

Young Consumers' Sustainable Purchasing Behavior of Online Food Products: Insights from Millennial and Generation Z Consumers

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Abstract. This study investigated the sustainability behaviors of young consumers, focusing on Millennials and Gen Z, in their online food purchasing and explored the factors driving their intention to engage in sustainable online food consumption. This study uses frequency analysis and ordinal logistic regression (OLR) to analyze the sustainable purchasing habits of young consumers for online food products. Data for this study were collected through a self-administered online questionnaire distributed via social media platforms, including WhatsApp, Instagram, and Facebook. A total of 407 respondents met the eligibility criteria and were included in the analysis. The findings reveal that online food expenditure and purchase intention sustainability are influenced by distinct factors. Expenditure changes are driven by being part of the Millennial generation, higher food expenditure, and living outside Java, while more online shopping experience reduces expenditure growth. Purchase intention is shaped by perceptions of usefulness, ease of use, sustainability concerns, and trust, with minimal demographic impact. Millennials often have higher education and income, while Gen Z consists of lower-income students in rural Java. Young consumers buy food online 2-3 times monthly, prioritize fresh food, and rely on smartphones and platforms like Shopee and Tokopedia.

1 Introduction

Millennials and Gen Z constitute the largest adult demographic worldwide. In 2021, Millennials and Gen Z comprised 4.27 billion individuals, representing 57% of the global population, with Asia housing a quarter of this demographic. According to the 2020 national census, Millennials and Gen Z encompass 53.81% (145.39 million) of the Indonesian market population [1]. Moreover, young consumers make up a profitable business segment globally.

Millennials consumers, also known as Generation Y, were born between 1981 and 1996 and are the most adept generation with information technology applications, such as e-commerce, compared to the previous generation of Generation X and Baby Boomers [2]. Moreover, Gen Z, also referred to as iGen, encompasses individuals born in 1997 or later, or the post-Millennial generation, and is considered a digitally native generation due to their hyperconnectivity and proficiency with computers and the internet. A previous study revealed that Millennials and Gen Z are the primary e-commerce consumers in Indonesia,

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accounting for 50% and 31% of e-commerce shoppers, respectively. It corresponds with the 2020 population census results, demonstrating that Millennials and Gen Z make up the majority of Indonesia’s population, as illustrated in Figure 1.

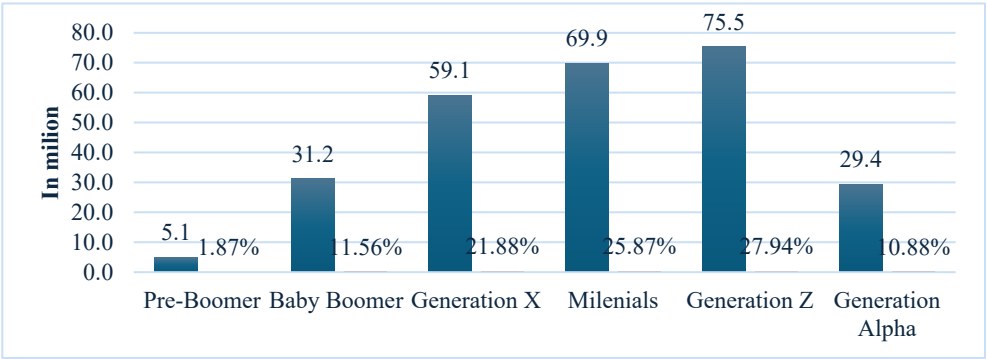


Fig. 1. The 2020 Indonesian Population Census (in millions and percentages)

As an emerging country, Indonesia has recently experienced rapid e-commerce growth. By mid-2024, the population was 281.6 million, with around 66.5%, equating to 185.3 million people, utilizing the internet. In 2023, Indonesia’s e-commerce spending reached USD 62 billion, positioning it as the leading country in e-commerce value in Southeast Asia, with an average annual growth rate of 15% [3].

In 2023, food products had the fastest growth within Indonesia’s e-commerce sector, with a 16.6% annual gain, reaching a value of USD 5.4 billion—an increase of USD 767 million from the previous year. The e-commerce market value of the food industry in Indonesia has been predicted to reach 20.46 billion USD by 2029. Moreover, food and fresh food products are the most favored among Indonesian e-commerce consumers across all generations, including Generation X, Millennials, and Gen Z [4].

Various studies have examined the purchasing behavior of young consumers regarding sustainable food products. Young consumers often exhibit more proficiency in purchasing food products online than older generations since they are more technologically inclined and readily adapt to environmentally friendly online shopping models [5]. Additionally, young consumers, particularly Millennials and Gen Z, are recognized for their environmental awareness and preference for green products, including organic and sustainably labeled food items. Environmental awareness is positively associated with the purchasing behavior of young consumers. Various factors affect young consumers’ intention to purchase online, including convenience, security factors such as consumer data security, and hedonic motives that drive individuals to buy online. Environmental education significantly influences consumers’ purchasing behavior about sustainable consumption. Online reviews and celebrity endorsements also impact young consumers’ online purchase decisions [6].

In addition, several studies have investigated the sustainable purchasing behavior of young consumers in Indonesia regarding online food products, including organic products, local food items, halal food products, and plant-based foods. Following the COVID-19 pandemic, young online consumers in Indonesia exhibit greater perplexity than price sensitivity, perceiving online shopping as a leisure activity rather than solely a means to fulfill needs. Another study indicates that social benefits significantly influence young consumers’ purchase decisions regarding food products, particularly halal ones, typically driven by religious considerations [7]. Moreover, trust is a crucial factor for young consumers when purchasing food products online, shaped by perceived benefits, the quality of the food products, and the quality of the marketing applications.

Despite the extensive literature on the purchasing behavior of young consumers regarding food products, research explicitly examining the sustainable purchasing behavior of online

food products in Indonesia remains limited. Therefore, further study is required to comprehend the sustainable purchasing behavior of Millennials and Gen Z regarding food products on online platforms. This study investigated whether Millennial and Gen Z consumers consider sustainability in purchasing food products and determined the factors influencing this behavior. The study is expected to provide insights into the shopping behavior of young consumers, particularly concerning the future sustainable online purchasing of food products.

2 Research method

Young consumers in this study refer to Millennials and Gen Z. Millennials consumers are individuals born between 1981 and 1996 while Gen Z, sometimes referred to as iGen, comprises those born in 1997 or later. Several studies have investigated the purchasing behavior of young consumers concerning online food products, employing various research methods including confirmatory factor analysis (CFA) with structured models, ANOVA and Fisher's LSD test structural equation model (SEM), multivariate logistic regression and principal component analysis (PCA) [8].

Data for this study were collected through a self-administered online questionnaire distributed via social media platforms, including WhatsApp, Instagram, and Facebook. Social media serves as an effective platform for reaching younger consumers due to their high engagement. Moreover, the target respondents of this research were consumers aged at least 18 years old, belonging to the Millennial and Gen Z demographic, residing in various regions in Indonesia, and having purchased food products online at least once. Of the 413 respondents who completed the questionnaire, only 407 met the requirements and were included in the subsequent analysis.

Subsequently, the data were evaluated descriptively using sample means and frequency analysis to assess the online food purchasing behavior of young consumers. These methods provided a general overview of the extent of young consumers' behavior in purchasing food products post-COVID-19 pandemic. The frequency analysis encompassed consumer demographic profiles and purchasing behavior, including purchase frequency, reasons for buying, most frequently purchased products, electronic devices utilized, e-commerce platforms, and expenditure on online food purchases. In this study, food products refer to the General Standard for Food Additives (GSFA) established by the Food and Agriculture Organization (FAO). Specifically, this includes all types of food and processed food products categorized under the GSFA system, which are either subject to or exempt from the provisions governing the use of food additives according to the relevant categories and subcategories specified in the GSFA standard [9].

Ordinal Logistic Regression (OLR) was utilized to investigate the factors influencing young consumers' sustainable online food purchasing behavior in the post-pandemic context. This method has been frequently employed to analyze the intrinsic ordering of levels in ordinal outcome variables [10]. In this study, young consumers' sustainable purchasing behavior for online food products was examined through two key aspects: the sustainability of their purchases and their concerns about sustainability-related issues. Details of the variables applied in this study demonstrates in Table 1. Moreover, the general form of the cumulative logit model is expressed in equation (1), where Y represents the ordinal outcome, θ_j denotes the threshold for the j -th cumulative logit, and β_k indicates the coefficient associated with the k -th predictor variable.

$$\text{Log} \left(\frac{P(Y \leq j)}{P(Y > j)} \right) = \theta_j - (\beta_1 \chi_1 + \beta_2 \chi_2 + \dots + \beta_k \chi_k), j = 1, \dots, j-1 \quad (1)$$

Table 1. Variable definitions

Variable	Description
Dependent variables:	
Online food purchase frequency	The frequency of online food purchases after the COVID-19 pandemic was categorized into three values: 1. Decreased, 2. Same as before, 3. Increased.
Sustainable online food purchase intention	The intention of consumers to purchase sustainable food products online was measured on a 5-point Likert scale (1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree)
Independent variables:	
<i>Main variables</i>	
Millennials	Dummy variable: 1 if the consumer is a Millennial; 0 if otherwise
Perceived usefulness	A 5-point Likert scale of perception: effectiveness, saving time, comparative advantage, and competitive price
Trust	A 5-point Likert scale of perception: system, security, and platform trust.
Perceived Ease of Use	A 5-point Likert scale of perception: easy to understand, easy to operate, easy to order
Food Sustainability Concern	A 5-point Likert scale of perception: local food, organic food, healthy food, non-imported food, energy-saving
<i>Individual characteristics</i>	
Gender	Dummy variable: 1 if the consumer is male ; 0 for female
Age	The age of individual consumers in the year
Education	1= junior high school; 2= senior high school; 3= undergraduate; 4= diploma; 5= post graduate degree
Income	The monthly income of a consumer in a million Rupiah
Experience	The consumer's experience of online food purchases in a year
<i>Residential characteristics</i>	
Region	Dummy variable, 1 if living in Java Island; 0 if non-Java
Location	1 = Urban; 2 = Sub-urban; 3 = Rural areas

3 Results and discussion

3.1 Demographic of young consumers

This research targeted young consumers aged at least 18, from the Millennial and Gen Z age groups, and having purchased food products online at least once before and after the COVID-19 pandemic. A total of 413 respondents completed the questionnaire, and 407 met the criteria and were included in the analysis. Table 2 lists the demographic profile of the respondents.

As mentioned in Table 2, the demographic profile of 407 young consumers participating in this study, categorized into Millennials and Gen Z. Females, accounting for 60.2%, dominated young consumers. Meanwhile, the rest, 39.8%, were males. It suggests that women are typically responsible for purchasing food in the household [46]. Regarding education, most young consumers (50.9%) possessed a university education, with 8.1% holding postgraduate degrees. Millennials were often better educated than Gen Z, with 66.7% completing undergraduate education. Previous studies highlight that online food consumers tend to be young and well-educated, as they are more adept at online purchasing technology [11].

Concerning residential areas, most young consumers (59.0%) inhabited metropolitan regions, with 67.2% of Millennials residing in urban areas, compared to 52.1% of Gen Z. In a residential context, 59.0% dwelt on Java Island, while 41.0% inhabited non-Java regions, with 28.5% of Millennials residing in Java compared to 84.8% of Gen Z. Income-wise, the majority (46.9%) of young consumers fell into the low-income category (under IDR 2.5

million). Millennials exhibited more affluence, with 44.6% earning middle-income (IDR 5-10 million) and 16.1% earning upper-middle-income (IDR 10-20 million). However, 73.4% of Gen Z belonged to the low-income category (under IDR 2.5 million).

Table 2. Demographic of young consumers (N=407)

Variable	Range	Millennials	Gen Z	All	Percentage
Gender	Male	88	74	162	39.8
	Female	98	147	245	60.2
Education	Junior High School	1	2	3	0.7
	Senior High School	20	126	146	35.9
	Diploma	11	7	18	4.4
	Undergraduate	124	83	207	50.9
	Graduate	30	3	33	8.1
Income (monthly)	≤ IDR 2.5 million	29	162	191	46.9
	IDR 2.5-5 million	35	42	77	18.9
	IDR 5-10 million	83	12	95	23.3
	IDR 10-20 million	30	4	34	8.4
	> IDR 20 million	9	1	10	2.5
Food expenditure (monthly)	≤ IDR 0.5 million	86	170	256	62.9
	IDR 0.5-1.5 million	41	39	80	19.7
	≥ IDR 1.5 million	59	12	71	17.4
Occupation	Student	2	164	166	40.8
	Professional	107	25	132	32.4
	Entrepreneur	46	7	53	13.0
	Government Official	24	1	25	6.1
	Other	7	24	31	7.6
Residential	Urban	125	115	240	59.0
Area	Sub-urban	54	75	129	31.7
	Rural	7	31	38	9.3
Region	Java	53	187	240	59.0
	Non-Java	133	34	167	41.0

Note: Millennials, aged 27 to 42 (born between 1981 and 1996); Gen Z, aged 18 to 26 (born after 1997). IDR : Indonesian Rupiah

Food expenditure data revealed that 62.9% of young consumers spent low amounts (≤ IDR 500,000) of their income on online food purchases. Millennials exhibited more expenditure, with 31.7% allocating substantial amounts (≥ IDR 1.5 million), in contrast to 5.4% of Gen Z. A key reason why Generation Z tends to spend less compared to Millennials is that they place a higher value on money and are generally more financially cautious than the previous generation [12]. Regarding occupation, 40.8% of young consumers were students, 32.4% were professionals, 13.0% were entrepreneurs, 6.1% were government officials, and 7.6% were engaged in other occupations. Millennials were predominantly professionals (57.5%) and entrepreneurs (24.7%), whereas 74.3% of Gen Z were students.

In summary, Millennials possessed higher educational attainment and income levels and were more inclined to be professionals or entrepreneurs. Conversely, Gen Z was predominantly students, had lower income levels, and demonstrated higher representation in rural and Java regions.

3.2 Behavior of young consumers in purchasing food online

Young consumers have become the drivers of today’s and future economy; therefore, discussing their purchasing behavior becomes necessary. This study explored various aspects of young consumers’ online food product purchasing behavior, including purchase

frequency, reasons for buying online food products, types of products purchased (including healthy food products), devices, and platforms.

Figure 2 illustrates the online food purchasing experience among young consumers, broken down into Millennials and Gen Z. Young consumers exhibited varied lengths of online food purchasing experience, with the highest engagement seen in between the one to six-month category, demonstrating significant participation. Within the last month, Millennials and Gen Z depicted similar levels of engagement, with slightly higher participation from Millennials.

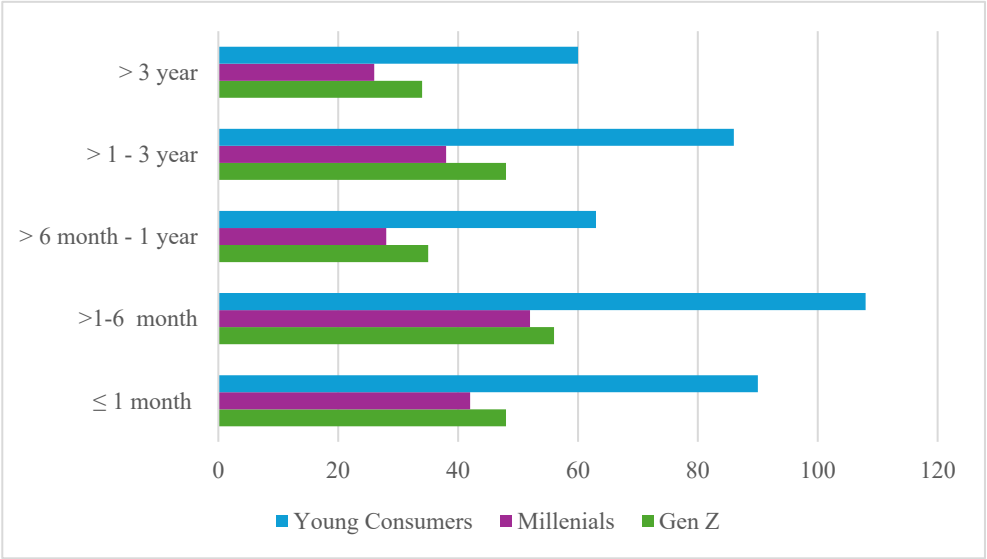


Fig. 2. Online purchasing experience of food

Among those with one month of experience or less, Millennials and Gen Z displayed nearly identical levels of engagement, with Millennials demonstrating a slight edge. Both groups maintained similar levels of engagement in the one to six-month category. However, Millennials had a slight advantage over Gen Z in the six-month to one-year range. In contrast, Gen Z surpassed Millennials in the one to three-year category. Millennials with over three years of experience exhibited greater involvement in online food purchasing. The study unveiled that both groups participated in online food purchases. Nonetheless, Millennials possessed longer-term experience, whereas Gen Z depicted higher engagement in the one to three-year range. It indicates that younger consumers displayed diverse online purchasing habits, with Millennials tending toward longer durations and Gen Z disclosing more vigorous participation in mid-term engagements. Previous research suggests that prior experience purchasing food products online influences the likelihood of repurchasing online food, enhancing customer satisfaction [13].

Moreover, Figure 3 portrays the frequency of online food purchases among young consumers, highlighting a comparison between Millennials and Gen Z. The predominant purchase frequency among young consumers was two to three times a month, followed by once a month. When comparing the two groups, Millennials and Gen Z exhibited different patterns. Millennials engaged in online food purchases less frequently, predominantly in the once-a-month and two to three times monthly categories. Conversely, Gen Z depicted more engagement in higher frequency categories, particularly in online food purchasing three to five times a week and once a week. The least common frequency for both groups was more than five times a week, with only a small portion of young consumers engaging in such frequent purchases. While Millennials often distributed their online food purchases

throughout the month, Gen Z exhibited a propensity for more frequent online food purchasing behavior. The data highlights that Generation Z exhibits unique behavioral patterns compared to other generations—particularly Millennials—reflecting their distinct characteristics [14].

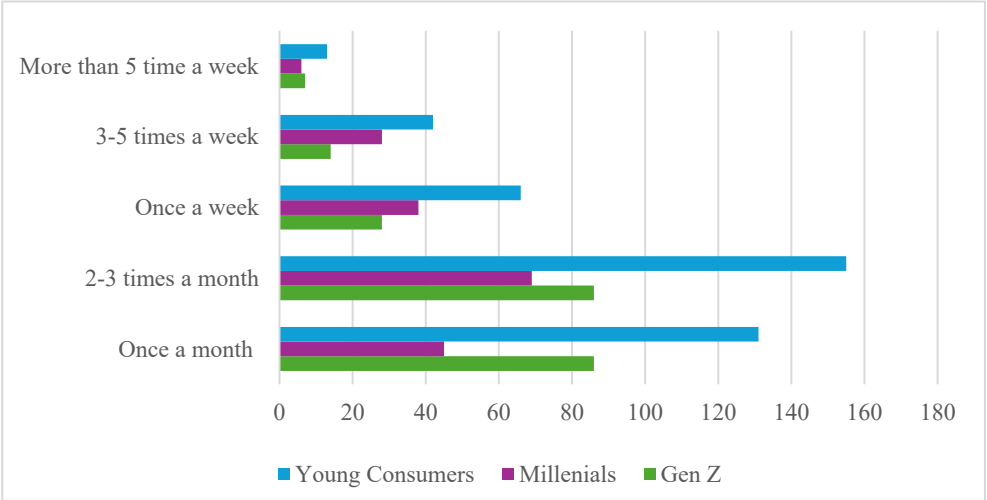


Fig. 3. Frequency of online food purchases

Regarding the frequency of online food purchases, comparing before and after the pandemic revealed several noteworthy observations. Figure 4 denotes that, among young consumers, the frequency of food purchases significantly diminished post-pandemic, with the majority buying less frequently than during the pandemic, although a minority maintained or augmented their purchasing frequency. Millennials were more inclined to reduce their spending, whereas Gen Z displayed a more balanced distribution across all three categories—less, same, and more—indicating more significant variability in their purchasing behavior post-pandemic.

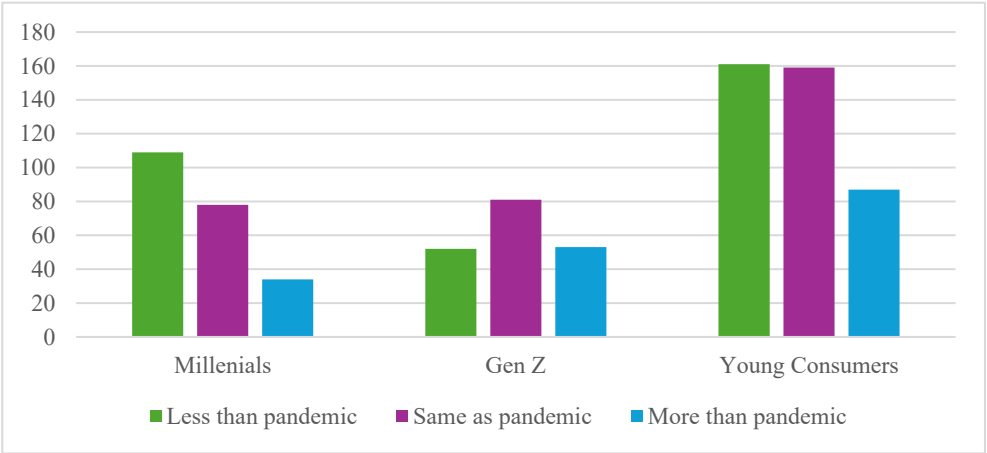


Fig. 4. Changes in food purchasing frequency

In addition, Figure 5 portrays the reasons young consumers engaged in online food purchased. The predominant reason for online food purchases was saving time, with a significant majority identifying this as their primary motivation. This research aligns with a previous study indicating that young consumers primarily purchase online food save time.

Promotions emerged as the second most common reason, followed by other factors such as trying new products or saving energy.

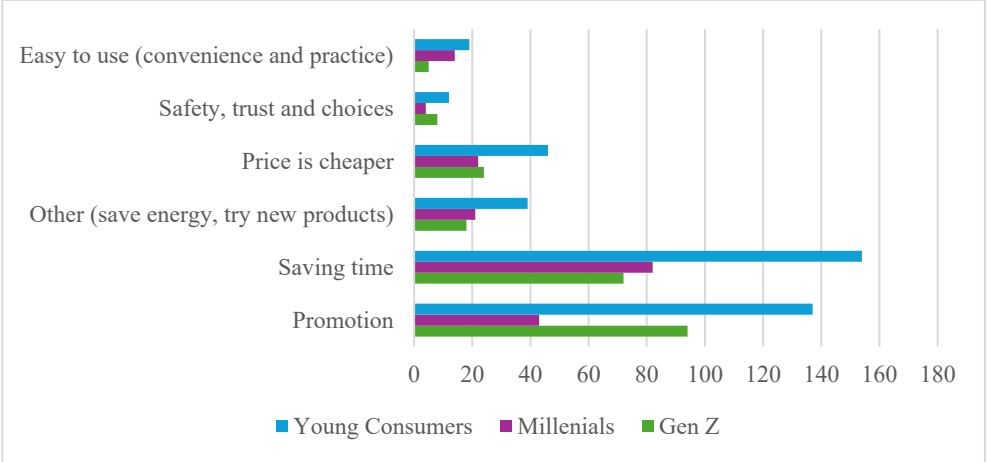


Fig. 5. Reasons to purchase food online

Both groups similarly prioritized saving time, while Millennials exhibited a slightly higher preference. In contrast, Gen Z was more motivated by promotions than Millennials. Additionally, Gen Z possessed a more significant concern for safety, trust, and choices, although this remained a less common reason overall. Both groups demonstrated similar levels of preference for ease of use and more affordable prices, with minimal differences. The “other” category, including trying new products, elicited a balanced response from both groups. In summary, while both Millennials and Gen Z highly valued the time-saving aspect of online food purchases, Gen Z was more influenced by promotional offers and safety considerations.

Furthermore, related to the food product category, Figure 6 signifies that fresh food, including fruits and vegetables, was the most frequently purchased category online among young consumers, with both Millennials and Gen Z heavily engaging in this category, though Millennials slightly more so. Food snacks ranked the second most popular category, with Gen Z exhibiting a slightly higher preference. Meat and processed meat also saw significant purchases, particularly among Millennials. Additionally, Millennials purchased coffee, tea, and beverage products more frequently than Gen Z.

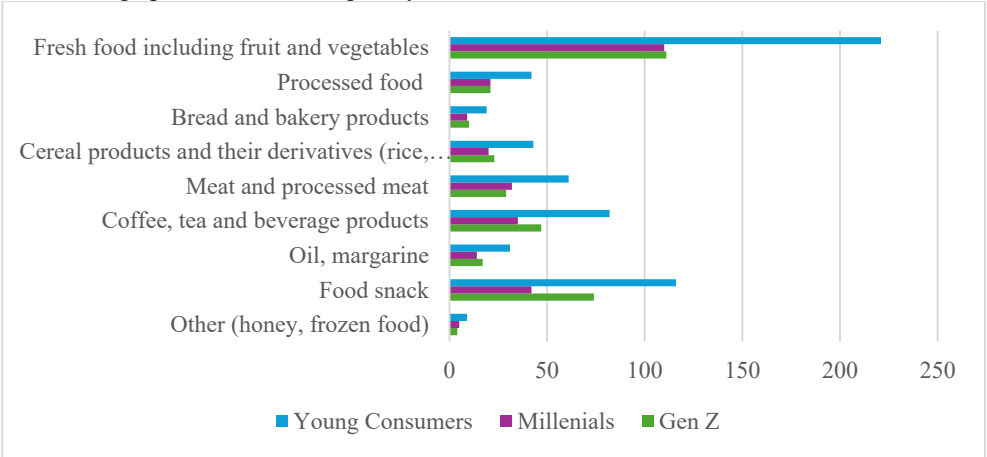


Fig. 6. Online food purchasing product categories

In contrast, Gen Z purchased processed food, bread and bakery products, and cereal products more frequently than Millennials, despite these categories being usually less favored. Oil, margarine, and other items like honey and frozen food were the least purchased categories, with minimal differences between the two groups. While fresh food dominated, Millennials leaned toward meat and beverages, while Gen Z depicted greater interest in processed and snack foods.

Figure 7 demonstrates the devices employed by young consumers to purchase food. The data revealed that smartphones were overwhelmingly the preferred device for online food purchases among both Millennials and Gen Z, with Gen Z showcasing a slightly higher reliance on them. Other devices like tablets, laptops, and personal computers were utilized significantly less frequently. Millennials primarily utilized tablets, although laptops were slightly more prevalent among Gen Z. Personal computers and other devices were the least favored options for both groups, with only minor differences. Hence, while smartphones remained the preferred option for online food purchases among young consumers, the utilization of alternative devices varied only slightly between both groups. Previous research suggests that the widespread adoption of smartphones for online food shopping is attributed to their perceived relative advantage, user-friendliness, clear benefits, and low levels of complexity and [15].

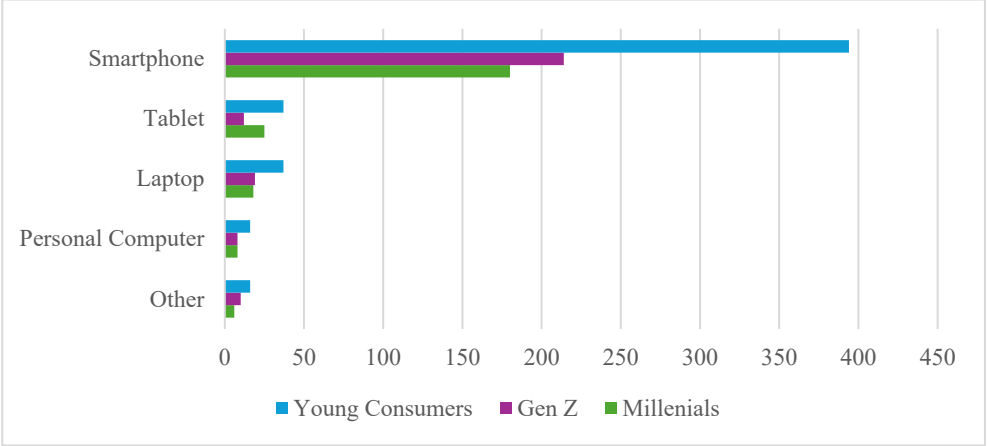


Fig. 7. Devices to purchase food online

Figure 8 lists the online platforms young consumers utilized to purchase food. Marketplaces like Shopee, Tokopedia, and Lazada were the predominant platforms employed by young consumers in Indonesia, with Millennials slightly leading in usage compared to Gen Z. Food delivery applications such as Gofood and Grabfood were extensively utilized, with Gen Z exhibiting a slightly higher preference for these platforms than Millennials. Social media platforms such as Instagram, WhatsApp, and TikTok occupied third in popularity, with comparable usage across both groups, but marginally higher among Millennials. Websites such as Sayurbox and Tanihub were less commonly employed, with Millennials using them more than Gen Z. Other platforms had minimal usage across both groups. Although marketplaces and food delivery apps were the predominant options for online food purchasing, Millennials expressed greater diversification across various platforms than Gen Z.

This study proposed four categories related to purchasing sustainable food products: organic food, local food or non-imported food, fresh food, and non-instant processed food. Figure 9 depicts the categories of sustainable food products purchased online by young consumers. Among all young consumers, fresh food emerged as the most purchased sustainable product, with both Millennials and Gen Z showing strong interest, though

Millennials led slightly. Local or non-imported food ranked the second most popular, with Gen Z depicting a higher preference than Millennials. Non-instant processed food was also frequently purchased, with Millennials and Gen Z exhibiting similar interests. Organic food experienced lower engagement overall, with Gen Z demonstrating a higher preference than Millennials. The other category remained the least popular across both groups. In summary, young consumers prioritized fresh and local food in their sustainable online purchases, with slight preference variations between groups. The growing awareness of green consumption and the escalating availability of information about food choices have made consumers more interested in purchasing eco-friendly products, including fresh food.

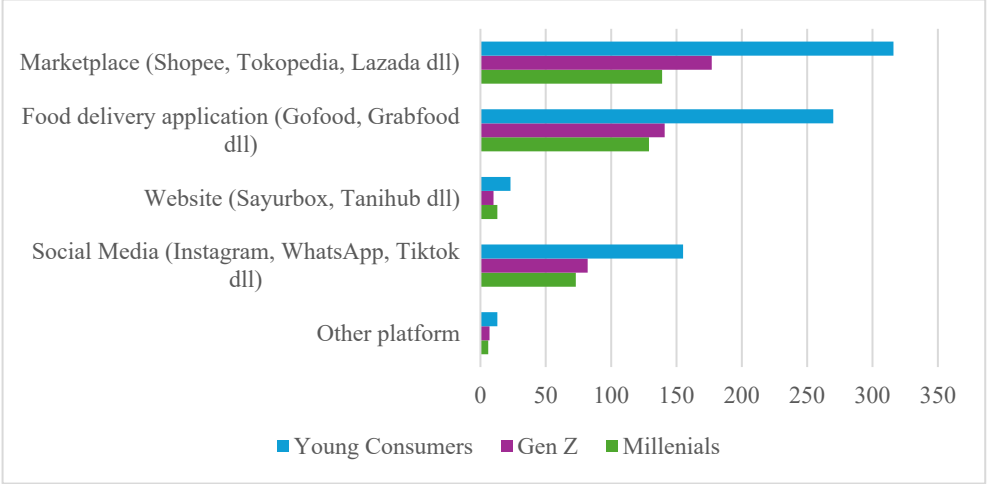


Fig. 8. Online platforms to purchase food

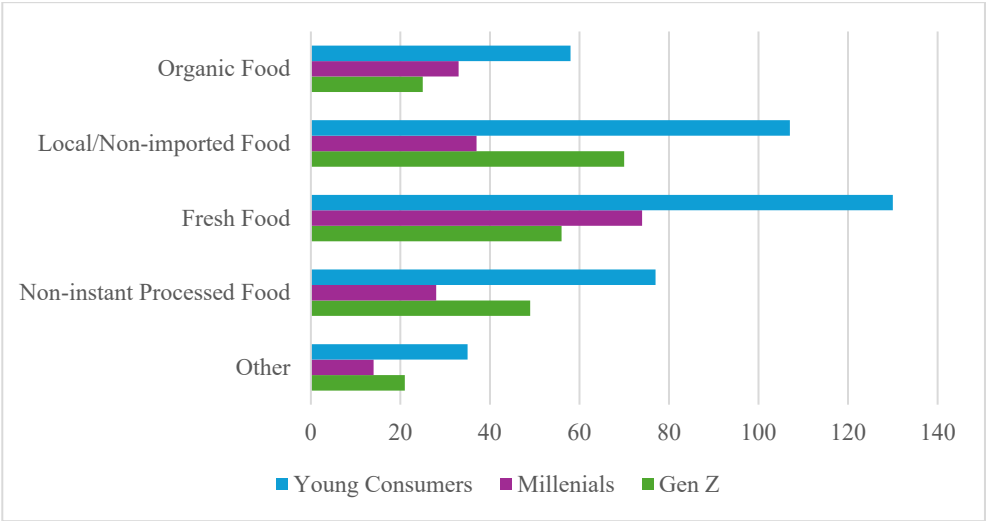


Fig. 9. Sustainable food purchasing categories

In conclusion, young consumers exhibited varying lengths of experience in online food purchases, with the highest engagement depicted in the one to six-month category. Young consumers often made purchases two to three times a month, and a comparison of behavior before and after the pandemic unveiled an overall reduction in the frequency of food purchases post-pandemic. Young consumers mainly opted for online food purchases to save time, emerging as the primary motivation for most. Fresh food, including fruits and vegetables, was the most frequently purchased category online. Regarding purchasing

sustainable food products, fresh food ranked as the most purchased product, with both groups portraying strong interest, though Millennials led slightly. Smartphones were the predominant device utilized for online food purchases by both groups, with Gen Z disclosing a slightly greater preference. Additionally, marketplaces such as Shopee, Tokopedia, and Lazada were the most favored platforms among young consumers in Indonesia, with Millennials marginally surpassing Gen Z in usage.

3.3 Sustainable online food purchasing behavior of young consumers

This research investigated the extent to which young consumers, particularly Millennials and Gen Z, engaged in online food purchasing and their consideration of sustainability when purchasing food products online. Sustainable purchasing behavior was examined through two primary dimensions: the sustainability of their purchases as reflected in online food expenditure and their intention to buy sustainable food products online.

Table 3 displays the results of ordered logistic regression (OLR) models, where the dependent variable was the change in online food expenditure compared to the post-pandemic online food purchasing expenditure. The models estimated the relationship between this dependent variable and several independent variables, including the main variables of being Millennial generation, as well as control variables such as gender, age, income, experience, education, expenditure, experience, region, and residential location.

Table 3. OLR Regression results (change in online food expenditure)

Independent Variable	Model 1	Model 2	Model 3
Gen (Millennials)	0.559**	0.715*	0.496
	-2.98	-1.93	-1.27
Gender (Male)		-0.269	-0.266
		(-1.35)	(-1.33)
Age		-0.029	-0.027
		(-0.88)	(-0.81)
Education		-0.002	-0.012
		(-0.05)	(-0.26)
Income		-0.015	-0.016
		(-0.78)	(-0.78)
Food Expenditure		0.312***	0.303***
		-4.62	-4.44
Experience		-0.140**	-0.141**
		(-2.04)	(-2.05)
Region (Java)			-0.412*
			(-1.79)
Residence (Urban)			-0.053
			(-0.35)
Pseudo R2	0.0105	0.0449	0.0489
LR chi2(4)	8.98	38.42	41.83
Prob > F	0.0027	0.0000	0.0000
Number of obs	407	407	407

Note: ***, **, and * denote significance at the 1%, 5%, and 10%. Standard errors are in parenthesis

As mentioned in Table 3, the primary variable of interest, the Millennials generation (dummy), which was significant in two models, positively affecting changes in online food expenditure with coefficients of 0.559 (Model 1), 0.715 (Model 2), and 0.496 (Model 3). Hence, Millennials were more likely to raise their online food expenditure than Gen Z. Previous studies have unveiled that Millennials prioritize convenience in shopping, one of the key benefits of online purchasing. Moreover, escapism and familiarity with online

platforms have become significant motivators, encouraging information-seeking behavior and ultimately driving their intention to purchase online.

Furthermore, food expenditure was highly significant and positively related to changes in online food expenditure across all models, with coefficients of 0.312 (Model 2) and 0.303 (Model 3), suggesting that individuals who spent more on food tended to allocate more to online food purchases. Previous studies on millennial consumers have shown that one of the main driving forces behind their online purchasing behavior is price discounts and the feeling of FOMO (fear of missing out). Experience with online shopping depicted a significant but negative effect in Models 2 and 3, indicating a rise in years of online shopping experience correlated with smaller increases in online food expenditure, with coefficients of -0.140 and -0.141, respectively. Living in Java Island (region) was significant in Model 3, with a negative coefficient of -0.412, suggesting that individuals living in Java were less likely to augment their online food expenditure than those outside Java. Other variables, including gender, age, education, income, and residence (urban), were insignificant across models, indicating that these factors lacked a strong relationship with changes in online food expenditure in this context.

Table 4. OLR Regression results (sustainable food online purchase intention)

Independent Variable	Model 3	Model 4	Model 5
Usefulness	1.170***	1.207***	1.175***
	-4.79	-4.88	-4.73
Ease of Use	0.853***	0.785***	0.814***
	-3.27	-2.91	-3.01
Sustainability Concern	1.328***	1.271***	1.271***
	-6.3	-5.93	-5.9
Trust	1.002***	1.096***	1.078***
	-4.33	-4.58	-4.5
Gen (Millennials)		-0.218	-0.293
		(-0.58)	(-0.74)
Gender (Male)		-0.363*	-0.359*
		(-1.79)	(-1.77)
Age		-0.006	-0.01
		(-0.17)	(-0.28)
Education		0.073	0.067
		-1.64	-1.49
Income		-0.021	-0.021
		(-1.27)	(-1.31)
Food Expenditure		0.089	0.08
		-1.48	-1.31
Experience		0.056	0.057
		-0.77	-0.78
Region (Java)			-0.175
			(-0.73)
Residence (Urban)			-0.189
			(-1.25)
Pseudo R2	0.2617	0.2680	0.2694
LR chi2(4)	411.87	421.87	424.05
Prob > F	0.0000	0.0000	0.0000
Number of obs	407	407	407

Moreover, Table 4 displays the results of OLR models, analyzing factors influencing sustainable food online purchase intention, with the primary independent variables being perceptions of usefulness, ease of use, sustainability concern, and trust. Moreover, the study included control variables such as generation (Millennial), gender, age, income, experience,

education, region, and residence location. The usefulness variable was highly significant across all models, with coefficients ranging from 1.170 (Model 3) to 1.175 (Model 5), signifying a strong positive relationship with purchase intention. Consumers' perceived usefulness of online platforms for food purchases significantly shapes their attitude toward online shopping, ultimately positively impacting their intention to purchase food products online.

Regarding demographic and socioeconomic variables, gender (male) was significant in Models 4 and 5, revealing a modest negative correlation with purchase intention. It implies that males were less likely to exhibit strong, sustainable purchase intentions than females. Previous research suggests that male consumers are generally less inclined to purchase online than females. Other variables, such as age, education, income, food expenditure, experience, region (Java), and residence (urban), were insignificant across models, indicating limited influence on sustainable online purchase intentions in this context.

Accordingly, sustainability in online food expenditure and purchase intention were influenced by distinct factors. For changes in sustainable online food expenditure, key drivers included being part of the Millennial generation, having higher food expenditure, and living outside Java, while more extraordinary experiences with online shopping reduced the rate of increase in expenditure. In contrast, sustainable online food purchase intention was primarily driven by perceptions of usefulness, ease of use, sustainability concern, and trust, with demographic and experiential variables generally displaying limited impact. Among these, only the gender variable (male) exhibited a significant adverse effect on purchase intention.

4 Conclusions and recommendation

This study explored whether young consumers, particularly Millennials and Gen Z, considered sustainability when purchasing food products and identified the factors influencing this behavior. The findings revealed that distinct factors influenced sustainability in online food expenditure and purchase intention. Changes in sustainable food expenditure online were driven by factors such as being part of the Millennial generation, higher spending on food, and residing outside Java, while increased online shopping experience tended to slow expenditure growth. Conversely, sustainable online food purchase intentions were shaped mainly by perceptions of usefulness, ease of use, sustainability concerns, and trust, with demographic and experiential variables having minimal impact. Notably, the gender variable (male) demonstrated a significant adverse effect on purchase intention.

Additionally, from a demographic perspective, Millennials generally possessed higher educational attainment, earned higher incomes, and were more frequently engaged in professional or entrepreneurial roles. On the other hand, Gen Z primarily consisted of students with lower incomes and a more significant presence in rural areas and Java. Regarding online food purchasing behavior, young consumers most purchased food online two to three times per month, with a decline in frequency post-pandemic. Their primary motivation was time-saving; fresh food was the most purchased category. Smartphones were the preferred device, with Gen Z depicting a slight preference. Marketplaces such as Shopee, Tokopedia, and Lazada emerged as the most popular platforms, with Millennials leading slightly in usage compared to Gen Z.

Despite the study providing valuable insights into young consumers' sustainable online food purchasing behavior, several limitations should be considered. To begin with, the study primarily centered on Millennials and Gen Z. However, the analysis of experiential factors, such as employment status and income level, might not fully capture the variations within these broad age groups, particularly given the economic disparity between the two generations. The observed decline in online food purchasing frequency post-pandemic was

also noted without fully exploring the underlying reasons, such as potential shifts in consumer priorities, economic pressures, or health and safety concerns.

Future studies could explore the factors driving the post-pandemic decline in online food purchases and offer deeper insights into how the pandemic has reshaped consumer habits, including the balance between convenience, cost, and health considerations. Furthermore, while fresh food was the most purchased category in this study, future research should consider a broader range of food product categories, such as processed, packaged, or organic foods. It would allow a deeper understanding of how sustainability concerns vary across food purchases, potentially providing more nuanced insights into consumer behavior

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References

1. BPS-Statistics Indonesia, BPS: 270,20 Juta Penduduk Indonesia Hasil SP2020, (2021).
2. R.J. Rohrich, A.M. Rodriguez, Millennial Leaders: Ready or Not, Here They Come, *Plast. Reconstr. Surg.* **145**, 1331 (2020) <https://doi.org/10.1097/PRS.0000000000006753>.
3. Google, E-Conomy SEA 2023, (2024). https://www.thinkwithgoogle.com/_qs/documents/18380/e_conomy_sea_2023_report.pdf
4. Snapcart, Shopping Behavior in The Indonesian E-Commerce Market 2018, (2018).
5. Y. Joshi, D. Sangroya, A.P. Srivastava, M. Yadav, Modelling the Predictors of Young Consumers' Sustainable Consumption Intention, *Int. J. Nonprofit Volunt. Sect. Mark.* **24**, (2019) <https://doi.org/10.1002/nvsm.1663>.
6. T. Macheka, E.S. Quay, N. Ligaraba, The Effect of Online Customer Reviews and Celebrity Endorsement on Young Female Consumers' Purchase Intentions, *Young Consum.* **25**, 462 (2024) <https://doi.org/10.1108/YC-05-2023-1749>.
7. M. Pradana, N. Rubiyanti, F. Marimon, Measuring Indonesian Young Consumers' Halal Purchase Intention of Foreign-Branded Food Products, *Humanit. Soc. Sci. Commun.* **11**, 150 (2024) <https://doi.org/10.1057/s41599-023-02559-0>.
8. N. Cela, V. Giorgione, F. Fassio, L. Torri, Impact of Circular Economy Information on Sensory Acceptability, Purchase Intention and Perceived Value of Upcycled Foods by Young Consumers, *Food Res. Int.* **175**, 113765 (2024) <https://doi.org/10.1016/j.foodres.2023.113765>.
9. Food and Agriculture Organization, GSFA Online: Food Categories, (2024). <https://www.fao.org/gsfonline/foods/index.html>
10. A. Kedia, D. Abudayyeh, D. Kusumastuti, A. Nicholson, Modelling Consumers' Preferences for Time-Slot Based Home Delivery of Goods Bought Online: An Empirical Study in Christchurch, *Logistics* **8**, 47 (2024) <https://doi.org/10.3390/logistics8020047>.
11. A. Barska, J. Wojciechowska-Solis, E-Consumers and Local Food Products: A Perspective for Developing Online Shopping for Local Goods in Poland, *Sustainability* **12**, 4958 (2020) <https://doi.org/10.3390/su12124958>.
12. S. Gomes, J.M. Lopes, S. Nogueira, Willingness to Pay More for Green Products: A Critical Challenge for Gen Z, *J. Clean. Prod.* **390**, 136092 (2023) <https://doi.org/10.1016/j.jclepro.2023.136092>.

13. K.X. Ma, D.W. Mather, D.L. Ott, E. Fang, P. Bremer, M. Miroso, Fresh Food Online Shopping Repurchase Intention: The Role of Post-Purchase Customer Experience and Corporate Image, *Int. J. Retail Distrib. Manag.* **50**, 206 (2022) <https://doi.org/10.1108/IJRDM-04-2021-0184>.
14. I. Astuty, R.J. Astuti, S.M. Mahmud, V. Widodo, A Closer Look at the Work Behavior of Gen Z in Micro, Small, and Medium Enterprises of Developing Countries, *Int. J. Hum. Cap. Urban Manag.* **10**, (2025).
15. H. Akhmadi, M. Fauzan, Smartphone Adoption on Fruit Marketing Communication: A Traders Perception, *J. AGRISEP Kaji. Masal. Sos. Ekon. Pertan. Dan Agribisnis* **19**, 433 (2020) <https://doi.org/10.31186/jagrisep.19.2.433-446>.