



Consumer Awareness and Purchase Intention of Upcycled Products in Baguio City: A Comparative Study by Gender and Age

Mary Claire Luminang

Baguio Central University, Philippines

Abstract— This study investigated the awareness, knowledge, and purchase intention of upcycled products among consumers in Baguio City, with a focus on gender and age differences. The study employed a quantitative research design using a cross-sectional survey method to collect data from 260 respondents, selected through stratified random sampling to ensure demographic representation. A structured questionnaire, distributed online via barangay Facebook accounts, gathered both quantitative and qualitative data on consumer awareness, knowledge, and purchase intention factors. The findings revealed no significant association between gender and awareness of upcycled products, as both males and females exhibited similar levels of awareness. However, females demonstrated a higher level of knowledge about upcycled products compared to males. Age differences in knowledge were not statistically significant. Significant gender differences were observed in purchase intention factors, with females placing more importance on environmental impact, product quality, price, and social influence. No significant gender differences were found for product availability and brand reputation. Age-wise, all groups rated environmental impact and product quality as very important, but social influence showed significant differences, with younger individuals being less influenced by social factors. Females expressed a higher likelihood of purchasing upcycled products in the future compared to males. Among age groups, the 36-45 age group showed the highest likelihood of purchasing, while the 18-25 age group showed the lowest. Based on these findings, the study recommends designing awareness campaigns to reach a broad audience and enhancing knowledge among males through educational programs and workshops. Businesses should consider gender differences in their marketing strategies, emphasizing environmental impact, product quality, and social influence for female consumers, and practical benefits and availability for male consumers. Policymakers should support initiatives that promote upcycling through incentives and collaborations to foster a sustainable market for upcycled products. These recommendations aim to enhance the awareness, knowledge, and purchase intention of upcycled products, contributing to a more sustainable and environmentally conscious consumer market in Baguio City.

Keywords— Upcycling, Awareness, Knowledge, Purchase, Gender, Age, Sustainability.

INTRODUCTION

As serious issues related to waste disposal endanger humanity, there is a growing recognition in society of the necessity to conserve resources and lower greenhouse gas emissions, as well as to reduce reliance on landfills. Due to growing social concerns about serious environmental issues, consumers are being increasingly encouraged to adopt sustainable practices for product disposal, including reusing products and extending their lifespan. In the



Philippines, the Department of Environment and Natural Resources (DENR) has highlighted upcycling as a potential solution to the country's solid waste crisis, with the country generating about 61,000 metric tons of solid waste daily, 24% of which is plastic waste (Manahan 2023).

A small but growing number of companies in the Philippines have begun trying to reduce waste by planning for a product's potential recycling or reuse at the end of its life before it is even made, a process known as "designing out waste" (WWF-Philippines, 2023). This need has created the popular trend of upcycling, which is considered a greener version of recycling. Upcycling is defined as a process to "reuse discarded objects or materials in such a way as to create a product of higher quality or value than the original" (Gozum 2020). In the Philippines, initiatives like Plastic Flamingo are transforming plastic waste into valuable resources, such as eco-boards and furniture, promoting sustainability and creating livelihood opportunities. (WWF-Philippines, 2023)

The variety of upcycled products in the Philippines is extensive. This includes rugs made from fabric scraps, refashioned clothing, bags, repurposed furniture, soaps and fertilizers (and energy) from organic waste, artistic items from scrap metal, and even entire buildings constructed with reused components from deconstruction. As consumer interest and demand for upcycled products grow, many companies in the Philippines are increasingly focusing on these items, whether their business is online or offline.

Despite the marketing trends that respond to consumer interest, evaluations of upcycled products have been infrequently studied in consumer behavior literature. Among the limited research, Wei and Jung investigated the perceived utility of sustainable fashion products, focusing on their overall product value, which includes functional, emotional, and social aspects, as well as their green value. They analyzed how perceived values and psychological factors, such as face-saving, influence consumer intentions to purchase sustainable fashion items. Given that upcycling breathes new life into discarded materials through unique designs and ideas, these products are anticipated to offer greater value compared to standard environmental products. This growing interest in upcycled goods reflects a broader commitment to sustainability, as seen in various initiatives across the Philippines, including those in Baguio City, where innovative waste management practices are being implemented. (World Wildlife Fund, n.d.)

Baguio City has been making significant strides in upcycling and waste management, reflecting a growing commitment to sustainability. One notable initiative is the transformation of the former dumpsite in Irisan into an ecological park, featuring greenery, trees, and huts, with recyclables used as planting materials. Additionally, Baguio high school students have been involved in creating green art by upcycling discarded materials like carpentry waste, scrap metal, and plastic into toys and art pieces, as part of a broader initiative to introduce upcycling in schools and promote environmental awareness among the youth. In response to landfill closures, the city has also embarked on programs to shred plastic and garments, profit from recyclable waste, and reprocess materials to reduce the volume of residual garbage. These efforts highlight Baguio City's innovative approaches to waste management and upcycling, contributing to a more sustainable future.

In Baguio City, government offices are increasingly providing financial support for upcycled products as part of their broader waste management and sustainability initiatives. The city government has approved ordinances to



promote ecological waste management and sustainability fairs, which showcase upcycled products and encourage public participation in waste segregation efforts (Agoot, 2024). Additionally, programs funded by organizations such as the MAVA Foundation and implemented by Circle Economy and ICLEI – Local Governments for Sustainability are supporting Baguio City’s transition towards a circular economy. These initiatives not only aim to reduce waste but also to foster economic opportunities through the creation and promotion of recycled products.

However, despite these efforts, there have been no studies conducted yet to determine whether these upcycled materials are being purchased by consumers and if the prices of these recycled products are accepted by the market. Understanding consumer behavior and market acceptance is crucial for the long-term success of these initiatives. The financial backing from government and non-governmental organizations is crucial in driving the city’s efforts to manage waste more effectively and sustainably. This study aims to investigate the key factors driving the purchase intention of upcycled products among consumers in Baguio City. Specifically, it seeks to determine whether there are significant differences in consumer awareness and the factors influencing purchase intention based on gender and age. Understanding these differences is crucial for developing targeted strategies to promote upcycled products and enhance their market acceptance.

Statement of the Problem

This study aims to investigate the key factors driving the purchase intention of upcycled products among consumers in Baguio City. Specifically, the study seeks to address the following questions:

- Is there a significant difference in the level of consumer awareness regarding upcycled products in Baguio City when compared according to gender and age?
- Is there a significant difference in the factors driving the purchase intention of upcycled products among consumers in Baguio City when compared according to gender and age?

Significance of the Study

This study on the key factors driving the purchase intention of upcycled products among consumers in Baguio City is significant for several reasons. Firstly, it addresses the environmental impact by understanding what motivates consumers to buy upcycled products, which can help reduce waste and promote sustainable consumption. Increased demand for these products can lead to less waste being sent to landfills, thereby mitigating environmental pollution. Secondly, the economic benefits of the findings can assist local businesses and artisans in better marketing their upcycled products, potentially boosting sales and fostering economic growth. This could also inspire more entrepreneurs to enter the upcycling market, promoting innovation and job creation.

Additionally, the study will provide valuable insights into consumer behavior and preferences regarding sustainable products. Marketers, policymakers, and educators can utilize this information to design effective campaigns and policies that encourage sustainable consumption. Furthermore, policy development can be informed by the study’s results, enabling policymakers to create supportive measures for the upcycling industry, such as incentives for businesses producing upcycled goods or educational programs to raise awareness about the benefits of upcycling.



The study also holds educational value, serving as a resource for academic research and further studies on sustainable consumption and upcycling. It can educate the public on the importance of upcycling and its contributions to environmental sustainability. Lastly, by highlighting the factors that drive the purchase of upcycled products, the study can foster community engagement and participation in sustainability initiatives, leading to a more environmentally conscious community that actively supports and practices sustainable living. Overall, this study aims to contribute to the broader goal of achieving a sustainable future by promoting the adoption of upcycled products and supporting the growth of the upcycling industry in Baguio City.

METHODOLOGY

Research Design

This study employed a quantitative research design using a cross-sectional survey method to collect data from consumers in Baguio City. The survey included questions designed to measure awareness, knowledge, and purchase intention of upcycled products.

Locale and Population

The target population for this study included residents of Baguio City who were potential consumers of upcycled products. A sample size of 260 respondents was selected using stratified random sampling to ensure representation across different demographics, such as age, gender, and income levels. This approach helped in obtaining a diverse and representative sample, providing a comprehensive understanding of consumer behavior in the city.

Data Gathering Instrument

A structured questionnaire was developed to collect data on consumer awareness and the factors influencing purchase intentions. This questionnaire included both closed-ended and open-ended questions to gather quantitative and qualitative data.

The sections of the questionnaire assessed awareness of upcycled products, knowledge of upcycled products, and purchase intention factors such as environmental consciousness, perceived quality, price sensitivity, social influence, and availability.

Data Gathering Procedure

An online survey was distributed through various barangay Facebook accounts to reach a wide audience within Baguio City. This method leveraged the high penetration of social media in the community, ensuring efficient and broad dissemination of the survey. Respondents were invited to participate voluntarily, and reminders were sent to encourage completion.

Treatment of Data

The collected data was analyzed using several statistical methods. A Chi-Square Test for Independence was used to determine if there was a significant association between gender and awareness of upcycled products. An Independent Samples t-Test compared the knowledge and purchase intention factors between males and females, while a One-Way ANOVA compared these factors among different age groups.



Ethical Considerations

All respondents were informed about the purpose of the study, and their consent was obtained prior to participation. The anonymity and confidentiality of respondents were maintained throughout the study, with data stored securely and used solely for research purposes. Ethical approval was sought from the relevant institutional review board to ensure that the study adhered to ethical standards and guidelines.

By following this research design, the study aimed to provide a comprehensive analysis of the factors driving the purchase intention of upcycled products among consumers in Baguio City, contributing valuable insights to the field of sustainable consumer behavior.

RESULTS AND DISCUSSION

Awareness of Upcycled Products

Table 1. Awareness on upcycled products compared between males and females

Gender	Have you heard about upcycled products before?		Total	Chi-Square Value	P-value
	No	Yes			
Male	5	48	53	0.284ns	.594
Female	15	192	207		
Total	20	240	260		

Legend:

ns - not significant

The study examined the awareness of upcycled products between males and females. As shown in Table 1, a Chi-Square test for independence was conducted to determine if there was a significant association between gender and awareness of upcycled products. The results were not statistically significant, $\chi^2(1, N = 260) = 0.284, p=.594$, indicating no evidence of a relationship between gender and awareness of upcycled products.

Table 2. Knowledge about upcycled products compared between males and females

Gender	Means	Descriptive Equivalent	T-value	P-value
Male	3.12	Neutral	-2.99**	.003
Female	3.54	Somewhat knowlegeable		

Legend:

** - highly significant

1.00 - 1.80 - Very unknowlegeable

1.81 - 2.60 - Somewhat unknowlegeable

2.61 - 3.40 - Neutral

3.41 - 4.20 - Somewhat knowlegeable

4.21 - 5.00 - Very knowlegeable

Table 2 presents the results of a comparison between males and females regarding their knowledge about upcycled products. The results indicate a statistically high significant difference between the two groups ($t = -2.99$,

$p = .003$). Specifically, females ($M = 3.54$) demonstrated a higher level of knowledge about upcycled products, classified as "Somewhat knowledgeable," compared to males ($M = 3.12$), who were considered "Neutral" in their understanding.

Table 3. Knowledge about upcycled products compared among different age groups

Age	Means	Descriptive Equivalent	F-value	P-value
18 - 25	3.55	Somewhat knowledgeable	-1.239ns	.295
26 - 35	3.34	Neutral		
36 - 45	3.38	Neutral		
46 - 55	3.62	Somewhat knowledgeable		
56 and above	3.68	Somewhat knowledgeable		

Legend:

ns - not significant

1.00 - 1.80 - Very unknowledgeable

1.81 - 2.60 - Somewhat unknowledgeable

2.61 - 3.40 - Neutral

3.41 - 4.20 - Somewhat knowledgeable

4.21 - 5.00 - Very knowledgeable

Table 3 presents a comparison of knowledge about upcycled products across different age groups. The highest mean score was observed among the 56 and above age group ($M = 3.68$), followed closely by the 46-55 age group ($M = 3.62$), and the 18-25 age group ($M = 3.55$), which demonstrated a levels of knowledge classified as "Somewhat knowledgeable." While the 26-35, and 36-45 age groups exhibited similar levels of knowledge, with mean scores ranging from 3.34 to 3.62, classified as "Neutral." Although it seems that there are slight differences in the mean of each groups, no statistically significant differences were found between them.

Purchase Intention Factor

Table 4. Purchase intention factors among different genders

Factors	Gender	Means	Descriptive Equivalent	T-value	P-value
Environmental Impact	Male	4.26	Very Important	-2.678**	.009
	Female	4.67	Very Important		
Quality of the Products	Male	4.25	Very Important	-2.411*	.019
	Female	4.59	Very Important		
Price	Male	4.02	Important	-2.479*	.016
	Female	4.41	Very Important		
Social Influence	Male	3.38	Neutral	-3.299*	.001
	Female	3.95	Important		
Availability of Products	Male	4.08	Important	-1.687ns	.093



	Female	4.32	Very Important		
Brand Reputation	Male	3.28	Neutral	-1.267ns	.206
	Female	3.53	Important		

Legend:

** - highly significant

* - significant

ns - not significant

1.00 - 1.80 - Not Very Important

1.81 - 2.60 - Not Important

2.61 - 3.40 - Neutral

3.41 - 4.20 - Important

4.21 - 5.00 - Very Important

Table 4 presents a comparison of purchase intention factors between males and females. Significant gender differences were observed in several factors. Females (M = 4.67) placed significantly more importance on environmental impact ($t = -2.678, p = .009$) compared to males (M = 4.26), both groups rating this factor as "Very Important." Both genders considered product quality "Very Important," but females (M = 4.59) valued it slightly more than males (M = 4.25). The difference was statistically significant ($t = -2.411, p = .019$). Females (M = 4.41) rated price as "Very Important", which has a higher value compared to males (M = 4.02), who considered it "Important." The difference was also statistically significant ($t = -2.479, p = .016$). Females (M = 3.95) rated social influence as "Important," whereas males (M = 3.38) considered it "Neutral," indicating a significant gender difference in the perceived importance of social factors ($t = -3.299, p = .001$). Females (M = 4.32) considered product availability "Very Important," placing it higher importance compared to males (M = 4.08), who considered it "Important," but the difference was not statistically significant ($t = -1.678, p = .093$). Females (M = 3.53) considered brand reputation "Important," while males (M = 3.28) viewed it as "Neutral," suggesting a gender difference in the perceived importance of brand reputation, but the analysis revealed no significant difference ($t = -1.267, p = .206$).

Table 5. Purchase intention factors among different age groups

Factors	Age	Means	Descriptive Equivalent	F-value	P-value
Environmental Impact	18 - 25	4.60	Very Important	0.119ns	.976
	26 - 35	4.55	Very Important		
	36 - 45	4.57	Very Important		
	46 - 55	4.65	Very Important		
	56 and above	4.57	Very Important		
Quality of the Products	18 - 25	4.48	Very Important	0.224ns	.925
	26 - 35	4.47	Very Important		



	36 - 45	4.55	Very Important		
	46 - 55	4.59	Very Important		
	56 and above	4.52	Very Important		
Price	18 - 25	4.24	Very Important	0.959ns	.431
	26 - 35	4.29	Very Important		
	36 - 45	4.33	Very Important		
	46 - 55	4.49	Very Important		
	56 and above	4.04	Important		
Social Influence	18 - 25	3.40	Neutral	2.411*	.050
	26 - 35	3.73	Important		
	36 - 45	4.00	Important		
	46 - 55	4.03	Important		
	56 and above	4.04	Important		
Availability of Products	18 - 25	4.10	Important	1.788ns	.132
	26 - 35	4.19	Important		
	36 - 45	4.46	Very Important		
	46 - 55	4.41	Very Important		
	56 and above	4.04	Important		
Brand Reputation	18 - 25	2.98	Neutral	2.333ns	.056
	26 - 35	3.45	Important		
	36 - 45	3.65	Important		
	46 - 55	3.73	Important		
	56 and above	3.48	Important		

Legend:

* - significant

ns - not significant

1.00 - 1.80 - Not Very Important

1.81 - 2.60 - Not Important

2.61 - 3.40 - Neutral

3.41 - 4.20 - Important

4.21 - 5.00 - Very Important

Table 5 presents a comparison of purchase intention factors across different age groups. All age groups consistently rated environmental impact and quality of products as "Very Important." There were no significant differences on the means of the different age groups. There were differences in the descriptive classifications of the age groups when it comes to the importance of price, availability of products, and brand reputation. This may suggest differences between the means, but the analysis revealed no significant differences among them.



Social influence was the only factor that showed a significant difference between the age groups, $F(4, 263) = 2.411$, $p = .050$. Descriptively, the 18-25 age group had the lowest mean ($M = 3.40$), considering social influence as "Neutral." The 56 and above age group had the highest mean ($M = 4.04$), closely followed by the 46-55 age group ($M = 4.03$), and the 36-45 age group ($M=4.00$), who all considered it "Important." This implies that, younger individuals were influenced by social factors. In contrast, older age groups are more likely to give importance to social influences.

Table 6. Likelihood of purchasing upcycled products in the future between males and females

Gender	Means	Descriptive Equivalent	T-value	P-value
Male	3.74	Likely	-2.868**	.006
Female	4.17	Likely		

Legend:

** - highly significant

1.00 - 1.80 - Very Unlikely

1.81 - 2.60 - Unlikely

2.61 - 3.40 - Neutral

3.41 - 4.20 - Likely

4.21 - 5.00 - Very Likely

Table 6 presents a comparison of the likelihood of purchasing upcycled products in the future between males and females. Although both genders indicated a "Likely" intention to purchase, a significant gender difference was revealed in the analysis. Females ($M = 4.17$) expressed a significantly higher likelihood of purchasing upcycled products compared to males ($M = 3.74$), as indicated by the t-test ($t = -2.868$, $p = .006$).

Table 7. Likelihood of purchasing upcycled products in the future among age groups

Age	Means	Descriptive Equivalent	F-value	P-value
18 - 25	3.83	Likely	3.024*	.018
26 - 35	4.05	Likely		
36 - 45	4.32	Very Likely		
46 - 55	3.86	Likely		
56 and above	4.22	Very Likely		

Legend:

* - significant

1.00 - 1.80 - Very Unlikely

1.81 - 2.60 - Unlikely

2.61 - 3.40 - Neutral

3.41 - 4.20 - Likely

4.21 - 5.00 - Very Likely



Table 7 presents a comparison of the likelihood of purchasing upcycled products in the future among different age groups. Overall, all age groups expressed likelihood of purchasing upcycled products in the future. A one-way ANOVA revealed a significant difference between the age groups, $F(4, 263) = 3.024, p = .018$. Based on the analysis, the 36-45 age group ($M = 4.32$) showed the highest likelihood of purchasing, while 18-25 age group ($M = 3.83$) showed the lowest likelihood.

CONCLUSION AND RECOMMENDATIONS

The study aimed to investigate the awareness, knowledge, and purchase intention of upcycled products among consumers in Baguio City, focusing on gender and age differences. The findings revealed several key insights. First, the Chi-Square test indicated no significant association between gender and awareness of upcycled products. Both males and females showed similar levels of awareness, suggesting that gender does not play a significant role in whether consumers have heard about upcycled products.

There was a significant difference in the level of knowledge about upcycled products between males and females. Females demonstrated a higher level of knowledge, classified as "Somewhat knowledgeable," compared to males, who were "Neutral" in their understanding. Age-wise, although older age groups showed slightly higher knowledge levels, the differences were not statistically significant.

Significant gender differences were observed in several purchase intention factors. Females placed more importance on environmental impact, product quality, price, and social influence compared to males. However, no significant gender differences were found for product availability and brand reputation. Age-wise, all groups rated environmental impact and product quality as "Very Important," but social influence showed significant differences, with younger individuals being less influenced by social factors compared to older age groups.

Females expressed a significantly higher likelihood of purchasing upcycled products in the future compared to males. Among age groups, the 36-45 age group showed the highest likelihood of purchasing, while the 18-25 age group showed the lowest.

Based on the findings, several recommendations are proposed. Since awareness levels are similar across genders, awareness campaigns should be designed to reach a broad audience. However, special efforts should be made to enhance knowledge among males, who showed lower levels of understanding about upcycled products. Developing educational programs and workshops that focus on the benefits and processes of upcycling is also recommended. These programs should be tailored to different age groups, with a focus on engaging younger individuals who may be less influenced by social factors.

Businesses should consider gender differences in their marketing strategies. Emphasizing environmental impact, product quality, and social influence in marketing messages may resonate more with female consumers. For males, highlighting the practical benefits and availability of upcycled products could be more effective. Companies should continue to focus on the quality and environmental benefits of upcycled products, as these factors are highly valued by consumers across all demographics. Ensuring that upcycled products are competitively priced and readily available can also enhance their market acceptance.



Policymakers should support initiatives that promote upcycling through incentives and funding for businesses and educational institutions. Encouraging collaborations between government, non-governmental organizations, and the private sector can help foster a sustainable market for upcycled products. By implementing these recommendations, stakeholders can enhance the awareness, knowledge, and purchase intention of upcycled products, contributing to a more sustainable and environmentally conscious consumer market in Baguio City.

REFERENCES

- [1] Agoot, L. (2024, March 18). More waste segregation efforts pushed to cut costs by 65%. Philippine News Agency. <https://www.pna.gov.ph/articles/1221049>
- [2] Gozum, I. (2020, December 9). Communities bear the weight of the Philippines' plastic waste problem. Rappler. Retrieved from <https://www.rappler.com/environment/tackling-plastic-waste-from-communities/>
- [3] ICLEI Southeast Asia. (2022, June 23). Baguio City, PH starts transition towards a circular economy. ICLEI Southeast Asia. <https://icleiseas.org/index.php/2022/06/23/baguio-city-ph-starts-transition-towards-a-circular-economy/>
- [4] Manahan, J. (2023, August 2). 'Upcycling' among possible solutions to PH's solid waste crisis: DENR. ABS-CBN News. Retrieved from <https://news.abs-cbn.com/spotlight/08/02/23/upcycling-among-possible-solutions-to-phs-solid-waste-crisis-denr>
- [5] Wei, X., & Jung, S. (2017). Understanding Chinese consumers' intention to purchase sustainable fashion products: The moderating role of face-saving orientation. *Sustainability*, 9(1570). Retrieved from Google Scholar
- [6] WWF-Philippines. (2023). Turning trash into treasure: The impact of upcycling and recycling plastic waste. Retrieved from <https://archive.wwf.org.ph/resource-center/story-archives-2023/turning-trash-into-treasure-the-impact-of-upcycling-and-recycling-plastic-waste/>