From Gen Z to Baby Boomers: Generational Differences in Consumer Perceptions and Behaviors Toward Upcycling

Da Yeon Kang and Eunsoo Kang
MICA International Scholars

ABSTRACT

Upcycling has received growing attention due to rising environmental concerns and the expansion of the circular economy. This study examines generational differences in perceptions and behaviors toward upcycling among four cohorts in Korea: Generation Z, Generation Y (Millennials), Generation X, and Baby Boomers. A 20-item paper-and-pencil survey measured awareness, attitudes, experiences, motivations, and perceived barriers related to upcycling practices and the purchase of upcycled products. A total of 200 valid responses were analyzed using a 5-point Likert scale and open-ended questions. Results showed that Generation Z demonstrated the highest levels of conceptual understanding, brand familiarity, and willingness to purchase, repurchase, and recommend upcycled products. Baby Boomers displayed comparatively positive attitudes grounded in practicality and environmental responsibility, whereas Generations Y and X reported lower engagement and expressed greater skepticism about product quality, durability, and hygiene. Open-ended responses revealed time constraints (younger cohorts), and trust and knowledge deficits (middle-aged and older cohorts) as key barriers. These findings highlight the need for generation-specific strategies: creative, design- and identity-oriented approaches for Generation Z, quality- and convenience-focused communication for Generations Y and X, and practical, cost-saving benefits for Baby Boomers. Overall, targeted community education and credible labeling can strengthen trust and participation in upcycling.

KEYWORDS

Upcycling, Generational differences, Sustainable consumption

INTRODUCTION

Upcycling has emerged as a creative and environmentally sustainable alternative to traditional recycling. Unlike recycling, which typically relies on energy-intensive mechanical or chemical processes to recover raw materials, upcycling transforms discarded or unused items into new products with enhanced functional or aesthetic value (Singh, 2022). By bypassing material breakdown, upcycling reduces waste, conserves energy, and contributes to the circular economy (Wegener & Aakjær, 2016). Within this framework, upcycling extends the lifespan of products and reduces dependence on primary resources by reintegrating waste into productive use (Triguero et al., 2023).

In recent years, upcycling has become increasingly prevalent across multiple industries (Cha & Han, 2016). In fashion, designers repurpose end-of-life fabrics, tents, and even automobile and marine wastes into eco-friendly apparel and accessories, combining creativity with sustainability (Gao & Kim, 2024; Kim & Kim, 2024; Lee & Kim, 2023; Lee & Yim, 2015; Niinimäki, 2015). Likewise, furniture artisans convert scrap wood, such as pallets, into functional and visually appealing pieces (Vonk, 2024). Both fast-fashion and luxury brands, such as Zara, H&M, and Hermès, have implemented upcycling initiatives to promote socially responsible, circular business models (Oh et al., 2016; Seo et al., 2024). Cross-disciplinary collaborations between artists and designers further demonstrate how upcycling fosters creativity, ecological awareness, and participatory culture (Cha & Han, 2016; Lee & Yim, 2015). In South Korea, the Seoul Upcycling Plaza serves as a national hub connecting producers and

consumers while encouraging public participation (Sung, 2021). Altogether, these examples indicate that upcycling functions as not only an environmental practice but also a socio-economic and cultural movement driving sustainability transitions (Martín Martín et al., 2022).

Despite the growing emphasis on sustainability, consumer engagement with upcycling varies markedly across generations. These generational differences stem from distinct socio-economic, cultural, and historical experiences that have shaped the values and consumption behaviors of each cohort (Yamane & Kaneko, 2021). Generation Z (Gen Z), often referred to as true digital natives, relies heavily on social media and influencer culture when making purchasing decisions. They are often described as environmentally conscious consumers with higher education levels and heightened sensitivity to social and ecological issues. For instance, Panopoulos et al. (2023) found that eco-labeling and user-generated content significantly affected the green purchase intentions of Gen Z university students in the United Kingdom. Generation Y (Gen Y), or Millennials, matured during the rise of globalization and the early internet era. They are often described as experience-driven consumers who value convenience, authenticity, and socially responsible consumption (Manley et al., 2023). Generation X (Gen X), sometimes called the Bridge Generation, experienced the analog-to-digital transition. Growing up during times of economic change and rapid technological growth, Gen X is often characterized as independent and practical, and somewhat skeptical of authority (Choudhary et al., 2024). The Baby Boomer generation, which experienced postwar economic growth and relatively high institutional trust, tends to emphasize durability, practicality, and intergenerational responsibility in consumption (Ma et al., 2024).

Given these generational contrasts, perceptions, motivations, and behaviors toward upcycling likely differ substantially among cohorts. Although prior studies in Korea have explored single-generational perspectives on upcycling (e.g., Hong & Kim, 2014), few have directly compared multiple generations within a single framework. Therefore, this study aims to investigate generational differences in awareness, attitudes, experiences, motivations, and perceived barriers toward upcycling among four cohorts: Gen Z, Gen Y, Gen X, and Baby Boomers in Korea.

Specifically, this study addresses the following research questions: (1) Do awareness and understanding of upcycling differ across generations? (2) How do perceptions, attitudes, and behaviors toward upcycled products vary by generation? and (3) What motivations and barriers influence each generation's engagement with upcycling? By addressing these questions, this study aims to inform generation-specific strategies for promoting upcycling and to offer practical implications for public participation and community-based sustainability initiatives.

METHODS

Participants

This quantitative study surveyed individuals in public spaces across Seongnam and Seoul, South Korea, from January to May 2025, using self-administered paper-and-pencil questionnaires. Of the 224 questionnaires distributed, 200 valid responses were obtained and analyzed (response rate = 89.3%). Participants were randomly recruited from community centers, libraries, subway stations, and parks to ensure demographic diversity and reduce sampling bias.

Respondents were classified into four generational cohorts based on Beresford Research (2025): Gen Z (born 1997-2012; ages 13-28; n = 43), Gen Y/Millennials (born 1981-1996; ages 29-44; n = 50), Gen X (born 1965-1980; ages 45-60; n = 57), and Baby Boomers (born 1964 or earlier; ages 61+; n = 50). The sample included 102 females (51.0%) and 98 males (49.0%). Although the sample was not fully representative of the entire Korean population, the gender and generational distribution was balanced for comparative analysis. No personally identifiable information was collected. Prior to participation, all participants were informed of anonymity, voluntary participation, and exclusive use of data for research purposes.

Survey Instrument

A structured 20-item questionnaire was developed and adapted from Ma et al. (2024), Manley et al. (2023), and Shi et al. (2025), focusing on perceptions, motivations, and barriers related to upcycling and the purchase of upcycled products. The instrument comprised four domains: (1) Understanding and awareness of upcycling, (2) Perceptions and attitudes toward upcycled products, (3) Experiences and behavioral intentions, and (4) Motivations and perceived barriers to use or purchase upcycled products.

Table 1 presents the purpose and content of each domain. To ensure reliability and content validity, a pilot test with 20 students evaluated clarity, usability, and completion time. Pilot testing confirmed that the instructions were clear, and the survey length was appropriate. Based on participant feedback, minor revisions were made by simplifying the wording and adding examples (e.g., reusable bags, keychains made from bottle caps) to enhance comprehension. Two high-school teachers with master's degrees in social studies and science reviewed the instrument for clarity and relevance. Based on their feedback, additional examples of brands and product types were added to improve readability for a mixed-age sample.

Most items used a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree), with higher scores indicating greater awareness or more positive attitudes. Three open-ended questions (Q18–Q20) were included to capture participants' opinions, motivations, and perceived barriers in depth.

Data Collection and Analysis

Data were analyzed using SPSS version 25.0 (IBM Corp., Armonk, NY, USA). The generational differences were examined using one-way analysis of variance (ANOVA) with least significant difference (LSD) post-hoc tests for pairwise comparisons and chi-square tests for categorical variables. Spearman's rank correlation coefficient (ρ) was used to measure the strength and direction of the relationship between variables. In addition, responses to the open-ended items were categorized and interpreted through content analysis. Statistical significance was set at $p < .05$.

Table 1. Domains and items of the survey questionnaire (*reverse scored)

| Domain	Purpose and focus	Items included
1. Understanding and awareness of upcycling	Assess participants' conceptual understanding of upcycling, including their familiarity with its meaning, practical applications, distinction from recycling, and educational exposure.	Q1. I am more familiar with general recycling and waste management practices than upcycling.* Q2. I know what upcycling is and understand how it differs from recycling. Q11. I have received education or learned how to upcycle items myself. Q12. I am aware that unused or discarded items can be transformed into new products through upcycling. Q13. I understand that, unlike recycling, upcycling creates products of higher quality or added value than the original materials. Q14. I understand that upcycling transforms unused materials into unique and distinctive products.
2. Perceptions and attitudes toward upcycled products	Evaluate perceptions and attitudes toward upcycled products, focusing on their perceived environmental and	Q4. I believe that upcycled products (e.g., reusable bags, keychains made from bottle caps) contribute to environmental protection. Q6. I consider upcycled or eco-friendly design factors when purchasing products such as fashion items or furniture. Q9. I trust that upcycled products are properly sanitized and

	social value of upcycled products (safety, quality, trust).	safe for consumer use. Q10. I believe that upcycled products have good quality and durability comparable to new products. Q15. I believe that purchasing upcycled products promotes socially responsible and sustainable consumption behaviors.
3. Experiences and behavioral intentions	Examine participants' prior experiences and brand familiarity with upcycled products and behavioral intentions to create, purchase, or recommend such products.	Q3. I have seen upcycled products, but I have not personally used them.* Q5. I am interested in collecting used materials and creating new upcycled products. Q7. I can identify at least one brand that sells upcycled products (e.g., Patagonia, Beyond Retro, or Eco Party). Q8. If an upcycled product meets my standards, I am willing to purchase it. Q16. If I find an upcycled product useful or appealing, I am willing to recommend it to others. Q17. Which of the following best describes your current engagement with upcycling? (a) I do not know or practice upcycling; (b) I know how to upcycle but rarely practice it; (c) I know and regularly practice upcycling.
4. Motivations and perceived barriers to use or purchase	Identify motivations (internal and external drivers), perceived barriers, and enabling factors influencing participation or purchase of upcycled products.	Q18. If you do not currently engage in upcycling, please indicate the reasons (Select all that apply). Q19. If you have purchased any upcycled products, please specify the products and describe the factors that motivated your purchase. Q20. If you have not yet purchased upcycled products, what factors would increase your willingness to purchase them in the future?

RESULTS

A total of 200 valid responses were analyzed across four generational cohorts: Gen Z (n = 43), Gen Y/Millennials (n = 50), Gen X (n = 57), and Baby Boomers (n = 50). Generational differences were examined across four domains: (1) understanding and awareness of upcycling, (2) perceptions and attitudes toward upcycled products, (3) experience with upcycled products and behavioral intentions, and (4) motivations and perceived barriers to use or purchase upcycled products. The results for each domain are described below in sequential order.

Domain 1. Understanding and awareness of upcycling

For Domain 1, both item-level and composite-score analyses revealed a consistent generational pattern. When averaged across the six items of Domain 1 (Q1-2, Q11-14), Gen Z (M = 3.75, SD = 1.03) scored significantly higher than Gen Y (M = 2.86, SD = 0.88), Gen X (M = 2.87, SD = 0.71), and Baby Boomers (M = 2.92, SD = 0.64), as illustrated in Figure 1. This indicates that, overall, Gen Z demonstrated the highest level of conceptual understanding and familiarity with upcycling, showing significantly higher scores than the other three cohorts ($F(3, 196) = 10.11$, $p < .05$). This trend was consistently observed across all individual items (Q1: $F(3, 196) = 8.31$, Q2: $F(3, 196) = 3.67$, Q11: $F(3, 196) = 36.97$, Q12: $F(3, 196) = 4.29$, Q13: $F(3, 196) = 2.94$, Q14: $F(3, 196) = 2.88$, all $p < .05$). Gen Y, X, and Baby Boomers exhibited similarly lower levels of awareness, with no statistically significant differences among them ($p > .05$). Notably, Baby Boomers were least familiar with upcycling and more accustomed to conventional recycling concepts.
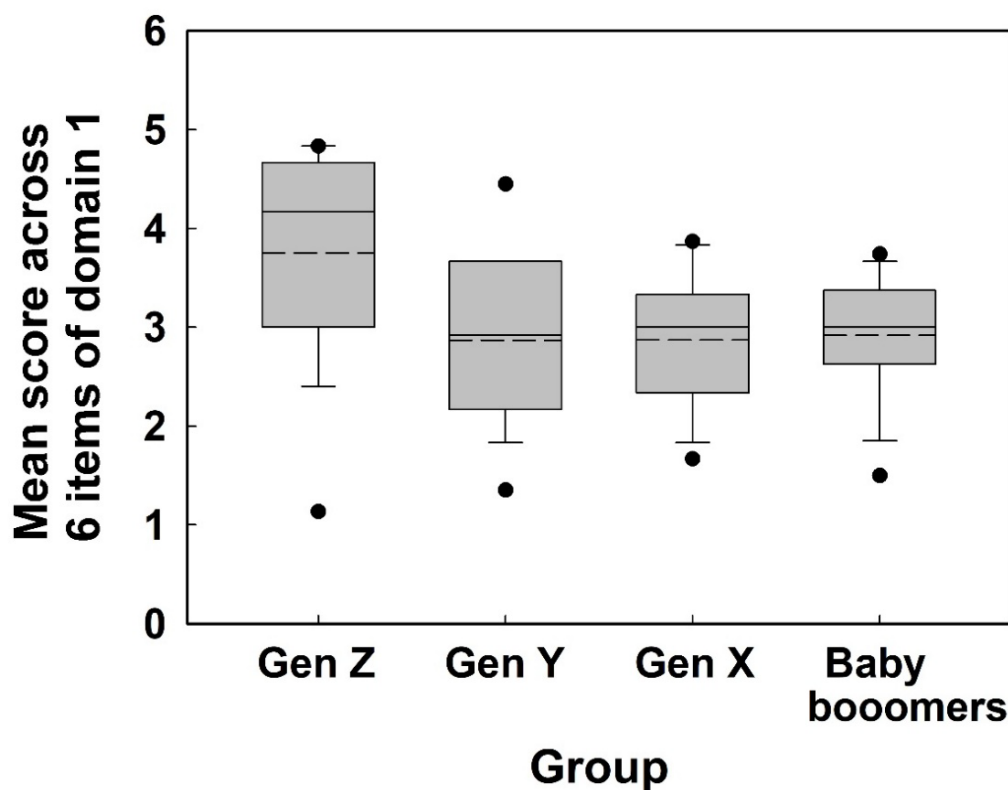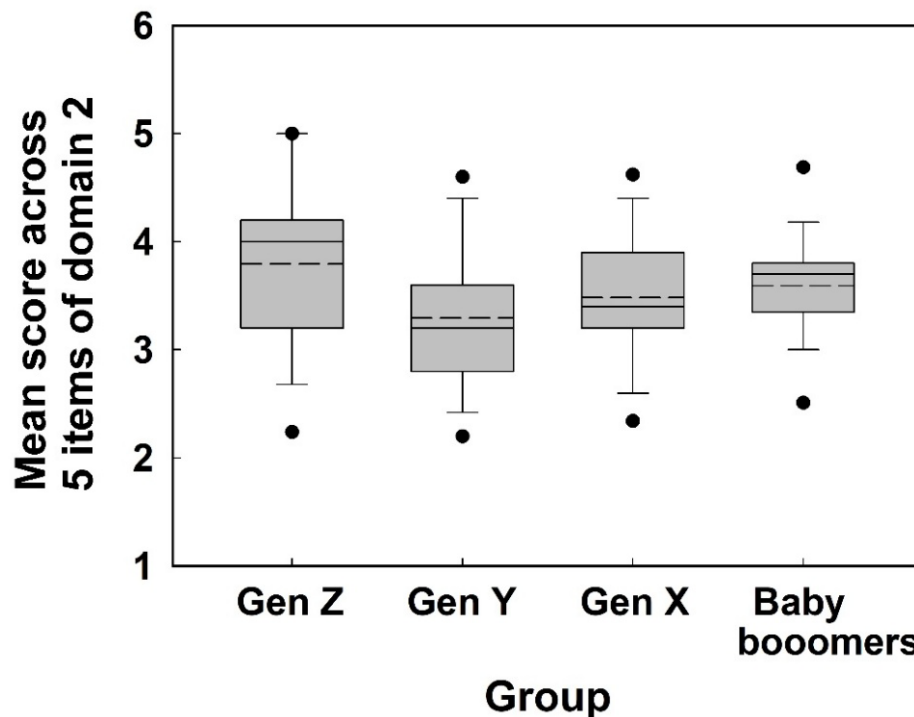
Figure 1. Boxplots displaying the distribution of scores of understanding and awareness of upcycling (domain 1) across generations. The straight line denotes the median/50th percentile and dashed line indicates the mean. The box edges mark the 25th and 75th percentiles of the dataset. The whiskers mark the 5th and 95th percentiles, and any points beyond are outliers (black dots).

Regarding educational exposure related to upcycling (Q11), Gen Z reported the highest mean score (M = 3.51, SD = 1.50 for Q11), whereas Gen Y, X, and Baby Boomers all scored below 2.0 on average. These findings indicate that most Gen Z participants had at least some formal or informal learning experiences with upcycling, while older cohorts had minimal or no prior education on how to upcycle materials. Spearman's rank-order correlation analyses showed that Gen Z's educational exposure was positively associated with their level of understanding (Spearman's ρ = .53–.66, p < .05), whereas the other cohorts showed only weak (Spearman's ρ <.40) or non-significant associations. This suggests that Gen Z has had greater exposure to upcycling education, whereas other generations have had few comparable opportunities, resulting in a substantial generational gap in understanding and awareness. These results highlight that the most critical gap lies in awareness and exposure, rather than in attitude, suggesting that expanding hands-on education and cross-generational learning opportunities will be essential for building a shared understanding of upcycling.

Domain 2. Perceptions and attitudes toward upcycled products

For Domain 2, the composite score across the five items (Q4, Q6, Q9, Q10, and Q15) differed significantly among generations (F(3, 196) = 4.23, p < .05). All items except Q6 revealed significant generational differences (Q4: F(3, 196) = 3.87, Q9: F(3, 196) = 4.23, Q10: F(3, 196) = 3.16, Q15: F(3, 196) = 3.12, all p < .05). When responses were averaged across the five items, Gen Z (M = 3.80, SD = 0.81) showed the most positive perceptions and attitudes toward upcycled products, followed by Baby Boomers (M = 3.59, SD = 0.53), Gen X (M = 3.48, SD = 0.71), and Gen Y (M = 3.30, SD = 0.71), as illustrated in Figure 2. No statistically significant differences were found between Gen X and Gen Y (p > .05).
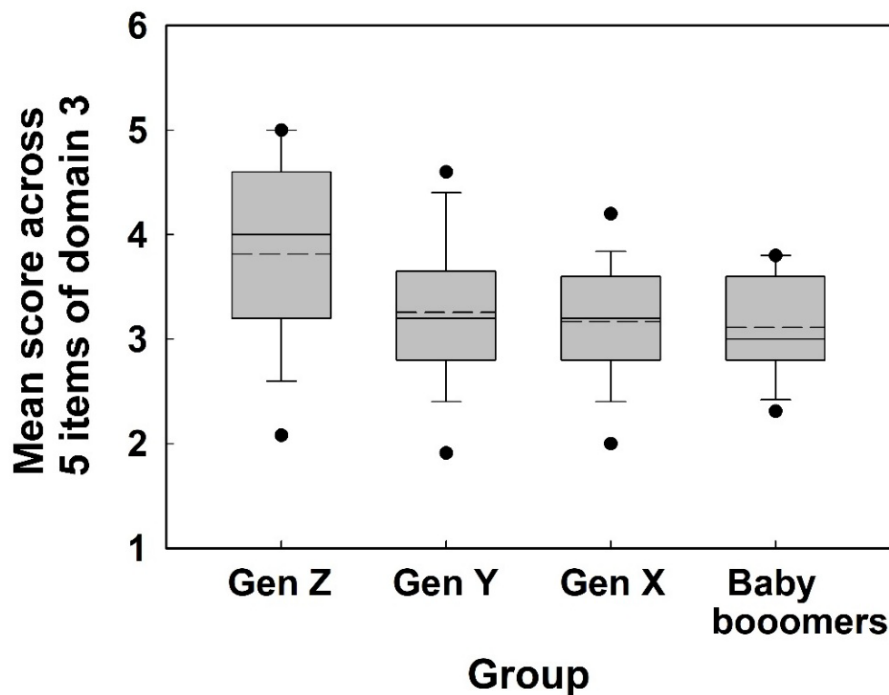
Figure 2. Boxplots displaying the distribution of scores of perceptions and attitudes toward upcycled products (domain 2) across generations. The straight line denotes the median/50th percentile and dashed line indicates the mean. The box edges mark the 25th and 75th percentiles of the dataset. The whiskers mark the 5th and 95th percentiles, and any points beyond are outliers (black dots).

Among the five items, results revealed partially mixed patterns. For Q6, all cohorts exhibited no statistically significant difference in considering upcycled or eco-friendly design factors when purchasing products ($p > .05$), suggesting that environmental values in purchasing decisions are shared across generations. However, for Q4, Gen Z and Baby Boomers expressed significantly stronger beliefs in the environmental benefits of upcycling compared with Gen Y, which reported the lowest belief among all cohorts. For Q9, Gen Z showed the highest trust in the sanitation and safety of upcycled products, whereas Gen X exhibited the lowest trust level. For Q10 and Q15, Gen Y exhibited significantly lower confidence in the quality, durability, and social responsibility of upcycled products, while higher belief observed in Gen Z.

Overall, generational contrasts in perception reflect distinct motivational orientations. Gen Z and Baby Boomers view upcycling through expressive or moral perspectives, either as creative self-expression or as an ethical commitment to environmental responsibility. Gen Y and Gen X, by contrast, prioritize functionality, reliability, and product performance, often requiring stronger evidence of quality before purchase. Therefore, practical interventions, such as transparent labeling, product-quality assurance, and demonstrable durability testing, may prove more effective than broad awareness campaigns alone for enhancing engagement among the middle-aged cohorts.

Domain 3. Experience with upcycled products and behavioral intentions

When averaged across the five items of Domain 3 (Q3, Q5, Q7, Q8, and Q16), Gen Z (M = 3.81, SD = 0.86) scored significantly higher than Gen Y (M = 3.26, SD = 0.74), Gen X (M = 3.17, SD = 0.56), and Baby Boomers (M = 3.11, SD = 0.48) as illustrated in Figure 3. The statistical results indicated significant generational differences in both hands-on experience with upcycled products and behavioral intentions to purchase or recommend them $F(3, 196) = 10.67$, $p < .05$. Overall, Gen Z demonstrated greater practical engagement and intention to act than the other three cohorts, although no statistically significant differences were observed among Gen Y, Gen X, and Baby Boomers ($p > .05$).

Figure 3. Boxplots displaying the distribution of scores of experiences with upcycled products and behavioral intentions (domain 3) across generations. The straight line denotes the median/50th percentile and dashed line indicates the mean. The box edges mark the 25th and 75th percentiles of the dataset. The whiskers mark the 5th and 95th percentiles, and any points beyond are outliers (black dots).

Across the individual items of Domain 3, Gen Z consistently recorded the highest mean scores (Q3: $F(3, 196) = 4.47$, Q5: $F(3, 196) = 3.79$, Q7: $F(3, 196) = 11.55$, Q8: $F(3, 196) = 3.85$, all $p < .05$), with no significant difference was found for Q16 ($p > .05$). For Q16, all four generations showed comparable willingness to recommend upcycled products once they had found them useful or appealing ($p > .05$). This suggests that perceived usefulness and satisfaction lead to similar recommendation and purchasing intentions across generations. For Q3, Gen Z reported more frequent use of upcycled products than other cohorts, while Gen Y, Gen X, and Baby Boomers exhibited similarly lower levels of product use. For Q5, Gen Z displayed the strongest creative interest in collecting used materials and producing new upcycled items, with no statistically significant differences among the remaining cohorts. For Q7, Gen Z was markedly more familiar with at least one upcycling brand (e.g., Patagonia, Beyond Retro), followed by Gen Y, while Baby Boomers showed the lowest brand awareness. Finally, based on Q8, Gen Z and Gen Y showed similar willingness to purchase upcycled products that meet their quality or aesthetic standards, whereas Gen X and Baby Boomers reported lower purchasing intentions overall.

Chi-square tests of independence were conducted to examine the relationship between generation and self-reported upcycling behavior (Q17). The result showed a significant generational difference ($\chi^2(6) = 19.65$, $p < .05$), indicating that the distribution of upcycling behavior differed significantly across generations. Upcycling participation showed a clear decline with increasing age, supported by a negative correlation between generation and engagement (Spearman's $\rho = -.19$, $p < .05$). As summarized in Table 2, Gen Z respondents were substantially more likely to report active upcycling practice, whereas older cohorts predominantly indicated no engagement. Specifically, 16.3 % of Gen Z participants reported "regular upcycling practice" (response 3), compared with only 0-5 % in the older cohorts. Conversely, more than 55% of Gen Y, Gen X, and Baby Boomers selected "no knowledge or no practice of upcycling" (response 1), while only 28 % of Gen Z selected this response.

Table 2. Distribution of upcycling awareness and engagement (responses to Q17). Values are expressed as number of respondents (n) and percentage (%).

Q17 responses	Gen Z	Gen Y	Gen X	Baby Boomers	Sum
Response 1. *"I do not know or practice upcycling."*	12 (27.9%)	30 (60.0%)	33 (57.9%)	29 (58.0%)	104 (52.0%)
Response 2. *"I know how to upcycle but rarely practice it."*	24 (55.8%)	20 (40.0%)	21 (36.8%)	20 (40.0%)	84 (42.0%)
Response 3. *"I know and regularly practice upcycling."*	7 (16.3%)	0 (0.0%)	3 (5.3%)	1 (2.0%)	12 (6.0%)

Together, these results demonstrate that behavioral engagement reflects prior exposure, familiarity, and trust: Gen Z's digital literacy and creative orientation lead to higher participation, while the limited hands-on experience of Gen Y, X, and Baby Boomers constrains their behavioral intentions. Gen Z's engagement largely stems from ongoing exposure to online sustainability trends, DIY content, and influencer campaigns that integrate creative reuse into daily life. Their participation in social media and digital maker communities has reframed upcycling as a social and creative activity rather than merely an environmental task. In contrast, older cohorts often encounter upcycling through limited media or retail exposure, reducing confidence in both process and product quality. Expanding experiential access through maker workshops, community programs, and local upcycling markets could bridge this behavioral gap by enhancing competence, trust, and intergenerational participation in sustainable consumption.

Domain 4. Motivations and perceived barriers

Motivations and perceived barriers toward upcycling were examined through open-ended questions. For Q18 ("If you do not currently engage in upcycling, please indicate the reasons."), responses on perceived barriers varied across generations. Among Gen Z (n = 43), the most frequently cited barrier was "lack of time" (n = 14). For Gen Y (n = 50), "lack of time" (n = 20) was also the most common, followed by "lack of trust in the upcycling process" (n = 14) and "concerns about quality or design" (n = 10). For Gen X (n = 57), the dominant barriers were "lack of time" (n = 21), "lack of knowledge about how to upcycle" (n = 16), and "concerns about product quality or reliability of the process" (n = 14). For Baby Boomers (n = 50), the most frequent barrier was "lack of trust in the process" (n = 13), followed by "concerns about reduced product quality" (n = 11) and "lack of knowledge" (n = 16).

For Q19 ("If you have purchased any upcycled products, please specify the products and describe the factors that motivated your purchase."), responses again differed by generation. Gen Z commonly mentioned unique design and aesthetic appeal as primary motivators, whereas Gen Y and Gen X prioritized convenience and functionality. Baby Boomers emphasized practicality and environmental contribution as their chief motivations.

For Q20 ("If you have not purchased upcycled products, what factors would increase your willingness to purchase them in the future?"), potential motivators for future purchasing also differed across cohorts. Gen Z emphasized quality and cost-effectiveness in addition to creative design and visual appeal. Gen Y and Gen X prioritized convenience, price, and credible product information to reduce skepticism toward upcycled materials. Baby Boomers indicated that they would consider purchasing if products were practical, durable, hygienic, and environmentally beneficial.

Summarizing, these findings indicate that motivations and perceived barriers toward upcycling reflect each generation's characteristic values and decision-making patterns. For Gen Z, upcycling embodies creativity, self-

expression, and identity; it connects sustainability with personal style and innovation. For Gen Y and Gen X, motivation is shaped more by efficiency, convenience, and product reliability, meaning their engagement depends heavily on trust, quality, and functional utility. For Baby Boomers, upcycling is grounded in practicality, durability, and moral responsibility, often framed around resource conservation and care for future generations. Addressing these generational distinctions through thoughtful design, fair pricing, and enhanced trust-building mechanisms can help translate awareness and perception into sustained consumer behavior. Furthermore, educational and community programs that link creativity with practicality can promote collaboration across generations and foster long-term participation in the circular economy.

DISCUSSION

Upcycling, as a creative and sustainable approach to consumption, requires not only environmental awareness but also a behavioral willingness to act, both of which are shaped by generational characteristics. This study examined how awareness, perceptions, experiences, motivations, and perceived barriers related to upcycling differ across generations. Findings show how Gen Z, middle-aged adults, and older adults approach upcycling differently based on their life experiences, as well as social and cultural contexts. The discussion is organized according to the three research questions of this study.

Research question 1) Do awareness and understanding of upcycling differ across generations?

Our findings revealed a notable generational difference in both understanding and awareness of upcycling. Gen Z consistently demonstrated the highest levels of conceptual knowledge and familiarity, reflecting their exposure to both formal and informal sustainability education and digital media. Their familiarity with eco-content and online trends allows them to perceive upcycling as both an ecological and creative pursuit (Raman et al., 2024). As digital natives, Gen Z engages in upcycling not only as environmentally responsible behaviors but also as expressions of creativity and personal identity. Their active involvement in social media and online communities further facilitates sustainability knowledge and promotes green lifestyle practices (Adah et al., 2025; Seo et al., 2024; Seyfi et al., 2025; Thangavel et al., 2019; Yamane & Kaneko, 2021). In contrast, Gen Y and Gen X showed lower engagement in upcycling activities, consistent with earlier findings (Liang & Xu, 2017; Manley et al., 2023). These generations rely more on traditional information sources and personal values, often prioritizing convenience or functionality. Baby Boomers remained least familiar with the concept, commonly associating upcycling with repair or reuse rather than creative transformation (Hong & Kim, 2014; Kamenidou et al., 2020).

Despite growing awareness across age groups, educational exposure was unevenly distributed, concentrated mainly among younger participants. Older generations' limited access to structured learning opportunities reinforces the generational gap in understanding. Many Baby Boomer and Gen X respondents indicated that they first encountered the concept of upcycling through media coverage or consumer advertising, suggesting that awareness often develops passively rather than through experiential learning. This disparity suggests expanding community-based education, such as public workshops and maker fairs, and collaborative intergenerational programs can strengthen participation and bridge the awareness gap. Such initiatives could reduce informational asymmetry between generations and cultivate sustained behavioral engagement across the lifespan.

Research question 2) How do perceptions, attitudes, and behaviors toward upcycled products vary by generation?

Overall, Gen Z and Baby Boomers expressed more positive perceptions of upcycled products than the middle-aged cohorts (Gen Y and Gen X), who remained more skeptical about quality and safety. Gen Z's favorable attitude reflects lifestyle-based identity expression, where sustainable consumption aligns with creativity and self-branding (Niinimäki, 2015; McNeill & Moore, 2015). Digital communities and influencer culture have normalized sustainability as part of social participation, encouraging Gen Z to link innovation with responsibility. By contrast, Gen Y and Gen X prioritized functionality, durability, and cost, interpreting upcycling through practical views of reliability and hygiene (Schiller & Jeppsson, 2024; Allison, 2024). Their lower behavioral engagement may stem

from limited firsthand experience and weaker trust in product quality. Baby Boomers considered upcycling as an extension of frugality and moral duty, emphasizing long-term usability and resource conservation, consistent with Vehmas et al. (2018) who reported that older consumers associate circular practices with economic efficiency and responsibility rather than aesthetic appeal.

Taken together, these findings indicate that Gen Z demonstrates the most proactive behaviors toward upcycled products, while middle-aged and older adults are less likely to act. This suggests that even when people hold positive attitudes toward upcycling, these attitudes do not always lead to consistent behavior. Bridging this attitudinal divide requires transparent quality assurance and accessible, generation-tailored communication that connects creativity with reliability and cost-effectiveness.

Research question 3) What motivations and barriers influence each generation's engagement with upcycling?

The analysis of open-ended responses revealed that motivations and barriers toward upcycling differed substantially by generation. Gen Z was primarily motivated by unique design and aesthetic appeal, favoring creative, expressive, and visually distinctive products. This aligns with previous studies showing that younger consumers are particularly responsive to design-oriented sustainability campaigns and social media–driven movements (Gao & Kim, 2024; Seo et al., 2024). In contrast, Gen Y and Gen X valued convenience and functionality but remained more skeptical, frequently citing concerns about product quality, safety, and hygiene. This finding is consistent with Allison (2024), who reported that consumer hesitation often arises from doubts about the durability and cleanliness of upcycled materials, and with Schiller and Jeppsson (2024), who emphasized that perceived inconvenience and limited practicality discourage sustainable product adoption. Together, these studies support the current finding that trust, usability, and quality assurance function as key behavioral barriers among middle-aged cohorts.

Baby Boomers, though less familiar with upcycling, associated it primarily with frugality, practicality, and resource conservation. This interpretation corroborates Kamenidou et al. (2020) and Liang et al. (2024), who found that older consumers tend to value economic efficiency and product durability over novelty or aesthetic appeal. Similarly, Vehmas et al. (2018) demonstrated that older consumers perceive recycling and reuse practices not as new environmental trends but as extensions of traditional thrift and household resourcefulness. Consistent with these findings, the present study indicates that Baby Boomers view upcycling as a cost-saving and ethically responsible practice rather than a form of creative expression.

Across all cohorts, time limitations emerged as the most frequent barrier, likely reflecting busy urban lifestyles and competing daily demands. Among Gen Y, Gen X, and Baby Boomers, "lack of trust in the process," "concerns about product quality," and "lack of knowledge" were also common obstacles, indicating a need for stronger communication and education. Cha and Han (2016) similarly noted that insufficient consumer education remains a central obstacle to sustainable practices. Addressing these challenges requires tailored interventions: design-driven and digital engagement for Gen Z; reliability and quality assurance for Gen Y and Gen X; and practical, cost-saving benefits for Baby Boomers. Expanding community-based learning and transparent certification systems can strengthen intergenerational trust, reduce skepticism, and enhance accessibility.

Taken together, these findings suggest that effective upcycling promotion must balance generational distinctions with shared challenges. Social media campaigns and innovative design can reinforce upcycling's role as self-expression for Gen Z, while transparency and convenience-based marketing can better appeal to middle-aged cohorts. For Baby Boomers, emphasizing practicality, cost efficiency, and long-term value may sustain participation through both ethical and economic appeal. Collaborative initiatives such as public workshops, local exhibitions, and credible eco-labeling programs can build familiarity and trust among consumers, transforming awareness into sustained behavioral commitment and fostering intergenerational collaboration within the circular economy.

This study has some limitations. The sample size was relatively small and geographically limited to Seongnam and Seoul, which may constrain the generalizability. Future research should incorporate larger and more diverse populations across regions. Additionally, the reliance on self-reported data may have led to overstated sustainable behaviors. To strengthen validity, future studies should employ mixed-method approaches such as in-depth interviews or field experiments. Furthermore, factors such as income, education, and geographic location should be integrated into subsequent analyses, as they likely mediate generational engagement with upcycling.

CONCLUSION

This study examined generational differences in awareness, perceptions, motivations, and behaviors related to upcycling among Gen Z, middle-aged adults (Gen Y and Gen X), and Baby Boomers. The results revealed that each generation responds to sustainability in distinct ways, reflecting their unique cultural, social, and economic experiences. Gen Z emphasizes creativity, self-expression, and environmental values, engaging with upcycling as both a lifestyle practice and a form of creative identity. Middle-aged adults are driven primarily by practicality, cost, and convenience, often showing skepticism toward product quality and hygiene. In contrast, Baby Boomers associate upcycling with frugality, durability, and moral responsibility, viewing it as a continuation of resourcefulness and post-war conservation values. These findings highlight the need for generation-specific strategies to promote sustainable participation. Addressing the cross-generational barriers identified in this study requires continuous education and community-based engagement. Initiatives such as neighborhood workshops, public exhibitions, and transparent eco-labeling systems can build familiarity and trust among consumers. Establishing credible certification frameworks and improving accessibility are also critical to transforming sustainable awareness into consistent everyday practice. Collectively, these strategies can advance circular-economy objectives and foster intergenerational collaboration toward a more inclusive and sustainable future.

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