CONSUMERS' SOCIO-DEMOGRAPHICS INFLUENCE BETWEEN PURCHASE INTENTION AND ACTUAL BEHAVIOR OF ENVIRONMENTALLY FRIENDLY GROCERY PACKAGING

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Abstract: *Grocery aisles in the United States provide the shocking realization that plastic packaging dominates the grocery industry. This realization raises the question of whether consumers are purchasing food that is not wrapped in plastic but in environmentally friendly packaging. For some consumers, finding food products wrapped in environmentally friendly packaging is not easy as it is not widely available in many United States grocery stores. This study adapted the Theory of Planned Behavior to investigate the relationship between purchase intention and purchasing behavior toward environmentally-friendly grocery packaging. This quantitative study collected 487 usable responses targeting a population of US consumers over 18 years old who purchase groceries. This study uncovered novel findings. This study supplied a fresh perspective on socio-demographics' role in environmentally friendly consumption, confirming that predominantly younger, unmarried consumers are likelier to act upon their intentions by purchasing environmentally friendly grocery packaging. The hope is that these findings provide marketers with fresh insights into the characteristics of consumers willing to purchase environmentally friendly grocery packaging. Results can also give government agencies and brands a clearer perspective on ways to increase consumers' knowledge of environmentally friendly packaging consumption.*

1. INTRODUCTION

Every day, hundreds of millions of consumers purchase items from grocery stores to sustain themselves or their families. Many of the products are wrapped in single-use packaging and are thrown away shortly after purchasing. The average household will use over 500,00 tons of plastic food packaging within a year (Douek, 2021). Many food brands and grocers have sought to increase their sustainable packaging solutions to bring forth more environmentally friendly alternatives to combat the increasing amount of plastic packaging. Packaged food brands in the United States, such as Boxed Water is Better, Celestial Tea, & No Evil Foods, are heading the change by providing consumers with environmentally friendly packaging alternatives within the food industry (Fagundes, n.d.). These brands have supplied customers with packaging composed of materials that are not single-use plastic but packaging materials that are recyclable or biodegradable. Outside of the United States, supermarkets are combating packaging waste by reducing over 800,000 tons of plastic waste each year (Glenza, 2019). Due to this realization, companies are altering their sustainability and corporate social responsibility initiative goals to aim for a switch to recyclable, reusable, or compostable materials within the coming years.

Many consumers are unaware of the long-lasting impacts of plastic packaging. Packaging types such as plastic and Styrofoam have long lifespans regarding their biodegradability, taking hundreds of years for the materials to break down. A plastic coffee pod takes around 500 years to break down, while plastic bottles take more than 450 years to biodegrade (WWF Australia, 2021). Due to their long lifecycle, many plastic materials have disastrous effects on the biodiversity of ecosystems around the world. One of the most recognized disruptions occurs in the ocean, where wildlife is often depicted as entangled in plastic materials or even dying with large amounts of plastic in their stomachs (Kam et al., n.d.). Humans are not exempt from this occurrence as most of the public ingests microplastics daily due to their presence in our water and food supply (Alberts, 2020). Plastic pollution is everywhere, making it nearly impossible to escape the effect of excessive plastic consumption. Many might argue that the improvements in packaging should be the retailer's responsibility. However, many retailers ignore the need for more environmentally friendly packaging. Others are finding new ways to approach the issue and are actively trying to take on this challenge. Jestratijevic et al. (2021) investigated retailers' promotion of

environmentally friendly packaging, which suggested that 36 out of 487 sampled brands were rethinking their current packaging strategies to appeal to more sustainability-concerned consumers. In comparison, 287 out of 478 sampled brands in that study had some plan for reducing their packaging by improving its quality and recyclability (Jestratijevic et al., 2021). These findings provided insight into how companies are approaching their environmental footprint. This comes as many consumers expect brands to take more responsibility in offering environmentally friendly packaging.

Even though environmentally friendly packaging has become more accessible to a broader demographic of consumers, many barriers deter individuals from making a more permanent transition to purchasing environmental-friendly packaging. Consumer preferences are shifting to higher adoption of the action of purchasing environmentally-friendly grocery packaging in the United States. The Global Green Technology and Sustainability Market are predicted to increase by 22.5% or $38.15 Billion by 2027 (ReportLinker.com, 2021). Furthermore, around 54% of consumers consider sustainable packaging when buying a product (Manning, 2021). It is expected for the sustainability industry to grow as more environmentally friendly grocery items become available. As consumers' purchase intention for the environmentally friendly product increases year over year, companies will have to address these emerging needs to maintain their standing in the food market.

To the researcher's knowledge, this is the first study to investigate the socio-demographic variable's effect as a moderator between consumers' intentions and purchasing behaviors towards environmentally friendly grocery packaging. Including socio-demographic variables intended to provide insights into which demographic groups have the most substantial moderating effect on the relationship between purchase intention and actual behavior. This moderation analysis investigated the influence of each socio-demographic variable's strength on the relationship between purchase intention and behavior towards EFGP. The socio-demographic variables examined in this study included: Age, Income, Gender, Education, and Marital Status.

1.1 Age

Age is a socio-demographic variable utilized to understand how different age groups approach EFGP. Segmenting the variables into groups helped provide an understanding of which demographic groups are more willing to exhibit environmentally friendly behaviors. Many studies specifically studied the particular age group's intention for environmentally friendly behaviors. Smith et al. (2016) investigated only younger consumers to understand their behaviors toward environmentally friendly shopping bags. A meta-analysis of age and pro-environmental behaviors found that older consumers were motivated by social norms and conservation behaviors (Wiernik et al., 2013). Zhoa et al. (2014) found that older consumers were more likely to perform pro-environmental behaviors such as recycling, which could result from their experiences in different social events. Fisher et al. (2012) also found that consumers over 55 were more likely to perform environmental actions. Due to current literature pointing to heightened pro-environmental behaviors for older individuals, findings suggested that the older the individual, the higher the likelihood of them performing environmentally friendly behaviors.

H1. The influence of intention on behavior is stronger for older consumers compared to younger consumers.

1.2 Income

Understanding income's role in purchasing EFGP is crucial in understanding which variables most influence the behavior. Within this research, income was distributed into groups by income brackets. Previous literature investigated income's role in how consumers decide to purchase environmentally-friendly packaging alternatives. Typically, most environmentally friendly products come at a premium price, questioning whether consumers are willing to pay more (Walker, 2021). Literature has found that income plays a significant role in the decision process of purchasing environmentally-friendly packaging (Orzan et al., 2018). Research also found that those who make over $100,000 are typically more socially responsible, leading to their consumption behaviors for EFGP (Park et al., 2012). Income has a role in environmentally friendly behaviors such as separating trash from recycling (Fisher et al., 2012). Research pointed to higher incomes having a significant role in environmentally friendly behaviors, translating to purchasing behaviors. Based on the information presented, we hypothesized:

H2. The influence of intention on behavior is stronger for consumers with a higher income compared to consumers with a lower income.

1.3 Gender

Understanding how gender plays a role in consumption behaviors is essential for managerial implications of best reaching either gender with a curated message. Many studies found a gender gap between men's and women's environmental sustainability, of which there has been evidence that many factors produce this gap (Brough et al., 2016). Literature found that women have stronger attitudes toward environmental quality and are likelier to perform environmentally friendly behaviors (Diamantopoulos, 2003; Fisher et al., 2012). Women are also more likely to be more environmentally conscious than men (Park et al., 2012). Overall, women are found to place more value on environmental sustainability, which supported the following hypothesis:

H3. The influence of intention on behavior is stronger for women compared to men.

1.4 Education

An individual's education level has been found to be a telling variable of an individual's environmental sustainability. This variable gauged the highest level of education obtained and compared it to the moderating effect between purchase intention and self-reported purchases. Literature found that education level correlated to environmentally friendly behaviors compared to other socio-demographic variables (Zhoa et al., 2014). Those who obtained a higher level of education had a higher percentage of respondents who claimed that they purchased recyclable bags (Fisher et al., 2012). Another study found that those with higher education are more concerned about the environment and knowledgeable about environmental issues (Tilikidou, 2007). The literature pointed to the understanding that the higher the education level, the higher the likelihood that they perform environmentally friendly behaviors, which can also be translated to purchasing EFPG. This understanding of education's role in environmentally-friendly behavior allowed us to claim the following hypothesis:

H4. The influence of intention on behavior is stronger for those with higher education compared to those with lower education.

1.5 Marital Status

Marital status can play a role in purchasing behaviors because most decisions are made jointly if the couple is married (Editors of Consumer Reports, 2008). Literature found that married individuals are likelier to shop for environmentally friendly products (Mehmet & Gul, 2014). Married people are more likely to purchase previously sustainably produced foods (Robinson & Smith, 2002). This finding can come with the expectation that these foods will also be wrapped in environmentally friendly packaging. Analysis of this variable provided a better understanding of how marital status plays a role in the consumption behaviors of EFGP. This variable was tested to see how marital status influences the actual purchasing behaviors of EFGP. Based on the information presented, we hypothesized:

H5. The influence of intention on behavior is stronger for married consumers than for those who are not married.

2. METHODS

This study employed a quantitative survey to collect consumer data and investigate the consumer purchasing behaviors of EFGP. The survey examined the research variable's attitudes toward EFGP, Environmental Concern, Subjective Norm, Perceived Behavioral Control, Purchase Intention, and the consumer's self-reported purchasing behaviors toward EFGP. The dependent variables in the conceptual framework were purchase intention and purchasing behavior. Based on the survey prompts, the purchasing behavior was collected by having respondents report their behaviors. This inclusion aimed to better understand consumers' actual behavior when purchasing food items in environmentally friendly packaging. Kopplin & Rausch (2020) collected data from respondents on their self-reported purchasing behaviors, further understanding their actual behaviors when purchasing sustainably. The independent variables in this study were environmental concerns, attitudes, subjective norms, perceived behavioral control, and socio-demographic variables. The relationships between the independent and dependent variables led to a better understanding of the purchasing behaviors for EFGP. The study also investigated if and how socio-demographics affect purchasing behaviors.

3. RESULTS

A total of 487 usable surveys were collected. Most respondents were males representing 57% of the sample, with females representing 43% of the sample (Table 1). Most respondents were 18 – 34 years old, making up 61% of the sample. 54% of the sample had a bachelor's degree, with 86% earning $79,000 or under a year. The majority of the sample were married, with 67% of respondents reporting in this category. The Single/Never Married category made up 30% of the sample.

Table 1: *Demographics of Respondents*

Demographics	N	%
Education		
Less than High School Diploma	4	1%
High School Diploma or GED	23	5%
Some College, but no Degree	68	14%
Associates Degree (e.g., AA, AS)	41	8%
Bachelor's Degree (e.g., BA, BBA, BS)	264	54%
Master's Degree (e.g., MA, MS, Meng)	81	17%
Professional Degree (e.g., MD, DDS, JD)	2	0%
Doctorate (e.g., PhD, EdD)	4	1%
Total	487	100%
Gender		
Male	279	57%
Female	207	43%
Total	486*	100%
Age		
18-24	104	21%
25-34	194	40%
35-44	107	22%
45-54	45	9%
55 and Older	37	8%
Total	487	100%
Income		
$0 - $29,999	118	24%
$30,000 - $49,999	168	34%
$50,000 – $79,999	136	28%
$80,000 - $99,999	51	10%
$100,000 and over	14	3%
Total	487	100%
Marital Status		
Single/Never Married	147	30%
Married	327	67%
Separated	1	0%
Divorced	12	2%
Total	487	100%

Note. Totals are different because of missing data

The socio-demographic variables included are Age, Income, Gender, Education, and Marital Status. A moderating analysis was conducted to investigate the interactions between purchase intention and behavior of EFGP. This interaction was investigated to understand the socio-demographic variables' effect in moderating the relationship between purchase intention and actual behavior. The variables for marital status and gender were recoded to binary variables to improve the statistical analysis of the variables. The items within the gender category were Male and Female and were recoded to display as Male, with

Male valued at 1 and Female valued at 0. The items with marital status were recoded to Single and Married, so the variable was recoded to display Married, with Single valued as 0 and married valued as 1. The interaction analysis of socio-demographic variables between the relationship of actual behavior and provided a clear view of how the variables interaction with the two contructs. The socio-demographic showed that Age (H1) was not supported with a (p=0.396), while hypothesis 2, posited the moderating influence of income, was not supported (p=0.807). Education (H3) also was not supported (p=0.615) that the interaction between actual behavior and purchase intention will be strong with higher education levels compared to those with lower levels of education. The interaction for gender was not supported (p=0.303), providing the understanding that gender does not have a moderating influence on actual behavior and intention. Lastly, the influence of marital status on the relationship between actual behavior and purchase intention was significant (p=0.033).

To the researcher's knowledge, these findings are novel, with previous studies not having investigated this relationship in the context of environmentally friendly grocery packaging. Even though hypothesis 5 was not supported, it is understood that socio-demographics can moderate the relationship between purchase intention and behavior. Unmarried consumers act upon their intentions by purchasing environmentally friendly grocery packaging. Furthering the analysis, we found that the demographic characteristics of single individuals consisted of primarily male consumers, with a more significant percentage of respondents between the ages of 18-24, with an income of $0-$29K, and with some college education. Those findings suggest that consumers within these socio-demographic characteristics are more likely to care about the environment and are willing to purchase EFGP. Findings from the moderating analysis might suggest that consumers are more concerned and sensitive to external factors (e.g., quality and price of packaging) when grocery shopping (Ferrara et al., 2020; Elgaaïed-Gambier, 2016). This analysis might indicate that income, age, gender, and education do not make consumers more likely to act upon their intention by purchasing EFGP. However, external factors might have a more significant role in their consumption behaviors toward EFGP than expected.

Although most unmarried consumers are 18-24, we can argue that age plays a moderating role in the relationship between purchase intention and behavior. Consumers within the age range of 18-24 are considered to be in the Gen-Z generational cohort. These consumers are highly concerned about environmental conservation and preserving the world for future generations (Wang et al., 2022). Their consumption behavior is directed towards environmentally friendly products as it has been found that the cohort often voices their concerns about environmental issues and consciously attempts to minimize their waste (Corey, 2021). Since most of the single respondents are within this age group, it can be assumed that generational values also play a role in their consumption behaviors.

4. DISCUSSION

The objective of this study was to analyze socio-demographics' role in moderating the relationship between purchase intention and purchasing behaviors. In this analysis, Age, Income, Gender, Education, and Martial status were investigated to clarify their power in the relationship. This study concluded that unmarried consumers act upon their purchasing intentions in purchasing environmentally friendly grocery packaging. These findings provide insight into how consumers act upon their intention by purchasing EFGP when grocery shopping. One factor that might lead single consumers to perform environmentally friendly behaviors is having more freedom to purchase items that align with their values. They can factor environmentally friendly items into their budget when grocery shopping. Furthermore, most unmarried respondents fall within the Gen-Z generational cohort, who all have strong values for environmental preservation and strong intentions to purchase products that have environmentally-friendly qualities.

Despite Age, Income, Education, and Gender not having a moderating influence on the relationship between purchase intention and behavior, findings from this analysis can provide more insight into environmentally friendly grocery consumption. The moderating effect of each of the variables (Age, Income, Education, and Gender) was not found to influence consumers to purchase EFGP; however, this might assist in providing more clarification of the role that a consumer's reluctance plays in buying EFGP. Results suggest that there are still many barriers contributing to consumers' consumption of environmentally friendly products, regardless of if the consumer has a higher income or great awareness of the negative influences caused by plastic packaging. Consumers in the United States are becoming increasingly more aware of the benefits that environmentally friendly packaging provides. As more

consumers become accustomed to EFGP, more socio-demographics might be able to moderate the relationship between purchase intention and behavior to EFGP.

5. CONCLUSION

This research provides managers a better understanding of the socio-demographic groups that they might be able to target for environmentally-friendly packaging solutions. Knowledge of how EFGP plays a role in the consumer behavior of various socio-demographic groups is pertinent in understanding which groups are more likely to purchase the packaging. This study provides insights into how single consumers are likelier to act upon their intention by purchasing EFGP. Marketing can develop new strategies to target these consumers. Furthermore, to gain more awareness of environmentally friendly grocery packaging, managers build resources and tools for consumers to become more educated on products packaged with environmentally friendly materials. Government agencies can also play a role in providing educational information on the importance of environmentally friendly behavior. There is currently a need for more consumers to understand the benefits and characteristics of purchasing environmentally friendly grocery packaging. Targeting all consumers more efficiently with pro-environmental messaging is critical to sustaining the effort already achieved in getting more consumers to perform environmentally friendly behaviors. Many municipal governments have already created new mandates for recycling which has helped reduce the amount of waste going to landfills (Leiber, 2019). However, more work is needed to ensure that all consumers correctly dispose of their grocery waste.

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