OF HYPOTHESIS 4 TESTING**

<b>Hypothesis</b>	<b>Dependent Variables</b>	<b>Independent Variables - Test Statistic</b>		
		<b>Electronics Usage</b>	<b>Social Networking</b>	<b># of Electronic Devices</b>
H4	Ethnicity (White vs Hispanic)	11.396*	1.937	5.143**
	Ethnicity (White vs Asian)	7.247*	12.363*	0.036
	Ethnicity (White vs Black)	7.472*	87.414*	3.697*
	Ethnicity (White vs Native American)	2.571***	2.743***	4.058**
	Ethnicity (White vs Middle Eastern)	1.381	1.063	0.167
	Ethnicity (White vs Other)	0.128	0.556	1.491
	Ethnicity (Hispanic vs Asian)	0.076	3.881***	1.292
	Ethnicity (Hispanic vs Black)	0.338	66.668*	6.747**
	Ethnicity (Hispanic vs Native American)	6.441**	6.420**	4.417**
	Ethnicity (Hispanic vs Middle Eastern)	5.402**	3.465***	0.102
	Ethnicity (Hispanic vs Other)	5.193**	3.429***	0.014
	Ethnicity (Asian vs Black)	0.036	10.001*	3.311***
	Ethnicity (Asian vs Native American)	2.121	2.928***	4.071***
	Ethnicity (Asian vs Middle Eastern)	1.865	2.407	0.085
	Ethnicity (Asian vs Other)	2.109	4.421**	0.661
	Ethnicity (Black vs Native American)	3.053***	19.728*	2.450
	Ethnicity (Black vs Middle Eastern)	2.807***	22.319*	2.810***
	Ethnicity (Black vs Other)	3.416***	51.653*	5.429**
	Ethnicity (Native American vs Middle Eastern)	5.215***	9.600*	4.615***
	Ethnicity (Native American vs Other)	5.594**	5.963**	4.340***
Ethnicity (Middle Eastern vs Other)	2.465	1.209	0.056	

\* Significant at  $p < .01$

\*\* Significant at  $p < .05$

\*\*\* Significant at  $p < .10$

Black consumers were next compared with all other ethnicities included in the study. For total time spent on electronic devices, Black consumers score higher than Middle Eastern ( $t = 2.807$ ,  $p \leq .10$ ), Native American ( $t = 3.053$ ,  $p \leq .10$ ), White (shown above), and Other consumers ( $t = 3.416$ ,  $p \leq .10$ ). For time spent in online social networking, Black consumers score higher than Asian (shown above), Hispanic (shown above), Middle Eastern ( $t = 22.319$ ,  $p \leq .01$ ), Native American ( $t = 19.728$ ,  $p \leq .01$ ), White (shown above), and Other consumers ( $t = 51.653$ ,  $p \leq .01$ ). For number of electronic devices owned or used, Black consumers score lower than Asian (shown above), Hispanic (shown above), Middle Eastern ( $t = 2.810$ ,  $p \leq .10$ ), White (shown above), and Other consumers ( $t = 5.429$ ,  $p \leq .05$ ).

Native American consumers were next compared with all other ethnicities included in the study. For total time spent on electronic devices, Native American consumers score lower Black (shown above), Hispanic (shown above), Middle Eastern ( $t = 5.215$ ,  $p \leq .05$ ), White (shown above), and Other consumers ( $t = 5.594$ ,  $p \leq .05$ ). For time spent in online social networking, Native American consumers score lower than Asian (shown above), Black (shown above), Hispanic (shown above), Middle Eastern ( $t = 9.600$ ,  $p \leq .05$ ), White (shown above), and Other consumers ( $t = 5.615$ ,  $p \leq .10$ ). For number of electronic devices

owned or used, Native American consumers score Higher than Asian (shown above), Hispanic (shown above), Middle Eastern ( $t = 4.615, p \leq .10$ ), White (shown above) and Other consumers ( $t = 4.340, p \leq .10$ ).

Next, the study compared Middle Eastern consumers with all other ethnicities. For total time spent on electronic devices, Middle Eastern consumers score higher than Native American consumers (shown above) and lower than Black (shown above) and Hispanic consumers (shown above). For time spent in online social networking, Middle Eastern consumers score higher than Middle Eastern consumers (shown above), and lower than Black (shown above) and Hispanic consumers (shown above). For number of electronic devices owned or used, Middle Eastern consumers score lower than Black (shown above) and Native American consumers (shown above). There are no differences between Middle Eastern consumers and Asian, White or Other consumers for the three electronic utilization variables.

Finally, Other consumers were compared with all other ethnicities included in the study. For total time spent on electronic devices, Other consumers score higher than Native American consumers (shown above) and lower than Black (shown above) and Hispanic consumers (shown above). For time spent in online social networking, Other consumers score higher than Middle Eastern consumers (shown above), and lower than Asian (shown above), Black (shown above) and Hispanic consumers (shown above). For number of electronic devices owned or used, Other consumers score lower than Black (shown above) and Native American consumers (shown above). There are no differences between other consumers and Middle Eastern or White consumers for the three electronic utilization variables.

Statistical testing for the last five hypotheses was done with OLS regression and is summarized in Table 5. Consumer cultural openness is increased by total electronic usage ( $t = 2.295, p \leq .05$ ). However, neither social networking nor a number of electronic devices has a significant impact on cultural openness. Thus,  $H_5$  is partially supported.

**TABLE 5**  
**RESULTS OF HYPOTHESES 5 – 9 TESTING**

<b>Hypothesis</b>	<b>Dependent Variables</b>	<b>Independent Variables</b>	<b>Test Statistic</b>	<b>p-value</b>
5	Electronics Usage	Cultural Openness	2.295	< .05
	Social Networking	Cultural Openness	1.137	> .10
	# of Electronic Devices	Cultural Openness	1.322	> .10
6	Electronics Usage	Deal Proneness	2.876	< .01
	Social Networking	Deal Proneness	1.456	> .10
	# of Electronic Devices	Deal Proneness	-1.235	> .10
7	Electronics Usage	Ability to Judge Value	1.177	> .10
	Social Networking	Ability to Judge Value	-0.334	> .10
	# of Electronic Devices	Ability to Judge Value	1.256	> .10
8	Electronics Usage	Self-Esteem	-0.114	> .10
	Social Networking	Self-Esteem	-0.374	> .10
	# of Electronic Devices	Self-Esteem	-0.528	> .10
9	Electronics Usage	Shopping Enjoyment	1.376	> .10
	Social Networking	Shopping Enjoyment	2.418	< .05
	# of Electronic Devices	Shopping Enjoyment	0.598	> .10

Consumer deal proneness is also increased by total electronic usage ( $t = 2.876, p \leq .01$ ). However, neither social networking nor number of electronic devices have significant impacts on deal proneness. Thus,  $H_6$  is partially supported.

None of the three consumer electronic utilization variables have statistically significant impacts on either consumer ability to judge value or self-esteem. Thus, neither H<sub>7</sub> nor H<sub>8</sub> are supported. Finally, consumer shopping enjoyment is increased by social networking (t = 2.418, p ≤ .05). However, neither total electronic usage nor number of electronic devices have significant impacts on consumer shopping enjoyment. Thus, H<sub>9</sub> is partially supported.

## DISCUSSION AND CONCLUSIONS

This extensive research project's findings provide valuable insights into the demographic antecedents of consumer electronic utilization and how that electronic utilization impacts positive consumer behavior. Among the most interesting results are in the findings from testing H<sub>3</sub> and H<sub>4</sub>, where the antecedents to electronic utilization of consumer majors and ethnicities are examined.

**TABLE 6**  
**COMPARISON OF MAJORS**

<b>Major</b>	<b>Result</b>	<b>Electronics Usage</b>	<b>Social Networking</b>	<b># of Electronic Devices</b>
Accounting	Greater Than	Non-Bus	--	Fin
	Less Than	Fin, Mktg, Gen Bus	Econ, Fin, Mgmt, Mktg, Gen Bus, Non-Bus	Mktg, Gen Bus,
Economics	Greater Than	--	Acctg, Gen Bus	--
	Less Than	Fin, Gen Bus	--	Fin, Mktg, Gen Bus
Finance	Greater Than	Acctg, Econ, Mgmt, Mktg, Gen Bus	Acctg, Gen Bus	Econ, Mgmt
	Less Than	--	Mktg	Acctg
Management	Greater Than	--	Acctg	--
	Less Than	--	--	Mktg
Marketing	Greater Than	Acctg	Acctg	Acctg, Econ
	Less Than	Fin	Fin	Mgmt
General Business	Greater Than	Acctg, Econ	Acctg	Acctg, Econ, Mgmt
	Less Than	--	Econ	--
Non-Business	Greater Than	--	Acctg	--
	Less Than	Acctg, Fin	Fin	--

Table 6 summarizes findings from statistical analysis of a consumer's major in college on electronic utilization. For example, it may be assumed accounting and finance majors would be similar in their electronic utilization. However, this study shows significant differences where finance majors spend more time on total electronic usage and social networking, even though they tend to own or use fewer electronic devices than accounting majors. Also, because of the nature of much work in marketing, it may be assumed marketing majors would score higher than all other majors on electronic utilization. However, marketing majors only score higher than accounting majors on total electronics usage and social networking time. Marketing majors actually score lower than finance majors in the time spent on total electronic usage and social networking. In fact, finance majors score higher than most other majors in total time spent on electronics usage and social networking. Other results may be seen in Table 6.

**TABLE 7  
COMPARISON OF ETHNICITIES**

<b>Major</b>	<b>Result</b>	<b>Electronics Usage</b>	<b>Social Networking</b>	<b># of Electronic Devices</b>
Asian	Greater Than	White	Hisp, Nat Am, Other	--
	Less Than	--	Black	Black, Nat Am
Black	Greater Than	Mid East, Nat Am, White, Other	Asian, Hisp, Mid East, Nat Am, White, Other	Asian, Hisp, Mid East, White, Other
	Less Than	--	--	--
Hispanic	Greater Than	Mid East, Nat Am, White, Other	Mid East, Nat Am, Other	--
	Less Than	--	Asian, Black	Black, Nat Am, White
Middle Eastern	Greater Than	Nat Am	Nat Am	--
	Less Than	Black, Hisp	Black, Hisp	Black, Nat Am
Native American	Greater Than	--	--	Asian, Hisp, Mid East, White, Other
	Less Than	Black, Hisp, Mid East, White, Other	Asian, Black, Hisp, Mid East, White, Other	--
White	Greater Than	Nat Am	Nat Am	Black, Hisp
	Less Than	Asian, Black, Hisp	Asian, Black	Nat Am
Other	Greater Than	Nat Am	Nat Am	--
	Less Than	Black, Hisp	Asian, Black, Hisp	Black, Nat Am

Table 7 summarizes findings from statistical analysis of a consumer's ethnicity on electronic utilization. Interestingly, Black and Hispanic consumers are more active than many other ethnicities in total time spent on electronic usage and social networking. Native American consumers tend to score lower than most other ethnicities on all three electronic utilization variables. However, Native American consumers tend to have access to more electronic devices than do most other ethnicities. Other results may be seen in Table 7.

The other two antecedents to consumer electronic utilization are consumer age and household income. Age impacted all three electronic utilization variables as predicted in that consumers will tend to spend less time on electronic usage and social networking, and they tend to utilize fewer electronic devices. These findings are expected as older consumers did not grow up with electronics like younger consumers. Consumer household income positively impacts the time consumers spend on total electronic usage and social networking. Surprisingly, household income does not impact the number of electronic devices a consumer owns or uses. This finding may indicate an emphasis on electronic device ownership, despite income level. Consumers with lower income levels have an equal need for ownership or usage of these

devices as consumers with higher income levels. Thus, lower-income consumers would be willing to spend a higher proportion of their discretionary income on electronic devices.

Surprisingly, electronic utilization does not greatly impact positive consumer characteristics. Significant findings included total time spend on electronic usage leads to more cultural openness and deal proneness by consumers. Also, time spent in online social networking leads to more consumer shopping enjoyment. Consumers seem to be less impacted by their use of electronics than many marketers may believe and hope for. This lack of findings also suggests access to electronic devices does not impact positive consumer characteristics. The devices have to actually be used by consumers to have any impact at all. This finding is demonstrated by Native American consumers who own or use more electronic devices but spend less time on total electronic usage and social networking than other ethnic groups.

The results of this study suggest further research. Some results either failed to support or only weakly supported the proposition that increased electronic usage positively impacts positive consumer characteristics. Perhaps increased electronic usage has a more significant impact on negative consumer characteristics, as suggested in past research (e.g., Frank 2010), so this issue should receive further investigation. Also, this current study examined general electronics usage rather than what impact use of each electronic device or practice may have on positive consumer characteristics.

This study has limitations so attempts to overcome these limitations should be made in similar future research. One limitation is that our sample was substantial overall, but when the individual hypotheses are examined, sample sizes for individual categories of respondents were small in some cases. This is especially true in the examination of H<sub>3</sub> and H<sub>4</sub>. With larger sample sizes in all categories, findings should be even stronger, and perhaps different than in this study. Among the ethnicities, some consumers were born and raised in the United States, while others from the same ethnicity may have come from another country. Thus, this limitation could be corrected in future research by separating the consumers within ethnicities.

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