"Consumer perception of sustainability and eco friendly brands."

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Abstract

The rate of failure to manage e-waste and the business sectors' failure to produce more eco-friendly products is high. These failure rates cause companies to lose profits on expanding an eco-friendly customer market. The central research question addressed by this correlational design examined the quality, price, and brand loyalty of eco-friendly products related to customers' willingness to recycle e-products. Consumer and buying behavior theories served as the theoretical framework in this investigation.

SurveyMonkey was used to distribute the researcher-developed survey to the participants for the collection of the data. The collection data instrument was validated by performing a pilot test using students of the subject organization. The final sample size consisted of 381 participants, 18-24 years old. The strength of the association between ranked variables was determined using Spearman correlation while the customer behavior relationships of interest were examined using ordinal regression. One of the key findings was that when customers had used a certain brand in the past, they were more likely to continue buying that brand, even when the price increased. However, another finding showed that some customers were not willing to recycle electronic devices even if more drop-off recycling facilities were available. The profitability of green product

innovations due to brand loyalty, combined with a demonstration of social responsibility by a business, could create a powerful venue for positive social change. The socially- responsible activities of a business could promote awareness that green products and recycling of e-waste are important for an environmentally-secure future.

Introduction

In 2009 the Environmental Protection Agency (EPA) reported that U.S.

consumers generated over 3.19 million tons of *e-waste* including televisions, telephones, video cameras, and computer equipment. In the United States, only 430,000 tons, or 13.6%, of these electronic items had been disposed of and recycled (Environmental Protection Agency, 2009).
The creation of global electronic waste was 40 million tons

per year, and the United Nations Environment Programme (UNEP) estimated that, by 2020, e-waste levels could rise by as much as 500%. As the global e-waste has grown by about 40 million tons a year concerns about e-waste ramifications have increased (Sanitation Updates, 2010). Walsh (2009) suggested that the massive amount of improperly disposed e-waste has raised toxicity in the air to dangerous levels.
Consequently, researchers have begun to investigate strategies to mitigate the negative ramifications of e-waste (Robinson, 2009).

One strategy to reduce e-waste is to encourage consumers to purchase electronic products that are environmentally friendly (Ngo, 2008). Research by Ngo (2008) found that consumers were more likely to make purchases based on product labeling design
combining specific environmental details and a numerical rating system. Consumers who would pay more for eco-products believed that eco-friendly products would reduce e- waste variables (Datta, 2011). The purpose of the present study was to assess the level of consumer willingness to pay more for eco-friendly products, and consumers willing to recycle e-waste at drop-off recycling centers. The relationships among quality (Ladhari, Souiden, & Ladhari, 2011), price (Bennett, 2011), and brand loyalty (Muk, 2012) have

been the subject of research for several decades; however, the relationship between these variables and consumer outcomes related to eco-friendly products has not been

extensively explored in the current literature. This paper will add to the current research on product factors and consumer behavior, thus attempting to close a gap in the professional literature regarding eco-friendly products and consumer conservation behavior.

Background of the Problem

Consumers play a large role in the management of e-waste. Due to increased global interest, 90% of American consumers were concerned about the way their purchases affected the environment, and they would be willing to change their purchasing behavior in an effort to improve the environment (Choi, 2012). Consumer interest in the environment had an effect on the success of manufacturing, and manufactures that have associated themselves with environmental causes have rebounded from the recession significantly faster than traditional manufacturers who had not done so. Companies that had profited from developing and selling *green* and *sustainable products* have increased over the years (Berger, 2010). Green sustainable products met the following criteria: sustainability, *cradle-to-cradle design*, *source reduction*, innovation, and viability (Green Technology, 2010). Cradle-to-cradle design is a holistic economic, industrial, and social framework, which seeks to create systems that are not just efficient but essentially waste- free (Watson, Boudreau, & Chen, 2010). For example, General Electric (GE) introduced compact fluorescent light bulbs in 2005. At first, GE captured less than 5% of the market; however, only 2 years later, corresponding to an increase in public awareness of

threats to climate change, GE captured 20% of the market (Banon Gomis, Guillén Parra, Hoffman, & Mcnulty, 2011; Dhiman, Marques, & Holt, 2010).

Companies' leaders are able to increase their competitive position by using eco- friendly products. Bonini and Oppenheim (2008) suggested that GE increased its revenues, enhanced its brands, and strengthened its competitive position because of its increased focus on eco-friendly products and the consumers' positive response to them. Other companies have also seen the green evolution as a way to save and cut the overhead cost. If consumers decided to purchase only eco-friendly products, then manufacturers would have to comply and make more profit (Orange, 2010). Although

the findings indicated that not all consumers believed that they would actually have an impact on the environment, researchers have not established whether enough consumers believe that purchasing eco-friendly products is good for the environment and that this could amount to a viable strategy for reducing e-waste (Peattie, 2010).

Voinea and Filip (2011) analyzed the main changes in consumer buying behaviors during the 2008 North American economic crisis which threatened the collapse of large financial institutions and found that price played a critical role in purchase decisions.

Similarly, Braimah and Tweneboah-Koduah (2011) demonstrated that price ranks ahead of green concerns as a major influence in a purchasing decision. Whereas some

researchers suggested using a cost-based technique to establish the price of a product (Alvarez & Lippi, 2012; Ferson & Lin, 2011), others suggested that the cost of manufacturing was the most important determinant in product pricing (Gordon, 2012). Guth, Levati, and Ploner (2012) argued that full and marginal cost pricing was consistent

with the *satisficing* model. Ryan (2011) explained that the satisficing model showed how a consumer made a purchase decision when faced with an array of similar choices that were all for sale at the same physical location. In this study, I assessed consumer

decisions based on their preference for eco-friendly products versus non-eco-friendly products. In this model, a company objective was not only to maximize profit, but also to earn a satisfactory return on investment. Gordon (2012) and Atkinson (2013) suggested that price would not be the only determinant in the marketing mix. It was currently unknown how the price points of eco-friendly products would affect consumer behavior and whether consumers who believed in the efficacy of eco-friendly products were willing to pay more for those products (Lee, 2011). It was also unclear how willing consumers would be to recycle e- waste at drop-off recycling centers (Saphores, Ogunseitan, & Shapiro, 2012).

Some researchers demonstrated that quality had an impact on consumer behavior as consumer behavior models revealed that quality was a positive antecedent to purchase intentions (Gallarza, Gil-Saura, & Holbrook, 2012; Melnik, Richardson, & Tompkins, 2011; Monroe, 2012). According to the Zeithaml model (as cited in Gallarza et al., 2012) perceived quality and purchase intention are measurable. In the Zeithaml model, the consumer perception of perceived quality shows consumers' judgments about a product's overall superiority or excellence. Although other researchers have studied the effect of consumers' green purchasing behavior using quality attributes as a contributors to the formation of purchase intention (Chen & Chai, 2010; Lindqvist, 2010), researchers do not currently know how quality affects consumers' willingness to pay more for eco-friendly

products or the consumers' willingness to recycle e-waste at drop-off recycling centers. This study will add to the existing knowledge base surrounding these topics.

In addition to the important role that product quality plays, Han and Ryu (2009) concluded that brand loyalty also influences consumer behavior. Research also suggested that customer satisfaction was influenced by physical surroundings and price perception (Ariffin, Bibon, & Saadiah, 2011; Han & Ryu, 2009). Other researchers maintained that these factors had an impact on customer satisfaction and that customer satisfaction depended on customer loyalty (Ladhari et al., 2011). Loyal customers were more likely to recommend products and services and engage in positive word-of-mouth behaviors as a result they spend extra money in service operation than nonloyal customers were more likely to do so (Ladhari et al., 2011). In addition, loyal customers were less costly to serve because they already knew the product or service well and required less information (McKercher & Guillet, 2011). Thus, in recent years, service providers have focused on achieving customer loyalty by delivering superior value and by identifying and enhancing the key factors that determine loyalty (Chen, 2010). The key factors that make up customer brand loyalty are captive customers or convenience seekers and contented and committed customers (Mao, 2010).

Mao (2010) defined captive customers as repeatedly purchasing the same product, service, or brand because of a lack of opportunities to substitute alternatives, whereas convenience-seekers might not respect the brand, but act out of convenience. Mao contended that consumers, who had a positive attitude toward a brand, did not consume

extra products or services. Lastly, committed consumer loyalty was active in both attitude and behavior.

The concept of *green branding* had slowly started to emerge. Green branding consists of a set of attributes and benefits that are associated with reduced adverse environmental impact and the ability to make a positive impression on consumers and raise their concerns for the environment (Wong, 2010). It was unknown how brand loyalty would affect consumers' willingness to pay more for eco-friendly products and the consumers' willingness to recycle e-waste at drop-off recycling centers. In this study, I attempted to clarify the relationships among service quality, price, brand loyalty, and eco-friendly products.

Problem Statement

In 2009 the Environmental Protection Agency (EPA) reported that U.S. consumers generated over 3.19 million tons of *e-waste* including televisions, telephones, video cameras, and computer equipment. In the United States, only 430,000 tons, or 13.6%, of these electronic items had been disposed of and recycled (Environmental Protection Agency, 2009). The power generated from recycling a million laptops can power 3,500 U.S. homes for a year (EPA, 2012). As consumers continue to purchase and replace electronic items, these figures will continue to rise (Rani, Singh, & Maheshwari, 2012). Despite the high rate of e-waste, Sharma and Bagoria (2012) contended that green marketing for eco-friendly products would reach $3.5 trillion by the year 2017, due to catering to environmentally conscious consumers. The general business problem is the

need to manage the high rate of failure of e-waste and to produce more eco-friendly

products, thus not missing profits and a growing eco-friendly customer market. The

specific business problem was that business managers did not have sufficient evidence to develop marketing and pricing strategies reflecting addressing the relationship between the high level of e-waste and the consumer's preference for eco-friendly products.

Purpose Statement

The purpose of this quantitative study was to examine the relationship between the high level of e-waste and the consumer's preference for eco-friendly products and provide business managers with the information they need to develop advertising and pricing strategies. The method used was convenience sampling. The geographic location used for this study was central Florida. The population sampled was comprised of students from University of South Florida (USF) registered on the SurveyMonkey database. I used correlation analysis to determine the relationships between the independent variable consumers' views on eco-friendly products on reducing waste, and consumers' willingness to pay more money for eco-friendly items. Product price perceptions, quality perceptions, and brand loyalty perceptions were the three dependent variables used in this study.

The findings of this study might contribute to social change by encouraging product manufacturers to produce more environmentally friendly products than nonenvironmentally friendly products. This increase could lead to a reduction in e-waste by providing more justification for the proliferation of products with a lower environmental liability rating rather than having products with high environmental liability.

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Nature of the Study

To explore and investigate consumer views on eco-friendly products I used a quantitative correlational design to address the purpose of this study. A qualitative methodology would explore attitudes, behavior, and experiences through such methods as interviews or focus groups. A smaller pool of participants is required to participate since this type of research yields in-depth opinions from participants. Smaller groups allow consumers to express clear ideas and share feelings that do not typically come out in a quantified survey or paper test. In qualitative research, the contact with participants tends to last quite a bit longer than in a quantitative study (Chen & Macredie, 2010). In
contrast, the quantitative methodology is an exploration that aims to measure variables and their relationships (Jandaghi & Matin, 2011). Unlike qualitative research,
quantitative research uses measurable data to determine facts and patterns. A quantitative method offered the best approach for this study because data gathering from a large sample via survey and collecting quantitative data allowed me to determine consumer perceptions and intentions though statistical means. I administered an online survey through SurveyMonkey (see Appendix A) to University of South Florida members of the SurveyMonkey database, and the data gathered helped to assess consumer perspectives on eco-friendly products.

The design of this study was nonexperimental and correlational. In an experimental design, the researcher would measure the impact of an intervention on an outcome (Chen & Macredie, 2010; Smith, Wright, & Breakwell, 2011). Without a
random assignment, manipulation, or treatment, nonexperimental investigations are

possible (Holbrook, 2011). The correlational design was appropriate for this study to find answers to the research questions, which required estimating the degree of association between variables (Chen & Macredie, 2010).

Although correlational methods cannot imply causation, correlation does allow for the determination of the strength and nature of the relationship between two variables.

Only a small number of empirical investigations explore what motivates a consumer to purchase eco-friendly products, the present study provides a description of the consumers' understanding of whether eco-friendly products are suitable for the

environment, whether they are beneficial in reducing e-waste, and whether consumers would be willing to pay more for eco-friendly products.

Research Questions

The research question this study will answer is how does the high level of e-waste correlate with consumer preference for eco-friendly products? The following research questions examined consumers' views on eco-friendly product quality, eco-friendly products price, and eco-friendly product brand loyalty and how these views would relate to consumers' willingness to recycle e-waste at drop-off recycling facilities and

consumers' willingness to pay more for green products.

RQ1: To what extent does eco-friendly product quality relate to customer willingness to recycle e-waste at drop-off recycling facilities?

RQ2: To what extent does eco-friendly product price relate to customer willingness to recycle e-waste at drop-off recycling facilities?

RQ3: To what extent does eco-friendly product brand loyalty relate to customer willingness to recycle e-waste at drop-off recycling facilities?

RQ4: To what extent does eco-friendly product quality relate to customer willingness to pay more for green products?

RQ5: To what extent does eco-friendly product price relate to customer willingness to pay more for green products?

RQ6: To what extent does eco-friendly product brand loyalty relate to customer willingness to pay more for green products?

RQ7: To what extent do gender and age differences relate to customer willingness to pay more for green products?

RQ8: To what extent is a relationship extant between e-waste and eco-friendly product purchasing?

Hypotheses

The null hypotheses and alternative hypotheses set forth this study were as follows:

*Ho*1: There is no significant statistical relationship between eco-friendly product quality and customer willingness to recycle e-waste at drop-off recycling facilities.

*Ha*1: A significant statistical relationship exists between eco-friendly product quality and customer willingness to recycle e-waste at drop-off recycling facilities. *Ho*2: There is no significant statistical relationship between eco-friendly product price and customer willingness to recycle e-waste at drop-off recycling facilities.

*Ha*2: A significant statistical relationship exists between eco-friendly product price and customer willingness to recycle e-waste at drop-off recycling facilities.

*Ho*3: There is no significant statistical relationship between eco-friendly product brand loyalty and customer willingness to recycle e-waste at drop-off recycling facilities.

*Ha*3: A significant statistical relationship exists between eco-friendly product

brand loyalty and customer willingness to recycle e-waste at drop-off recycling facilities.

*Ho*4: There is no significant statistical relationship between eco-friendly product quality and customer willingness to pay more for green products.

*Ha*4: A significant statistical relationship exists between eco-friendly product quality and customer willingness to pay more for green products.

*Ho*5: There is no significant statistical relationship between eco-friendly product price and customer willingness to pay more for green products.

*Ha*5: A significant statistical relationship exists between eco-friendly product price and customer willingness to pay more for green products.

*Ho*6: There is no significant statistical relationship between eco-friendly product brand loyalty and customer willingness to pay more for green products.

*Ha*6: A significant statistical relationship exists between eco-friendly product brand loyalty and customer willingness to pay more for green products.

*Ho*7: There is no significant statistical relationship between gender, age, and customer willingness to pay more for green products.

*Ha*7: A significant statistical relationship exists between gender, age, and customer willingness to pay more for green products.

*Ho*8: There is no significant statistical relationship between e-waste recycling, income, and age.

*Ha*8: A significant statistical relationship exists between e-waste recycling, income, and age.

Survey Questions

All survey information is completely confidential. Your responses are very important. Thank you for participating in the survey.

Please circle the option that applies to you

Section 1 1 2 Demographics		**3**	**4**	**5**
1. Your gender male Female				
2. Your age range 18-24 25-31			3 2 - 3 8	39-45 46-52
3. Education level high some		scho ol colle ge – grad uate no degre e	A A d e g r e e	BA/ BS Master's degree Degree or higher
3b. Income	0-24,999 50,000-99,999	25,000-49,000		100,000- 150,000-+ 149,000

Please circle the option that applies to you

Section 2 - Willingness to

pay more for green products Never **Rarely** **Sometimes** **Often** **Always**

4. I have used green 1 2 product before. 3 4 5

5. I believe that green products are more expensive than nongreen products.	2	3	4
6. I am willing to pay more for green products.	2	3	4

7. Indicate the percentage between between between betwee between you are willing to pay for 1% - 11% - 21% - n 31% - 41% - green products 10% 20% more 30% more 40% 50% more more more

8. I believe the price of 1 2 3 4 5 green products effect my decision to purchase them.

Disagree Disagree Neutral Agree Agree

Strongly Strongly

9. ~~I believe the quality of 1 2 3 4 5~~ green products effect my decision to purchase.

10. I believe that green 1 2 3 4 5 products are of better quality than nongreen products.

11. I would recommended green products based on quality to my friends.

12. I would switch to 1 2 3 4 5 green products if they were more available at my local store.

13. I would switch to 1 2 3 4 5 green products if they were promotional deals such as TVs ads and local printed coupons available at my local store.

14. I am more likely to buy a certain product because it has a brand name I have used in the past. 1 2 3 4 5

Select the option that best describes you best

Section 3

Willingness to Recycle

e-Waste	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
15. I recycle electronic devices or e-waste (products such as computers, televisions, VCRs, stereos, copies, fax machines, cellular phones as opposed to discarding them as trash).	1	2	3	4	5

Select the option that best describes you best

	Strongly				
16. I would start recycling electronic devices if I receive a financial incentive for doing so.	1	2	3		
17. If I had the choice of discarding an old electronic device I would use a drop-off recycling facilities.	1	2	3		
18. I would buy and recycle electronic devices if more drop-off recycling facilities were available in my area.	1	2	3		

Disagree	Disagree	Neutral	Agree	Strongly Agree
			4	5
			4	5
			4	5

19. I would you buy and recycle electronic devices if there was an awareness campaign in my area about the dangers of not recycling.	1 2 3 4 5

Theoretical or Conceptual Framework

Consumer behavior theories and buying behavior in advertising were the theoretical frameworks used in this investigation. Through the results of this research, I
will explain an aspect of buyer behavior.

Consumer Behavior Theories

Consumer behavior theories cover two areas: consumer perception and collective consciousness (Cohen, n.d.). The consumer perception theory suggests that consumers understand how perception of a product or service influences their behavior. Researchers studying consumer perception explored branding, buyer's remorse, positioning, repositioning or depositioning, sensory perception and value, and quality (Kher et al.,
2010; Monday, 2011; Rosenzweig & Gilovich, 2011).

Perception relates to the consumer's ability to make some sense of reality from external sensory stimuli (Rosenzweig & Gilovich, 2011). Branding involves imposing an identifying feature on products or services so that they would be easy to identify by the public (Kher et al., 2010). Positioning occurs when marketers try to build up their brand. Positioning involves actively creating images that are both appealing to and recognizable by certain target groups. Repositioning relates to altering the image to appeal to a larger market of consumers to help influence a larger target market, whereas depositioning

relates to the practice of trying to devalue a substitute (Timofte, 2013). Value relates to the customer's perception that a product's benefits outweigh its cost. These benefits can be either qualitative or quantitative. Quality relates to value, while taking into account

measuring goods and services against the competition (Timofte, 2013). Buyer's remorse relates to a feeling of regret that occurs after one has made a purchase and, then, realizes that one has missed a better opportunity to buy a product or service (McKnight, Paugh, McKnight, & Parker, 2010).

In the cognitive dissonance theory, cognition (e.g., attitudes, desire, intention) is dissonant, or conflicted, when consumers are unable to keep away from a situation, as well as from information, that might add dissonance (Sahgal & Elfering, 2011). This is apparent when a consumer chooses one brand over another. Similarly, cognitive dissonances that occur after a purchase is post purchase dissonances (Bose & Sarker, 2012). Saleh (2012) was able to show that post purchase regret comes from low consumer satisfaction, and low satisfaction leads to no-repurchase intention, the tendency to shift to alternative brands,

and negative word-of-mouth reports about the brand in

question.

Theories of collective consciousness reflect the shared beliefs and attitudes held

within a society. Researchers such as Dekker, Hummerdal, and Smith (2010); Filippakou and Tapper (2010); and Jung (2012) suggested that an autonomous individual would come to identify with a larger group. While this was true for some groups (as for example in Japan), other groups (for instance in the United States), had a more self- aggrandizing need over others (Cohen, n.d.). Self-aggrandizing nations had a high

opinion of them and viewed themselves as very different from others. Collective- consciousness information helped marketers target their market by appealing to

consumers' individualism in the United States but not in other parts of the world.

Buying Behavior Theories

Some theories related to buying behavior include the generic theory of buying behavior, cultural theory of buying behavior, and the environmental theory of buying behavior. These three theories are explaining how consumers tend to buy products and services. Consumers would go through a series of steps before making a purchase and customer decisions depend on a number of different factors such as cultural influences,

personality, and environmental elements (Lehtinen, 2012).

The generic theory of buying behavior highlights the basic procedures followed

by consumers when making a purchase. The customer would recognize a need to make a purchase and start researching potential products and pricing. An example would be a customer about to buy a television set: He or she would evaluate features, benefits, and pricing, and finally make a decision to purchase. Additionally, the way the customer

feels about the brand would also tell how likely the customer is to purchase from the same company again. In a 2000 study, 89% of teenagers said that they "would likely switch brands to one associated with a good cause" (Hyllegard, Yan, Olga, & Attmann, 2010).

Proponents of the cultural theory of buying behavior highlight the cultural influences shown to affect the buyers' behavior (Penn, n.d.). An individual's cultural beliefs and values develop over time and within the context of a community. These

values and beliefs lead to certain purchases (Yuan, Song, & Kim, 2011). Researchers have explored cultural variables and their effects on online shopping (Ha & Stoel, 2012) and brand loyalty (Carman, 2011).

Supporters of the environmental theory of buying behavior suggested that purchasers would buy different items based on different situations and variations in customer knowledge. For example, a buyer in the United States would buy winter

clothes in November or December and not during the summer (Bloch, 2011). Mazar and Zhong (2010) used environmental theory to explore the occurrence of green purchase decisions using socio demographic variables and personality indicators that measured environmental consciousness.

Operational Definitions

This section clarifies terms in this study. Some are topic specific, whereas others might convey a variety of different meanings in relation to other subject matter.

e-Waste: A popular, informal name for electronic products nearing the end of their useful life. Computers, televisions, VCRs, stereos, copiers, and fax machines are common electronic products (California Department of Resources Recycling and Recovery, 2013).

Green: The term *green* encompasses a variety of environmental concerns. Some of the current concerns relate to the depletion of natural and scarce resources. Examples include bad and excessive production and consumption activities, waste accumulation, and emissions because of production processes, the use of hazardous materials, fast replacement, consumption patterns and usage, and usage and disposal habits. There are

also unhealthy products and side effects arising from unhealthy environments, the use of improper materials, improper choices, and uses due to uninformed consumer decisions, unsafe or unpleasing work environments due to inadequate safety management, and lack

of appropriate aesthetics (Chen, 2010).

Green sustainability products: Such products meet the following criteria: (a) sustainability by meeting the needs of society in ways that can continue indefinitely into the future without damaging or depleting natural resources, and (b) sustainability meeting present needs without compromising the ability of future generations to meet future needs
(Green Technology, 2010).

Greenwashing: Greenwashing occurs when a company or organization spends

more time and money claiming to be green through advertising and marketing than through implementing business practices that minimize environmental impact. Some consider it an example of whitewashing, but with a green brush (Greenwashingindex.com, 2011).

Innovation: Innovation involves developing alternatives to existing technologies, whether fossil fuel or chemical-intensive agriculture, which have demonstrated to damage health and the environment (Green Technology, 2010).

Source reduction: The attempt to reduce waste and pollution by changing patterns of production and consumption (Green Technology, 2010).

Sustainable products: Such products reduce the impact on the environment by

virtue of being responsibly sourced products (e.g., those that are either renewable or sustainably harvested). A sustainably harvested source material does not harm the

surrounding area, pollute the air, or permanently reduce the supply (Sebhatu, Enquist, Johnson, & Gebauer, 2011).

Viability: Viability involves creating a center of economic activity around technologies and products that benefit the environment, speeding their implementation,
and creating new careers that truly protect the planet (Green Technology, 2010).

Assumptions, Limitations, and Delimitations

Assumptions

This study contains two foundational assumptions. The primary assumption was that participants would be honest in their responses to the survey. Honest responses were essential to the integrity of the study, and I made every effort to elicit honest answers.

For example, I would assure participants that their responses were confidential and would remain anonymous. Additionally, the survey questions were short to keep participants interested and focused on providing the most pertinent responses. The survey was also pilot tested to ensure that questions were straightforward and easy to understand and that respondents were likely to answer honestly and appropriately.

A second assumption was that consumers were aware of recycling efforts and able to answer questions about the likelihood of their practicing recycling. There was an assumption that participants would know the location of their nearby recycling centers. Daoud (2011) stated that American households account for most of the electronic market, but they recycle only 26% of the time, thereby producing an enormous amount of e- waste. The assumption that consumers were becoming more aware of the effect of their

spending habits on the environment and the trend that they were making changes to protect natural resources for future generations appears to be accurate (Spiegel, 2011).

Limitations

There were several potential limitations in this study. One limitation of the survey was administration within an online database so that only participants who had access to the Internet and had a survey account would able to participate. I analyzed a large number of responses by age and gender representing a diverse pool of online USF student registered with Survey Monkey. This provided a level of validity to the data analysis. Another limitation was the availability of persons to participate. Although participants would receive no incentives for participation, the survey was brief in order to encourage responses. Participants received a number of reminders to encourage them to take part in the survey. Another limitation was the potential for a social desirability bias. Respondents might indicate that they were more likely to recycle or pay more for a green item because they considered it an environmentally conscious activity. This was consistent with information found through the literature review (Lee, 2011). With this study, I also explored whether consumer's attitude and behavior, environmental consciousness and willingness to pay more for green products still prevailed. Lee was able to prove those college students who were more concerned about the environment tended to be willing to pay more for green apparel. The quantitative methodology also limits exploring the conclusions from an investigation. In nonexperimental research, causality cannot be determined. The correlational method allows for the examination of

significant statistical relationships to be reported (Leedy & Ormrod, 2010). Information on these relationships helps to close a gap in the professional literature.

Delimitations

A delimitation of the study was the selection of products within the consumer- electronics industry; thus, the results might not apply to products from other industries.

Another delimitation was that the sample consisted of persons who currently reside in the state of Florida; the results might not generalize to individuals who are not Florida residents. Last, University of South Florida students between 18 and 24 years of age, who have registered as members of SurveyMonkey, made up the sample. Accordingly, the results might not generalize to individuals outside this university and age range or to persons who are not members of SurveyMonkey. Based on E-Marketer (2008) research suggesting that this demographic shows the greatest tendency to integrate green behavior into their daily lives, I chose this age range for my research.

Transition

Researchers indicated that consumers were becoming more environmentally conscious than ever before as information about the scarcity of natural resources increasingly entered the public discourse. Consequently, companies are starting to price and manufacture products for emerging market with environmentally conscience consumers in mind. With their empirical research, researchers had clearly demonstrated the importance of pricing in consumers' decision-making behavior; however, there is a paucity of literature on the relationship between environmental factors and pricing, quality, brand loyalty, and the relationship between understanding how eco-friendly products affect the environment and consumers' willingness to pay more for them.

The purpose of this quantitative correlational study was to describe consumer behavior related to eco-friendly products and determine if a relationship existed between consumer perceptions and behaviors regarding eco-friendly products. Results from the current investigation might contribute to the field of business practice by increasing the understanding of product manufacturers and by providing information on the strength of the relationship between price and a product's environmental impact and its effect on consumer behavior. The results from this study might also contribute to social change encouraging product manufacturers to better price their environmentally friendly products in order to sell more, which in return could create more social benefits for the community by reducing e-waste. The results of the current investigation might also provide relevant information to consumers who are willing to pay more for a product

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Research Method and Design

Research Method

The three methodological approaches to conducting research are quantitative, qualitative methods and mixed method. (Marczyk, DeMatteo, & Festinger, 2010). In qualitative research, one could explore attitudes, behaviors, and experiences with the use of such methods as interviews or focus groups (Church & Ekberg, 2013). The yield of qualitative research consists of in-depth opinions from the participants who usually number far fewer than in quantitative studies, but the contact with the former tends to last much longer (Chen & Macredie, 2010). By contrast, in quantitative research, one can quantify attitudes and behaviors or measure variables (Jandaghi & Matin, 2011). Unlike qualitative research, quantitative research uses measurable data that rely, facts, and patterns. The quantitative approach was best suited for this study because I intended to obtain data from a large sample via questionnaires assessing consumer behaviors and perceptions using numerical data. I also planned to use statistical means to quantify, measure, and analyze the data and express the results numerically.

Quantitative methodology also allowed me to test multiple variables of costumer behavior

reported by the sample to determine which variables have a significant effect on e-waste reduction.

Chen and Chai (2010) distributed 200 questionnaires to undergraduate students at a major private university in Malaysia to assess their attitudes toward the environment and green products and to measure the relationship between attitude toward the environment and the use of green products. Results indicated that there was no difference according to gender in the students' attitude toward the environment and their

use of green products. One important finding through multiple linear regression analysis was that how consumers view both the government's role and their personal norms toward the environment contributed significantly to their attitude on purchasing green products and recycling e-waste.

Lee (2011) described how researchers such as Laroche used a conceptual framework that considered many factors such as demographics, knowledge, values, attitudes, and behavior that influence consumers' willingness to pay more for environmentally friendly products. Laroche (as cited in Lee, 2011) disseminated 2,387 questionnaires to selected household in a North American city. The questionnaires included Likert scales and measured participant responses to several questions. The first part of the survey collected demographic information (i.e., gender and age), the second part measured consumer attitudes toward a variety of topics related to the environment, and the last part measured behaviors of the respondents toward the environment. One significant finding was that values played an important role in the consumers' willingness to spend more for green products.
A mixed method was not appropriate for this study since there was insufficient time to explore the qualitative rationale for the respondents' responses.

Research Design

In the current study, I used a quantitative design. Smith et al. (2011) and

Komesaroff (2012) explained that quantitative research designs fit two basic types: experimental and nonexperimental designs. Nonexperimental designs consist of

descriptive research and correlational studies, whereas experimental designs include experiments and causal-comparative or quasi-experimental research.

The first design, descriptive research, is to determine and describe the status of an identified variable. Descriptive research involved the gathering of data that describe events, and then the data collection organization, tabulated, depicted, and described (Graney, Martínez, Missall, & Aricak, 2010). Tom and Eves (1999) provided an example

of this type of descriptive research, where 120 pairs of advertisements were collected to test whether they used rhetorical figures. The researchers found that 45% of the advertisement had used some form of rhetorical figures. The conclusion was that advertisements that used rhetorical figures performed better in terms of recall and persuasion than advertisements that did not.

The second design, and the method used in this study is correlational research. A

study qualifies as nonexperimental and correlational if the data lend themselves only to interpretations about the degree to which certain things tend to co-occur or relate to each other. Chang and Zauszniewski (2011) used a nonexperimental, cross-sectional, correlational design to examine the interrelationships among a situational factor (maternal depression), learned resourcefulness (LR), and target behaviors (depression and adaptive functioning in school-aged children). The major advantage of a correlational design in

this study was that the collected data were easy to interpret. The major disadvantage of the correlational designs was that the reason for the associations discovered was unclear. As the purpose of the current study was to gather information on the relationships among consumer perceptions, consumer behaviors, and demographic variables, the correlational

design was appropriate.

The third design, experimental research, is an attempt to maintain control over all factors that might affect the results of an experiment. In doing so, the researcher attempts to determine or predict what might occur (Li, Hung, & Tangpong, 2012). Some of the steps involved in experimental research are identifying and defining the problem,

formulating hypotheses and deducing the consequences, constructing an experimental design that represents all the elements, conducting the experiment, compiling raw data and reducing it to usable forms, and applying an appropriate test of significance. Some of the advantages of this method are researcher control over the variables by determining the ideal population for achieving clear results (Weathington, Cunningham, & Pittenger, 2012). Some of the disadvantages of this method are potential personal bias of the researcher, the sample might not be representative, and the results might apply only to one situation and might be difficult to replicate (Weathington et al., 2012). Gruppen (2008) who examined the dispersion of airborne infectious viruses and the development of brain pathology because of exposure conducted an example of this type of research.

The researcher used lab rats to perform this study and controlled all the variables. The fourth design, causal-comparative or quasi-experimental methodology,

identifies cause-and-effect relationships between independent and dependent variables (Smith et al., 2011). D'Onofri, Lahey, Lichtenstein, and Turkheimer (2013) conducted an example of this type of research. The researchers explored how genetic and biological influences, environmental risks, and behavior act and interact across development to result in psychological and physical health problems. The researchers were able to show,

by examining past studies, that a need existed for more quasi-experimental studies to further the understanding of the true causes of human health and development.

Population and Sampling

The focus of this study was to describe self-reported consumer behaviors related to eco-friendly products to determine if a relationship exists between consumers' perceptions related to eco-friendly products and their willingness to pay more for such products. The survey target audience was USF Students between the ages of 18 and 24 years from the SurveyMonkey database of respondents. According to E-Marketer (2008) research, this demographic had the greatest tendency to integrate green behavior into their daily lives when compared to other age groups. As reported in the *University of South Florida Fact Book,* the total student population for the 2011 academic year was 47,214 (USF System, 2011), and of those students, 600 were registered in the SurveyMonkey database.

Eligibility criteria for participating in this study required that the respondent be a student at USF, between 18 and 24 years of age, a registered user of SurveyMonkey, and live in the United States. Of the entire 600 USF student population registered on the SurveyMonkey database, I invited 381 potential participants. The only exclusion criterion used specified age, in that participants had to belong to the 18 to 24 year age range

Data Collection

Data Collection Instruments

I developed a survey for data collection (see Appendix A). Existing measurement instruments were not appropriate for this study, and customized instruments by variables were different from study to study. Therefore, for this study a new instrument was
developed.

Before launching the data collection, I performed a pilot survey to ensure the validity of the questionnaire. Five participants received the questionnaire via e-mail from SurveyMonkey.com to make sure that the participants clear and readily answered the questions. The results from the pilot survey ensured instrument validity. The questions' purpose was to examine consumer perspectives on product price, product quality, and brand loyalty, as well as self-reported consumer behavior of paying more for an item and willingness to drop off e-waste. Also collected were demographic variables (i.e., age and gender). With the pilot study, I also wanted to make sure that the survey was comprehensive and had a high level of content validity. High content validity was a necessary attribute of the questionnaire survey in this study. Each survey question corresponds to one of the study variables and the research questions. The rating scale for each question indicates a respondent's level of agreement or disagreement with the statement. For example, the response to Question 4 on the survey ("I have used green products before") would yield a score from 1- 5. This score became the data for data analysis of the applicable variable. A score of 1 would indicate a low level of agreement, whereas a score of 5 would indicate a high level of agreement.

Data Collection Techniques

Study variables and questionnaire items. The purpose of the study was to evaluate relationships among consumer perspectives on product price, product quality,
and brand loyalty; consumer behaviors of paying more for an item and willingness to drop off e-waste at drop-off centers; and demographic variables of age and gender. To that end, a researcher-developed questionnaire assessed respondents' perceptions, behaviors, and demographic variables.

Product price perspectives. The two survey questions used in this research helped to elevate participants' perspectives on price. Survey questions pertaining to price perceptions were Questions 5 and 8. Responses to these items would be in the form of a 5- point Likert-type scale where 1 = *never*, and 5 = *always.* The calculation score will be the total for the responses of the two questions and the total product price perspective.

Product quality perspectives. The three survey questions used in this research

helped to elevate participant's perspectives on quality. Survey questions pertaining to product quality perceptions were Questions 9, 10, and 11. Responses to these items would be in the form of a 5-point Likert-type scale where 1 = *strongly disagree*, and 5 = *strongly agree.* The calculation score will be the total responses of the three questions and the total product price perspective.

Perceptions on brand loyalty. The four survey questions used in this research helped to elevate participant's perspectives on brand loyalty. Survey questions pertaining brand loyalty perceptions were Questions 12, 13, and 14. Responses to these items will be in the form of a 5-point Likert-type scale where 1 = *strongly disagree*, and 5 =

strongly agree. The calculation score would be the total responses of the four questions and the total product price perspective.

Consumer behaviors. I used survey questions to measure consumers' self- reported behaviors of willingness to pay more for a green items and willingness to recycle e- waste. The survey question used to enquire about willingness to pay more for green products was Question 6. Responses to this item will be in the form of a 5-point Likert-type scale where 1 = *never*, and 5 = *always*. For Question 6, 1 = *strongly disagree*, and 5 = *strongly agree*. The calculation score will be the total responses of the 10 questions and the total product price perspective.

Questions 18 on the survey inquired about willingness to recycle e-waste.

Responses to this item will be in the form of a 5-point Likert-type scale where 1 = *never*, and 5 = *always*. The calculation score will be the total responses to Question 18 and the total product price perspective.

Following approval by the IRB of Walden University, I sent an e-mail invitation

to the target sample of 381 randomly selected potential USF participants registered with SurveyMonkey (see Appendix B). The participants first had to agree to the informed- consent conditions (Faden, Beauchamp, & Kass, 2014), and then they would move onto the survey link. Participation was voluntary, and subjects could quit the study at any time. The participants did not need to provide any identifying information.

Measuring the first three items of the survey established a relationship among product price, product quality, and brand loyalty and labeled a measure either as effective or ineffective. A product price was effective if the price of the product inspired the

consumer to pay more for an item and drop it off at an e-waste drop-off station at the end of its usefulness. Once a consumer deemed a product effective or ineffective, I

conducted a correlation analysis to determine if the remaining survey items had a positive correlation with the consumer behaviors of paying more for an item and willingness to drop off e-waste. The collection and validity test data from the pilot survey were able to measure the internal consistency for each question in the survey.

After obtaining IBR approval, I conducted the pilot study began. The pilot study participants had 2 weeks to submit their comments for analysis and validation of the research questions. After the completion of the pilot study, the online survey participants also had 2 weeks to respond to the survey. When the survey responses did not reach the

set target number within 2 weeks, I sent a reminder e-mail to the invited participants. The survey closed when 381 respondents had taken the survey; then, the data collected with SurveyMonkey went to the Statistical Package for the Social Sciences (SPSS) for analysis. A summary of the analysis of raw data is available Section 3.

Data Organization Technique

Following receiving approval from IRB, I distributed an e-mail invitation targeting 381 randomly selected potential participants from SurveyMonkey. The SurveyMonkey (2013) website reported that more than 30 million unique subjects responded to SurveyMonkey surveys each month. This online resource collected information from a large group of participants in a relatively short period about

purchasing habits.

The SurveyMonkey Contributor Member database consisted of 30 million members. The selection of participants was from SurveyMonkey Contributor Member database, for a target sample of 381 participants. The participants knew that they could

stop their participation at any time; they provided their answers on a voluntary basis. I kept the responses confidential, and the participants remained anonymous. I analyzed the collected data using SPSS software (Appendix A).

Data Analysis

I used SurveyMonkey for data collection in this quantitative study. Access to the survey on the SurveyMonkey website is password protected. As the researcher, I was the only one able to check on the number of responders and review their responses. Once the participants had completed the survey, the responses went from SurveyMonkey to the SPSS software for analysis. I ensured that the SPSS data file would take each subject's scores on each of the 19 survey questions, and I then analyzed the results.

I used SPSS Version 17 to perform data organization, analysis, calculated, and reported descriptive and inferential results. Descriptive statistics included the means,

standard deviations, and the ranges of variables (i.e., responses to each question). I used Spearman correlation coefficients for RQs 1-6 and multiple regressions models for RQs

7-8 to analyze and evaluate the data and to answer the research questions.

To evaluate the answers to Research Question 1, I used Spearman correlation

analysis to analyze the relationship between the total product quality score and willingness to recycle e-waste at drop-off recycling facilities. To evaluate answers to Research Question 2, I calculated the Spearman correlation score using the total product

price perception scores and willingness to recycle e-waste at a drop-off recycling facilities. To evaluate answers to Research Question 3, I calculated the Spearman

correlation coefficient to analyze the correlations between the total brand loyalty scores and willingness to recycle e-waste at a drop-off recycling facility scores. To evaluate answers to Research Question 4, I calculated the Spearman correlation to analyze the relationship between the product quality scores and willingness to pay more for a green product. To evaluate answers to Research Question 5, I calculated the Spearman correlation to analyze the relationship between total product price perception scores and willingness to pay more for a green product. To evaluate Research Question 6, I calculated the Spearman correlation to analyze the relationship between total brand loyalty scores and willingness to pay more for a green product. To evaluate answers to Research Question 7, I conducted a multiple regression analysis using age and gender as predictor variables and customer willingness to pay more for green products and customer willingness to recycle e-waste at drop-off recycling facilities as criterion variables. Finally, to evaluate answers to Research Question 8, I conducted a multiple regression using e-waste as the predictor variable and eco- friendly product purchasing as criterion variable.

Reliability and Validity

Reliability

I used Cronbach's alpha to test the internal consistency of the survey instrument for the subject population. There are four general classes of reliability estimates. Firstly, Inter- Rater or Inter-Observer Reliability, assesses the degree to which different

raters/observers, gives consistent estimates of the same phenomenon. Secondly, Test- Retest Reliability assesses the consistency of a measure from one time to another.

Thirdly, the Parallel-Forms Reliability assesses the consistency of the results of two tests constructed in the same way from the same content domain. Finally, Internal Consistency Reliability assesses the consistency of results across items within an instrument. Internal consistency reliability assesses the reliability of the summation scale and several items from a total score (Kurtz, McCrae, Terracciano and Yamagata, 2010). Some of the tests used to calculate these results are the Average Inter-item Correlation, Average Item total Correlation, Split-Half Reliability, and Cronbach's Alpha. Cronbach's alpha tests the inter- item reliability of the survey questions to examine their relationship to each other. The coefficient alpha measures the degree to which the questions examine the same core constructs. Cronbach's alpha values measure between 0 and 1, where the acceptable values of alpha ranges from 0.70 to 0.95 (Dennick & Tavakol, 2011. The Cronbach's alpha value for this study was 0.685. Cronbach's alpha value means that the survey questions were adequate per the internal consistency reliability coefficient. One of the means for ensuring the validity and reliability was to assure each respondent could only take the survey once. The survey questions were the same for all respondents, and the survey remained opened for 2 weeks to ensure that respondents' experience was consistent.

Validity

There are two types of study-centric validity, internal validity, and external

validity (Thomas, Nelson, Silverman, & Silverman, 2010). Internal validity refers to

both how well a study is being conducted (research design, operational definitions used, the measurement of variables, what is being measured, among other considerations) and how confidently one might conclude that the observed effect(s) are attributable to the

independent variable and not some extraneous ones (Kidd & Morgan, 2010). External validity represents the extent to which a study's results can apply to other people or settings (Thomas et al., 2010).

I used the online survey instrument to determine the relationships among

consumer perspectives, consumer behavior, and demographic variables, and claim no causality between the study's variables. The use of an online survey allowed for wide selection of candidates from University of South Florida.

Applying my knowledge of the green industry and the geographical region, I ensured that all of the necessary, fundamental elements of the survey applied.

Additionally, the distribution of the pilot survey to five participants not associated with the study enabled me to examine the clarity of the measurement instrument (i.e., the survey. The purpose for the pilot study was to ensure that the instrument was clear, comprehensible, and easy to understand. If the results of the pilot study had revealed some question clarity issues, I would have applied corrective measures to all such issues, before using the questionnaire in the main data collection stage.

Findings

The total number of respondents in this study was 313. Pearson's correlation coefficient measures the linear relationship between two normally distributed variables, that is, the line of best fit, whereas Spearman's correlation measures the relative rank order of the points. The selection chosen was Spearman's correlation, in preference over

I used a non-parametric method for data analysis, which does not require parametric assumptions because interval data conversion to rank-ordered data. The Spearman's rank correlation provides a distribution free test of independence between two variables. This method helps to improve validity in the study since handling rank-

Pearson's because Spearman's correlation coefficient does not require any assumptions about the frequency distribution of the two variables. Specifically, the variables reflect ordinal data and the calculation of Spearman's correlation results do not assume that the relationship between the variables is linear (Lund, 2013).

Spearman's correlation coefficient is a statistical measure of the strength of a *monotonic* relationship between two variables. If the value of one variable increases, so does the value of the other variable, or, conversely, as the value of one variable increases, the value of the other variable decreases. Spearman's rank correlation coefficient, or Spearman's rho, denoted by the Greek letter ρ (rho), or as rs, which is a nonparametric measure of statistical dependence

between two variables. One can verbally describe the strength of the correlation using the

following guide for the absolute value of rs where 0.00-0.19 expresses a very weak

relationship, 0.20-0.39 expresses a weak relationship, 0.40-0.59 expresses a moderate

relationship, 0.60-0.79 expresses a strong relationship, and 0.80-1.0 expresses a very strong relationship (Lund, 2013).

Consideration 1: Customer Willingness to Recycle e-Waste at Drop-Off Recycling Facilities

Research Question 1. To what extent does eco-friendly product *quality* relate to customer willingness to recycle e-waste at drop-off recycling facilities?

Research Question 1 addressed respondent views on products reliability and assessed whether respondent would keep or recycle a product based on the available of having recycling facilities. This question's aim was to capture the buying and recycling habit of respondents. The two survey items related to Research Question 1 were:

item 15: I recycle electronic devices or e-waste (products such as computers, televisions, VCRs, stereos, copiers, fax machines, and cellular phones) as opposed to discarding them as trash.

Item 18: I would buy and recycle electronic devices if more drop-off recycling facilities were available in my area.

This research question addresses how likely, *based on quality*, customers recycle devices and if they consider using a local drop-off recycling facility. To answer Research Question 1, I tested the following hypotheses:

*Ho*1: There is no significant statistical relationship between eco-friendly product quality and customer willingness to recycle e-waste at drop-off recycling facilities.

*Ha*1: A significant statistical relationship exists between eco-friendly product quality and customer willingness to recycle e-waste at drop-off recycling facilities.

Table 1 shows the results of the Spearman's correlation test for customer willingness to recycle e-waste at drop-off recycling facilities and eco-friendly product quality. Product quality is defined through two primary dimensions, product features (e.g., e-friendly) and the products that are reflecting the intended features. Research Question 1 addresses respondent views on

products quality/reliability and assess whether respondent would keep, get rid or recycle a product based its value at a recycling facilities. The aim is to capture the buying and recycling habit of respondents when it comes to assessing the quality of a product.

table 1.

Spearman's Correlation Test for Customer Willingness to Recycle e-Waste at Drop-Off Recycling Facilities and Eco-Friendly Product Quality

Questions from the Questionnaire		I recycle electronic devices or e-waste (products such as computers, televisions, VCRs, stereos, copies, fax machines, cellular phones as opposed to discarding them as trash).	I would buy and recycle electronic devices if more drop-off recycling facilities were available in my area.
Spearman's ρ	I recycle electronic devices or e-waste (products such as computers, televisions, VCRs, stereos, copies, fax machines, cellular phones as opposed to discarding them as trash).	Correlation Coefficient	-.213*
		Sig. (2-tailed)	.
		N	0
	I would buy and recycle electronic devices if more drop-off recycling facilities were available in my area.	Correlation Coefficient	-.213*
		Sig. (2-tailed)	0
		N	313

N	313	313

Note. *I tested the correlation at the significance level of 0.05.

Per the values in the table above *rs* = -.213, *n* = 313

Because the calculated significance was less than 0.05 or 1.437E-4, I rejected the null hypothesis (*Ho*1). The rejected hypothesis stated that there is no significant statistical
relationship between eco-friendly product quality and customer willingness to recycle e-waste at drop-off recycling facilities.

Quality did not have a positive correlation with customer willingness to recycle e- waste at drop-off recycling facilities and this could be the strength expressed by this variable, that is, product quality. Product quality and reliability have steadily improved

over the years; Energy Star-qualified refrigerators currently last longer than they did 5 years ago. Refrigerators that were sold in 2010 are 20% - 30% more energy efficient than nonqualified refrigerators and, at least, 40% more energy efficient than nonqualified refrigerators sold in 2001 (General Electric, 2014). The change in quality of the product has allowed consumers to keep products longer and delay recycling.

Research Question 2. To what extent does eco-friendly product *price* relate to customer willingness to recycle e-waste at drop-off recycling facilities?

The two survey items related to Research Question 2 were:

Item 16: I would start recycling electronic devices if I received a financial incentive for doing so.

Item 17: If I had the choice of discarding an old electronic device I would use a drop-off recycle facilities.

This research question asked would consumers use the local drop-off recycle facilities if product pricing that included a financial incentive is available. To answer Research

Question 2, I tested the following hypotheses.

*Ho*2: There is no significant statistical relationship between eco-friendly product price and customer willingness to recycle e-waste at drop-off recycling facilities.

*Ha*2: A significant statistical relationship exists between eco-friendly product price and customer willingness to recycle e-waste at drop-off recycling facilities.

Table 2 shows the results of the Spearman's correlation test for customer willingness to recycle e- waste at drop-off recycling facilities and eco-friendly product price.

Table 2.

Spearman's Correlation Test for Customer Willingness to Recycle e-Waste at Drop-Off Recycling Facilities and Eco-Friendly Product Price

		Questions from the Questionnaire	
		I would start recycling electronic devices if I receive a financial incentive for doing so.	If I had the choice of discarding an old electronic device I would use a drop-off recycling facilities.
Spearman's I would start recycling electronic devices if I receive a financial incentive for doing so.	Correlation Coefficient ρ	1.000	.166*
	Sig. (2-tailed)	.	.003
	N	313	313
If I had the choice of discarding an old electronic device I would use a drop-off recycling facilities.	Correlation Coefficient	~~.166* 1.000~~	.003 .
	Sig. (2-tailed)		
	N		313 313

Note. * I tested the correlation at the significance level of 0.05.

$rs = .166$, $n = 313$

Because the calculated significance was less than 0.05 r (0.0032), I rejected the null hypothesis (*Ho*2). The rejected hypothesis stated that there is no significant statistical relationship between eco-friendly product price and customer willingness to recycle e-waste at drop-off recycling facilities.

Product price correlating with customer willingness to recycle e-waste at drop-off recycling facilities might be due to the existence of a secondary market. Wang, Zhang, Yin, and Zhang (2011) found two factors that could affect recycling styles: economic

benefit and convenience. The authors showed that reclaiming by peddlers played a major role in e-waste recycling in Beijing because the price offered for e-waste was much higher and onsite services were convenient. Similarly, reused cell phones in the United States are at 65%, and the buy-back price can range from a few dollars to $40 or $50, depending on the model of the phone (Geyer & Blass, 2010).

Most consumers can easily sell their old phones, rather than recycle them. **Research Question 3**. To what extent does eco-friendly product *brand loyalty* relate to customer willingness to recycle e-waste at drop-off recycling facilities? The survey items related to Research Question 3 were:

Item 18: I would buy and recycle electronic devices if more drop-off recycling facilities were available in my area.

Item 19: I would buy and recycle electronic devices if there were an awareness campaign in my area about the dangers of not recycling.

This research question addressed the relationship between consumers' awareness of the dangers

of not recycling and consumers' likelihood to use local drop-off recycles facilities. Awareness

campaign about the dangers of not recycling helps to encourage consumer to purchase more products eco-friendly products. To answer Research Question 3, I tested the following hypotheses:

*Ho*3: There is no significant statistical relationship between eco-friendly product brand loyalty and customer willingness to recycle e-waste at drop-off recycling facilities.

*Ha*3: A significant statistical relationship exists between eco-friendly product brand loyalty and customer willingness to recycle e-waste at drop-off recycling facilities.Table 3 shows the results of the Spearman's correlation test of customer willingness to recycle e-waste at drop-off

recycling facilities and eco-Friendly product brand loyalty. With a recycling awareness campaign, managers could promote responsible habits from respondents to use recycling facilities when products have reached the end of their useful life.

Table 3.

Spearman's Correlation Test of Customer Willingness to Recycle e-Waste at Drop-Off Recycling Facilities and Eco-Friendly Product Brand Loyalty

Questions from the Questionnaire		I would buy and I would buy and recycle electronic recycle electronic devices if more devices if there was drop-off recycling an awareness facilities were campaign in my area available in my about the dangers of area. not recycling
Spearman's *ρ*	I would buy and recycle electronic devices if more drop-off recycling facilities were available in my area.	Correlation Coefficient	1.000	.537*
		Sig. (2-tailed)	.	.
		N	0	0
	I would buy and recycle electronic devices if there was an awareness campaign in my area about the dangers of not recycling	Correlation Coefficient	.	.
		Sig. (2-tailed)	0	0
		N	0	0

	.537* 1.000		3 313
313 313		3 1	

Note. * I tested the correlation at the significance level of 0.05.

rs = .537, *n* = 313

Because the calculated significance was less than 0.05 (9.569E-25), I rejected the null hypothesis (*Ho*3). The rejected hypothesis, which stated that brand loyalty did not relate to customer willingness to recycle e-waste at drop-off recycling. Research Questions 3 addressed respondents' views on brand loyalty as it related to customer

willingness to recycle e-waste at drop-off recycling facilities. The questions also addressed whether an awareness campaign would prompt respondents to start using the e- waste at drop-off recycling facilities. The results could demonstrate the importance of customer awareness of

using recycling facilities, which is alignment with Wang et al. (2011) findings that stated that consumers education played an important role in recycling, as did the convenient location of recycling facilities, both these aspects tended to enhance public participation in recycling (Wang et al., 2011). Management of companies should begin programs to start an awareness campaign to shape consumer behavior. Some managers of management companies have adopted an Extended Producer Responsibility (EPR) policy. These policies required manufacturers to finance the cost of recycling or of safely disposing of products that consumers no longer want.

Some businesses management saw programs that encourage consumers to bring back products for recycling as opportunities for strengthening brand loyalty (Nash & Bosso, 2013). For example, Nestlé Waters, a major producer of bottled water products, recently funded the start- up called Recycling Reinvented, a new organization dedicated to advocating EPR for

packaging (MacKerron, 2012). Other companies' leaders such as those at Waste Management Incorporated have lent financial support to organizations' leaders advancing EPR policies in the hope that these efforts will generate business for them (Nash & Bossi, 2013).

Consideration 2: Customer Willingness to Pay More for Green Products

Research Question 4. To what extent does eco-friendly product *quality* relate to customer willingness to pay more for green products?

The four survey items related to Research Question 4 were: Item 6: I am willing to pay more for green products.

Item 9: I believe the quality of green products affects my decision to purchase. Item 10: I believe that green products are of better quality than nongreen products. Item 11: I would recommend green products based on quality to my friends.

This research question compared the extent to which the quality of a green product relates to customers' willingness to pay more for green products than for a nongreen product. To answer Research Question 4, I tested the following hypotheses:

*Ho*4: There is no significant statistical relationship between eco-friendly product quality and customer willingness to pay more for green products.

*Ha*4: A significant statistical relationship exists between eco-friendly product quality and customer willingness to pay more for green products.

table 4 shows the results of the Spearman's correlation test of customer willingness to pay more

for eco-friendly product quality.

Table 4.

Spearman's Correlation Test of Customer Willingness to Pay More for Eco-friendly

Product Quality

Questions from the Questionnaire

	I believe that I would green products I believe the recommended are of better quality of green green products I am willing to quality than products affect my based on
	pay more for nongreen decision to quality to my green products. products. purchase. friends.
Spearman's I am willing to pay more Correlation Coefficient	1.000 -.445* -.327* -.517*
ρ for green products. Sig. (2-tailed)	. .000 .000 .000
N	318 318 318 318
I believe that green Correlation Coefficient	~~-.445* 1.000 .157* .461*~~ products are of better
Sig. (2-tailed)	.000 . .005 .000
quality than nongreen *N*	318 318 318 318
products.	
* * * I believe the quality of Correlation Coefficient	-.327 .157 1.000 .392 green products effect my
Sig. (2-tailed)	.000 .005 . .000
decision to purchase. *N*	318 318 318 318
* * * I would recommended Correlation Coefficient	-.517 .461 .392 1.000 green products based on
Sig. (2-tailed)	.000 .000 .000 .
quality to my friends. *N*	318 318 318 318

Note. * I tested the correlation at the significance level of 0.05.

rs = -.445, *n* = 318 (Item 9)

rs = - .327, *n* = 318 (Item 10)

rs = - .517, *n* = 318 (Item 11)

Because the calculated significance level was less than 0.05 (4.9373E-6, 2.3675E-

9 and 3.8545E-23) respectively, I rejected the null hypothesis (*Ho*4), which stated that there is no significant statistical relationship between eco-friendly product quality and customer willingness to pay more for green products.

Quality might not be much of a concern in consumers' willingness to pay more

for a green product because consumers might have not developed a high level of trust in eco-friendly products. Datta (2011) showed that a high percentage of respondents (82%) would consider buying eco-friendly products, but only a few (36%) actually trust the quality of the eco-friendly products. This apparent discrepancy might have been due to the perception of product performance and hesitation to use eco-friendly products.

Research Question 5. To what extent does eco-friendly product *price* relate to customer willingness to pay more for green products?

The three survey items related to Research Question 5 were:

Item 6: I am willing to pay more for green products.

Item 5: I believe that green products are more expensive than nongreen products.

Item 8: I believe the price of green products affects my decision to purchase them.

This research question compared the extent to which the price of a green product

relates to customer willingness to pay more for green products than nongreen products. To answer Research Question 5, I tested the following hypotheses.

*Ho*5: There is no significant statistical relationship between eco-friendly products price and customer willingness to pay more for green products.

*Ha*5: A significant statistical relationship exists between eco-friendly product price and customer willingness to pay more for green products.

Table 5 shows the results of the Spearman's correlation test of customer willingness to

pay more and eco-friendly product based on price.

Table 5. 48 *Spearman's Correlation Test of Customer Willingness to Pay More and Eco- Friendly Product Based on Price*

Questions from the Questionnaire					
I believe that I believe the green products price of green are more products					
I am willing to expensive than affects my pay more for nongreen decision to green products. products. purchase.					
Spearman's ρ	I am willing to pay more Correlation Coefficient for green products. Sig. (2-tailed)		1.000	-.157*	-.271*
			-	.005	.000
	N		318	318	318
I believe that green products are more expensive than nongreen products.	Correlation Coefficient		-.157*	1.000	.409*
	Sig. (2-tailed)		.005	-	.000
	N		318	318	318
I believe the price of green products effect my	Correlation Coefficient		-.271*	.409*	1.000
	Sig. (2-tailed)		.000	.000	-

	.00	0	
0		0	
decision to purchase.		0	
N	318	3	3
		1	1
		8	8

Note. * I tested the correlation at the significance level of 0.05.

rs = -.157, *n* = -.318

rs=-.271, *n* =- .381

Because the calculated significance was less than 0.05 (0.005 and 9.1365E-7) respectively, I rejected the null hypothesis (*Ho*5). The rejected hypothesis stated that there is no significant statistical relationship between eco-friendly products price and customer willingness to pay more for green products.

Customers are willing to pay more for green products because they are willing to pay a

premium for product sustainability as a baseline condition for consumer products. D4o9h , Howton, Howton, and Siegel (2010) showed that management should not ignore sustainability, as it would lead to negative results. Doh et al. stated that, since social performance is difficult for investors to track, they rely on expert endorsements from companies such as the Calvert Group. When the Calvert Group maintained and endorsed a company, the company's stock would remain stable.

Research Question 6. To what extent does eco-friendly product *brand loyalty*

relate to customer willingness to pay more for green products?

The four survey items related to Research Question 6 were: Item 6: I am willing to pay more for green products.

Item 12: I would switch to green products if they were more available at my local store.

Item 13: I would switch to green products if they were promotional deals such as TV ads and local printed coupons available at my local store.

Item 14: I am more likely to buy a certain product because it has a brand name I have used in the past.

This research question compared the extent to which brand loyalty to a green product related to customer willingness to pay more for green products than for nongreen products. To address Research Question 6, I tested the following hypotheses.

*Ho*6: There is no significant statistical relationship between eco-friendly product brand loyalty and customer willingness to pay more for green products.

*Ha*6: A significant statistical relationship exists between eco-friendly product brand loyalty and customer willingness to pay more for green products.

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50

rs =-.551, *n* = 318 (Item 12)

rs = -.285, *n* = 318 (Item 13)

rs = .05, *n* = 313 (Item 14)

Because the calculated significant was less than 0.05 (1.2839E-26, 2.3995E-7), I rejected the null hypothesis (H_o6). The rejected hypothesis, which states that there is no significant statistical relationship between eco-friendly product brand loyalty and
customer willingness to pay more for green products.

Repeat purchasing of green products might induce consumers to pay a higher price because the consumers might now consider a store's green credentials when
choosing where to shop (Tucker, Pearce & Bruce, 2012). Green credentials help to

ensure that the consumer understands why the company's products are superior to those of other stores. Leaders of car companies understand that consumers are becoming increasing concerned about the effect the automobile has on the environment (Tucker, Pearce & Bruce, 2012). Marketing professionals of the car companies have developed an advertising campaign for their hybrid car that lets consumers know that the hybrid cars are the most efficient gas-and-electricity vehicle on the market. Hybrid cars are now the brand that most consumers have in mind when purchasing or shopping for an automobile that will save money on gas and reduce harmful effects to the environment.

Consideration 3: Customer Willingness to Pay More and to Recycle at Drop-Off Recycling Facilities

Research Question 7. To what extent are there gender and age differences in customers' willingness to pay more for green products?

For the three survey items related to Research Question 7, I collected demographic information for gender, age, and income.

To address Research Question 7, I used an ordinal regression analysis to test the following hypotheses:

*Ho*7: There is no significant statistical relationship between gender, age, and customer willingness to pay more for green products.

*Ha*7: A significant statistical relationship exists between gender, age, and customer willingness to pay more for green products.

To examine the issue of willingness to pay more, Table 7 shows the results of the Ordinal regression analysis of customer willingness to pay more for eco-friendly products based on gender, age, and income information.

Table 7.

Ordinal Regression Analysis of Customer Willingness to Pay more for Eco-Friendly Products based on Demographic Information

			Parameter Estimates					
						95% Confidence Interval		
		Estimate	*SE*	Wald	*df*	Sig.	Lower Bound	Upper Bound
Threshold	[Sec2_Price_2 = 1]	-2.262	.434	27.154	1	.000	-3.113	-1.411
	[Sec2_Price_2 = 2]	.350	.335					.334

				2.990			0
		[Sec2_Price_2 = 3]	2.410	.385	39.109		3.166
		[Sec2_Price_2 = 4]	4.085	.449	82.914		4.964
Location	[Gender=1]	[Age=3]	[Age=4]	] [Age=5] [Income=2]	e=1] [Income=3]	[Income=3] [Income=4]	come=4] [Income=5]

.667 .2338.188 8.869.418 1.004 064 .210 40

-.159

[Gender=2]	0a	- -		0	-	1	-
[Age=1]	-.093		.386 .058	1	.810		
[Age=2]	.145		.385 .142	1	.706		

-.533

.304

0a 1.249

1.002

.712

.799

0a

1020

-.849

5.755 1.193 -

-.610

.409 1.694 .370 .672 - - .419

.384 3.439 .488 2.674 - -

1.412 0 - 1.003 1.016 1.

-1.334 -.422 -.427 .183 -.0

1.124	.	.		1	1	1.756
-	2	0	2	.	.	-
	6	3	.	8	4	
.663	9	0	0	2	6	
.901	1	-	7	1	4	
			1			

Note. Link function: Logit.

Note. Threshold: Response categories 'logit functions' intercepts for each pricing category's logit function.

Note. Location: Independent variables 'logistic regression models' coefficients for willingness to pay more.

Note: a: Reference category

Ordinal regression analysis models enable researchers to examine the relationship

between a set of predictors or independent variables and a polytomous ordinal dependent variable response. The first ordinal regression model (results in Table 7) measured "I am willing to pay more for green products" (dependent variable) against gender, age, and income (independent variables).

Table 8 shows the results of the goodness of fit for the ordinal regression analysis of customer willingness to pay more and eco-friendly products and table 9 shows that the assumption of the parallel lines cannot be rejected.

Table 8.

The Model Fitting Information, Which Shows the Statistical Significance of the Ordinal Regression Analysis for Customer Willingness to Pay More for Eco-Friendly Products

Model Fitting Information

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Intercept Only	298.604			
Final	278.037	20.566	9	.015

Link function: Logit.

Table 9.

Test of Parallel Line, Which Shows the Statistical Significance of the Ordinal Regression Analysis for Customer Willingness to Pay More for Eco-Friendly Products

Test of Parallel Lines[a]

Model	-2 Log Likelihood	Chi-Square	df	Sig.
Null Hypothesis	278.037			
General	254.538	23.499	27	.658

The null hypothesis states that the location parameters (slope coefficients) are the same across response categories.

Since the calculated significance level was less than 0.05 the model fitting information above validate my decision to reject the null hypothesis ($H_0 7$), which stated that there is no significant statistical relationship between gender, and customer willingness to pay more for green products. Furthermore, as shown in Table 9, the test for parallel logit lines calculated the chi-square significance value as 0.658, which is larger than 0.05, which implies that the assumption of the parallel lines cannot be rejected.

The income range of the participants who *expressed a readiness to pay more* for green products was respondents who earned up to $49,999. The data results showed the need to develop awareness campaigns targeting respondents with incomes greater than $50,000. We also observe a significance value of 0.004, which shows that males were more likely to be willing to pay more for recyclable products than females.

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Summary and Conclusions

In conclusion, the key findings are that product quality and price are significant for attaining consumers' brand loyalty, and in relationship to customers' willingness to recycle e-waste at drop-off recycling facilities and their willingness to pay more for green products. The findings indicate that male participants and participants between the ages of 25-31 were not as likely to recycle e-waste as female participants and participants in the older age group. Additionally, as reflected in Table 7, male participants and the participants who earned up to $49,999 *expressed a readiness to pay more* for green products.

In conclusion, to promote green products as the wave of the future, the focus should be on product stewardship and product marketing. Because evolving and changing customers' views drive business product development, it is the customers' expressing their newly found interest in green products that should prompt businesses leaders to refocus their efforts and dedicate their resources to explore how they can harness this new and potentially competitive advantage to increase companies' bottom lines while satisfying the customer base.

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Appendix

All survey information will be kept completely confidential. Your responses are very important. Thank you for participating in the survey.

Please circle the option that applies to you

Section 1 1 2 3 4 5 Demographics

1. Your gender Male female

2. Your age range 18-24 25-31 32-38 39-45 46-52

3. Education level high some AA BA/ BS Master's school college – degree degree Degree or graduate no degree higher

3b. Income	0-24,999 50,000-99,999	25,000-49,000	100,000-149,000	150,000-+

Please circle the option that applies to you

Section 2 - Willingness to

pay more for green products	Never	Rarely	Sometimes	Often	Always	
4. I have used green 1 product before.		2	3	4	5	62
5. I believe that green 1 products are more expensive than nongreen products.		2	3	4	5	
6. I am willing to pay 1 more for green products.		2	3	4	5	
7. Indicate the percentage you are willing to pay for green products		between 1%-10% more	between 11%-20% more	between 21%-30% more	between 31%-40% more	between 41%-50% more

8. I believe the price of green products effect my decision to purchase them.	1	2	3	4	5

	Strongly Disagree		**Neutral**	**Agree**	**Strongly Agree**
9. I believe the quality of green products effect my decision to purchase.	1	2	3	4	5
10. I believe that green products are of better quality than nongreen products.	1	2	3	4	5
11. I would recommended green products based on quality to my friends.	1	2	3	4	5
12. I would switch to green products if they were more available at my local store.	1	2	3	4	5
13. I would switch to green products if they were promotional deals such as TVs ads and local printed coupons available at my local store.	1	2	3	4	5
14. I am more likely to buy a certain product because it has a brand name I have used in the past.	1	2	3	4	5

Select the option that best describes you best

Section 3 Willingness to Recycle

e-Waste	**Never**	**Rarely**	**Sometimes**	**Often**	**Always**
15. I recycle electronic devices or e-waste (products such as computers, televisions, VCRs, stereos, copies, fax machines, cellular phones as opposed to discarding them as trash).	1	2	3		

Select the option that best describes you best

	Strongly Disagree	**Disagree**	**Neutral**		
16. I would start recycling electronic devices if I receive a financial incentive for doing so.	1	2	3		
17. If I had the choice of discarding an old electronic device I would use a drop-off recycling facilities.	1	2	3	4	5
18. I would buy and	1	2	3	4	5

recycle electronic devices

if more drop-off recycling facilities were available in my area.

19. I would buy and 1 2 3 4 5

recycle electronic devices if there was an awareness campaign in my area about the dangers of not recycling.

Correspondence between Research Questions and Survey Numbers

Willingness to Recycle e-Waste Subscale

RQ1. To what extend does eco-friendly products quality relate to customer willingness to recycle e-waste at drop-off recycling facilities? **Questions 15, 16,**
17, 9, 10, 11

RQ2. To what extend does eco-friendly products price relate to customer

willingness to recycle e-waste at drop-off recycling facilities? **Questions 15, 16,**

17, 5, 6, 8

RQ3. To what extend does eco-friendly products brand loyalty relate to customer willingness to recycle e-waste at drop-off recycling facilities? **Questions 15, 16,**

17, 12, 13, 14

Willingness to Pay More for Green Products Subscale

RQ4. To what extend does eco-friendly products quality relate to customer willingness to pay more for green products? **Questions 18, 19, 7, 9, 10, 11** RQ5. To what extend does eco-friendly products price relate to customer
willingness to pay more for green products? **Questions 18, 19, 7, 5, 6, 8**

RQ6. To what extend does eco-friendly products brand loyalty relate to customer willingness to pay more for green products? **Questions 18, 19, 7, 12, 13, 14**

Demographics Subscale

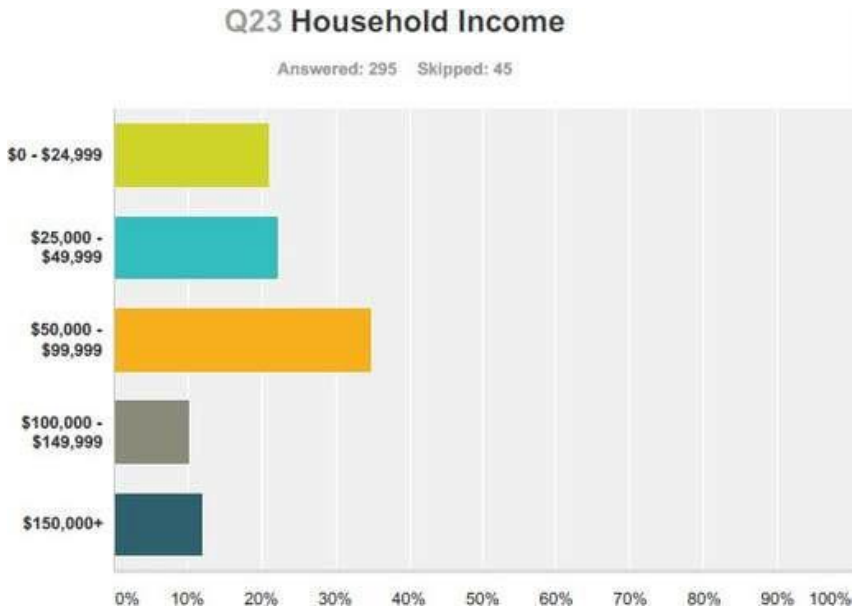
RQ7. Are there gender, age, and education differences in customer willingness to pay more for green products and customer willingness to recycle e-waste at drop-
off recycling facilities? **Questions 1, 2, 3**

SPSS Variables, Questions, and Descriptions

Variable Respondent ID	Description Respondent ID
CONSENTFORM	CONSENT FORM
Gender Age Income Education	Your gender What is your age? Household Income
Green_Product_use	What is the highest level of education you have completed? I have used green products before.
Consideration2_Price_1	I believe that green products are more expensive than nongreen products.
Consideration2_Price_2	I am willing to pay more for green products.
Consideration2_Price_3	Indicate the percentage you are willing to pay for green products.
Consideration2_Price_4	I believe the price of green products affects my decision to purchase.
Consideration2_ Quality_1	I believe the quality of green products affects my decision to purchase.
Consideration2_ Quality_2	I believe that green products are of better quality than nongreen products.
Consideration2_ Quality_3	I would recommended green products based on quality to my friends.

Consideration2_Brand_ Loyalty_1	I would switch to green products if they were more available at my local store.
Consideration2_Brand_ Loyalty_2	I would switch to green products if they were promotional deals such as TV ads and local printed coupons available at my local store.
Consideration2_Brand_ Loyalty_3	I am more likely to buy a certain product because it has a brand name I have used in the past.
Consideration3_ Recycle_1	I recycle electronic devices or e-waste (products such as computers, televisions, VCRs, stereos, copiers, fax machines, cellular phones) as opposed to discarding them as trash.
Consideration3_ Recycle_2	I would start recycling electronic devices if I received a financial incentive for doing so.
Consideration3_ Recycle_3	If I had the choice of discarding an old electronic device I would use a drop-off recycling facility.
Consideration3_ Recycle_4	I would buy and recycle electronic devices if more drop-off recycling facilities were available in my area.
Consideration3_ Recycle_5	I would buy and recycle electronic devices if there was an awareness campaign in my area about the dangers of not recycling.

Household Income



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