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From Virtual Carts to Real-Life Purchases: The Role of Digital Technology in Gen Z's Buying Decisions

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ABSTRACT

Purpose of the study: The main objective of this study is to conduct a confirmatory factor analysis on the determinants of shopping behavior, as well as to conduct a difference test analysis to see the differences in shopping behavior between Gen Z and Gen Y.

Methodology: The type of data used in this study is primary data, obtained through a questionnaire. The selected samples are Gen Z (aged 10-19 years) and Gen Y (aged 20-35 years) who shop online with e-commerce. The estimation method uses confirmatory factor analysis and independent t-test.

Main Findings: The results of the confirmatory factor analysis show that cultural, social, personal, and psychological variables are confirmed as variables that shape shopping behavior. Then the results of the difference test show that Gen Z's shopping behavior is different from Gen Y's shopping behavior.

Novelty/Originality of this study: This study offers new insights into how digital technology is bridging the gap between virtual shopping experiences and real-world purchasing decisions among Gen Z consumers. By examining the evolving influence of digital platforms, the study highlights new patterns in Gen Z consumer behavior, providing valuable perspectives for businesses adapting to the digital marketplace.

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1. INTRODUCTION

The rapid development of digital technology has brought significant changes to various aspects of people's lives around the world [1], [2]. Increasingly widespread and fast internet access is driving a shift in global consumption patterns, from conventional to online [3], [4]. According to a report by the International Telecommunication Union (ITU), the number of global internet users will reach around 5.4 billion, reflecting significant growth in recent years. This progress is in line with the increasing use of social media and smartphone-based applications that make daily activities easier, including shopping [5], [6]. Thus, digital technology plays a major role in the transformation of modern society's lifestyle globally [7]-[9].

The emergence of various e-commerce platforms such as Shopee, Tokopedia, and Lazada are real indicators of the shift in people's shopping patterns [10]-[12]. People now tend to use the internet to search for product information, compare prices, and make transactions online [13]-[15]. The ease of access and variety of products offered make online shopping the main choice, especially for the younger generation [16]-[18]. This

phenomenon has even resulted in the closure of several conventional retail outlets that are unable to compete with online shopping services. Thus, digital technology has significantly changed the landscape of the trade industry.

This change not only affects consumption patterns, but also people's shopping behavior. Generation Z, who were born in the technology era, is a digital native group that is very familiar with technological devices [19]-[21]. They have a preference for practicality, time efficiency, and flexibility offered by digital platforms [22]-[24]. As active users of social media, they tend to integrate shopping activities with their digital lifestyle [25]-[27]. This makes Generation Z an interesting subject to study regarding their shopping behavior.

Generation Z has unique characteristics that distinguish it from previous generations [28]-[30]. They grew up with high internet connectivity, so they have multitasking habits in utilizing technology. The use of the internet as the main medium for communicating, learning, and shopping creates a more open and responsive behavior pattern to technological changes [31]-[33]. Unlike generation Y, who only got to know the internet as teenagers, generation Z has utilized technology since an early age [34]-[36]. This difference creates an interesting generation segmentation to study further.

Not only in consumption patterns, generation Z also has a different approach in choosing products [37], [38]. They tend to search for information through social media and rely on recommendations from influencers before deciding to purchase [39]-[41]. Practicality, speed, and unique experiences are the main factors they look for. This shows that conventional marketing approaches are no longer relevant for this generation. Instead, digital-based strategies are an urgent need for business actors who want to reach them.

In addition, generation Z also shows dynamic and changing shopping behavior. They are more interested in products that are considered "cool" and unique, although often sacrificing brand loyalty. Unlike generation Y who are more sensitive to price and tend to be consistent with certain brands, generation Z focuses more on the added value and experience provided by a product [42], [43]. Therefore, understanding their preferences is key to creating an effective marketing strategy.

Research conducted by Fathinasari, Purnomo, and Leksono [44] focuses on the potential of digital marketing on product purchasing decisions among Generation Z, but the study emphasizes more on identifying digital marketing opportunities without reviewing in depth the specific role of digital technology in the entire purchase journey. Meanwhile, Priya & Agrawal [45] explores the impact of digital platforms on Gen Z purchasing behavior, but the discussion focuses more on the influence of social media and e-commerce platforms in general, without outlining the concrete mechanisms of the transition from online activities (such as using virtual carts) to real purchases. The current study fills this gap by examining in more detail how digital technology, including specific features in applications and platforms, shapes, facilitates, and drives the conversion of purchasing decisions from virtual activities to real transactions.

This study offers novelty by specifically examining how digital technologies, such as virtual cart features, recommendation systems, and digital payment integration, influence the transition from online purchase intention to actual purchase decisions among Gen Z. Unlike previous studies that only discuss the general influence of digital marketing or digital platforms, this study highlights the concrete mechanisms that occur in the purchasing process. The urgency of this study lies in the shift in behavior of young consumers who increasingly rely on digital ecosystems in making purchasing decisions, so the results of this study are important to help business actors and technology developers understand effective strategies in optimizing purchase conversions in the digital era.

Based on the description above, this study aims to analyze the shopping behavior of generation Z in the digital technology era. The focus of the study includes factors that influence their shopping decisions and differences in behavior with generation Y. With this approach, it is hoped that the study can provide in-depth insight into the dynamics of generation Z consumption while providing strategic recommendations for business actors and policy makers in facing the challenges of the digital era.

2. RESEARCH METHOD

2.1. Research Approach

This research seeks to assess and examine the connections between variables by utilizing qualitative data. The data used is cross-sectional, involving the analysis of multiple data points [46]. The focus of the study is on variables that influence the shopping behavior of Generation Z and Millennials.

2.2. Population and Sample

The population in this study consisted of teenagers aged 10-19 years (Generation Z) and individuals aged 20-37 years (Generation Y) who engage in online shopping through e-commerce platforms. The study aimed to examine differences in shopping behavior between these two generations. Due to the unavailability of data on young people who shop online via e-commerce, a Non-probability sampling framework was applied. The purposive sampling method, specifically quota sampling, was used to ensure representation of various subgroups within the population based on specific sample characteristics determined by the researcher [47]-[49]. The sample included individuals aged 10-19 years representing Generation Z and those aged 20-35 years representing

Generation Y. Both male and female respondents were included, with 100 participants from each generation, resulting in a total sample size of 200 respondents. The selected respondents were individuals actively involved in online shopping through e-commerce platforms. Sampling was conducted randomly to ensure adequate representation of both generational groups in the analysis.

2.3. Data collection technique

The data collection technique used in this study uses Non-probability sampling. That every member of the population has the opportunity to be used as data or sample [48]. Primary data is obtained from a questionnaire, which is a list containing a series of questions about a problem or field to be studied, which aims to obtain the necessary information, relevant information, and information needed simultaneously [50]. The questionnaire uses the Likert Scale, which is a scale used to measure attitudes, income, and perceptions of a person for a group of people about social phenomena. The scales used are:

1 : Strongly Disagree
2 : Disagree
3 : Agree
4 : Strongly Agree

2.4. Estimation Method

This study uses the Confirmatory Factor Analysis (CFA) method with SEM (Structural Equation Modeling). SEM is a combination of factor analysis and path analysis [51]. The structural equation model is based on causal relationships, where changes in a variable are assumed to result in changes in other variables [52]. SEM has advantages over other multivariate statistical methods because in latent variables, measurement errors are included in the model [53]. This study conducted two tests using two analysis tools, namely: Hypothesis testing related to the number of factors and their loading patterns (CFA) using the AMOS Version 19.0 program; and T-test difference test between Gen Z and Millennial shopping behavior using the SPSS program.

2.5. Analysis Stages

Descriptive analysis method is a simple analysis method used to describe observation conditions by presenting tables, graphs, or narratives in order to facilitate the interpretation of research results [54]. Descriptive analysis to see Gen Z shopping behavior in the increasingly rapid development of technology. The Independent Sample T-test is used to determine whether or not there is a difference in the average of two groups that are not related (free) to each other [55], with the aim of whether the two groups have the same average or not significantly, assuming the data is normally distributed.

3. RESULTS AND DISCUSSION

3.1. Descriptive Data

The data for this study were collected through questionnaires distributed to teenagers aged 10-19 years (Generation Z) and individuals aged 20-37 years (Generation Y) who shop online using e-commerce platforms in Bida City, Nigeria. The distribution of the questionnaires was facilitated by sharing web links via social media platforms such as WhatsApp, Instagram, and Twitter. Given that the population size could not be determined [56]. a nonprobability sampling method was employed. The sampling techniques used included purposive sampling and quota sampling to ensure the representation of various subgroups within the population based on specific characteristics desired by the researcher. A total of 215 respondents participated in the study, comprising 103 individuals from Generation Z and 112 from Generation Y. The observed respondent characteristics included gender, age, type of employment, income, type of residence, frequency of monthly online shopping, frequently purchased products, and decision-making roles in online shopping activities.

3.2. Respondent Overview
3.2.1. Respondents by Gender

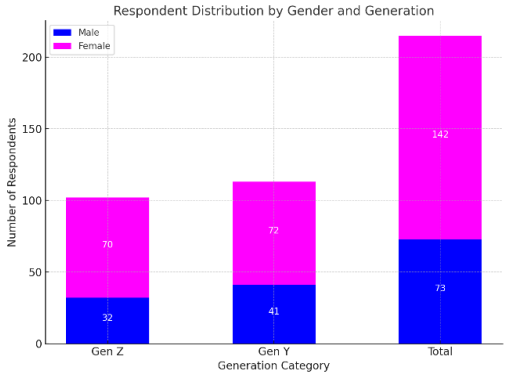

Figure 1. Respondents by Gender

This study involved 215 respondents, with the gender composition illustrated in the diagram above. The majority of respondents were women, comprising 66% (142 individuals) of the total sample. This dominance is attributed to women being more attuned to their needs. Male respondents accounted for 34% (73 individuals). Among Generation Z respondents, women also formed the majority with 70 individuals, while male respondents numbered 32. Similarly, Generation Y respondents were predominantly women, totaling 72 individuals, compared to 41 male respondents.

3.2.2. Respondents by Age

Generational differences can show different shopping behaviors. Generation Z is the generation born in 2000-present. While Gen Y is the generation born in 1981-1999.

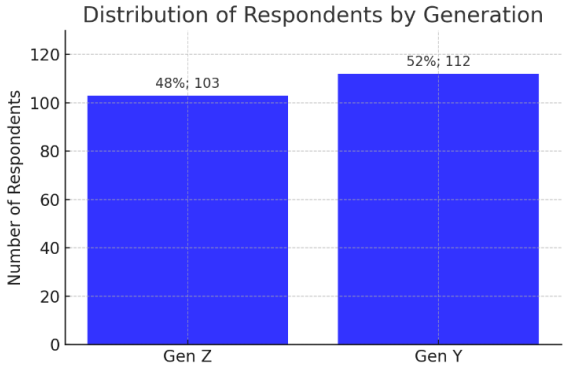

Figure 2. Respondents by Generation

Respondents from generation Y are more dominant compared to respondents from generation Z. As many as 52% of respondents are from Gen Y or 112 people. While respondents in Gen Z are 48% or 103 people. This is because Gen Y respondents are mostly students, where their needs are higher, while Gen Z respondents are students.

3.2.3. Respondents by Type of Work

The type of work can influence each individual's shopping style. To see which type of work dominates or who does more online shopping, respondents were grouped by type of work.

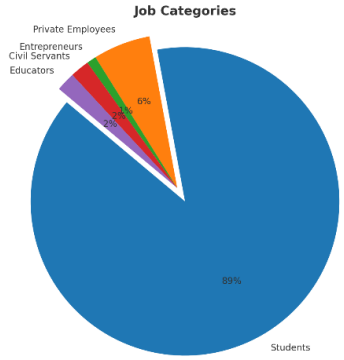

Figure 3. Respondents Based on Job Type

From the data above, the most dominant respondents came from students, which was 89% or 191 people. This means that respondents from students are respondents who do more online shopping. Then private employees were 6% or 12 people, civil servants and educators were the same, which was 2% or 4 people, then self-employed were 1% or 3 people.

3.2.4. Respondents Based on Income

The various offers and affordable prices in online shopping, make some people become more consumptive. Although individual consumption is determined by the amount of income. However, because the prices offered are affordable, some people become more fond of shopping online, even though their income is not high.

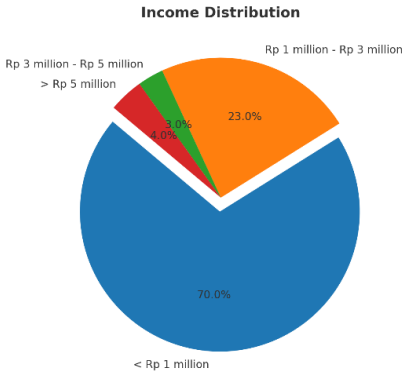

Figure 4. Respondents Based on Income

From the data above, the respondents who dominate are respondents with an income level of <Rp 1 million, which is 70% or 151 people. This is because most respondents come from students, where their income is obtained from pocket money, besides their curiosity in trying new things makes them more consumptive than others. Then respondents with an income of Rp 1 million - Rp 3 million are 23% or 50 people, an income of Rp 3 million - Rp 5 million is 3% or 6 people, and an income of Rp > 5 million is 4% or 8 people.

3.2.5. Respondents Based on Type of Residence

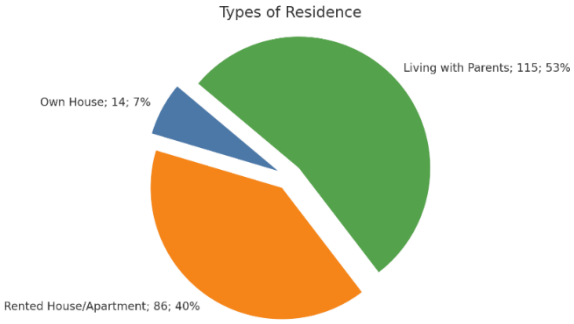

Figure 5. Respondents Based on Type of Residence

Respondents who live with their parents do more online shopping, which is 53% or 115 people. This is because respondents are dominated by students, even though their income or pocket money is low, they can ask for pocket money from their parents at any time. Then respondents who live in boarding houses/rental houses are 40% or 86 people, and respondents who live in their own homes are 7% or 14 people.

3.2.6. Respondents Based on Online Purchase Frequency/Month

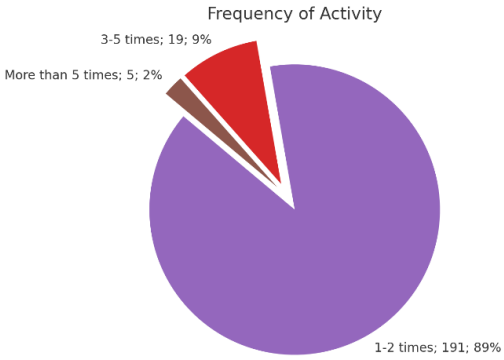

Figure 6. Respondents Based on Online Purchase Frequency/month

Respondents who make online purchases in one month 1-2 times are the most dominant, which is 89% or 191 people. This is because the majority of respondents are students whose income is still given by their parents, so there are limitations in making purchases. Then respondents who make online purchases 3-5 times a month are 9% or 19 people, and respondents who make purchases > 5 times a month are 2% or 5 people.

3.2.7. Respondents based on products frequently purchased online

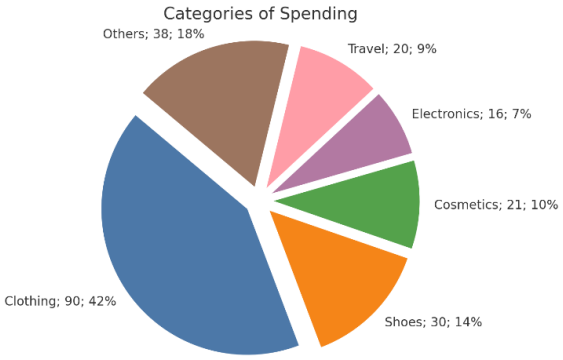

Figure 7. Respondents Based on Most Frequently Purchased Products

The most frequently purchased products by consumers through online shopping are clothing at 42% or 90 people. Then shoes at 14% or 30 people, cosmetics at 10% or 21 people, travel at 9% or 20 people, electronics at 7% or 16 people, and products purchased other than that at 18% or 38 people.

3.2.8. Respondents Based on Who Plays a Role in Decision Making

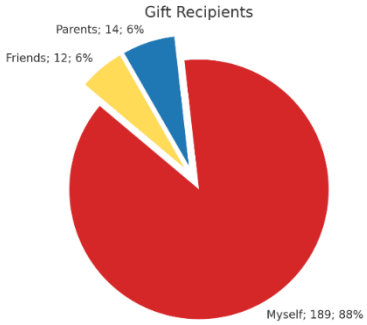

Figure 8. Respondents Based on Role in Decision Making

In making decisions to make online purchases, according to self-decision is the most dominant, which is 88% or 189 people. This means that respondents have the freedom to determine their choices and are not influenced by other people's opinions in determining purchasing decisions. When viewed from respondents from Gen Z, those who play a role in making purchasing decisions are also largely determined by themselves, which is 43% or 91 people from the total respondents, then those determined by parents are 4% or 10 people, and those who make purchasing decisions according to friends' opinions are 1% or 2 people. While Gen Y respondents, 45% of purchasing decisions are determined by themselves or 98 people. then those determined by parents are 2% or 2 people, and those who make purchasing decisions according to friends' opinions are 5% or 10 people.

3.3. Data Analysis Results

3.3.1. Normality Test

The normality test aims to assess whether the data for the dependent variable follows a normal distribution. This study employs the Kolmogorov-Smirnov (K-S) one-sample test for this purpose. The decision-making criterion is as follows: if the asymp. sig. value (2-tailed) exceeds the significance level of 5% (0.05), the data is considered to be normally distributed. The test results are presented below:

Table 1. Normality Test Results

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Gen	Statistic	df	Sig.	Statistic	df	Sig.
Total	Gen Z	.101	103	.011	.949	103	.001
	Gen Y	.008	112	.033	.981	112	.111

Based on the results of data processing that has been carried out for the normality test using Kolmogorov-Smirnov (K-S) one sample, it was found that there were 2 variables that were not normally distributed, namely Gen Z and Gen Y. Therefore, the data must be retested using the outlier test and discarding data that has a sig. value below 0.05.

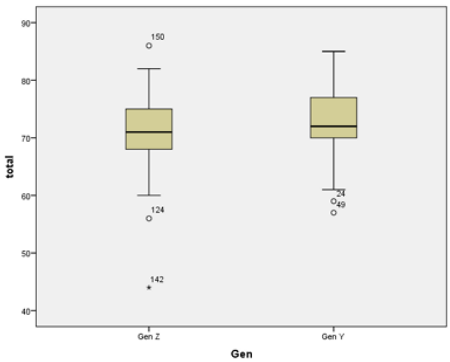

Figure 9. Boxplot of Variables

Based on the image above using the outlier test, the data recommended to be discarded are outliers 142, 124, and 150 in the Gen Z variable, and outliers 49 and 24 in the Gen Y variable. After reducing data that does not meet the criteria for normally distributed data, the data that previously amounted to 215 was reduced to 210 data that can be used for further processing. The following are the results of the normality test after the outlier test was carried out.

Table 2. Results of Normality Test After Outliers

		Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Gen	Statistic	df	Sig.	Statistic	df	Sig.
Total	Gen Z	.069	100	.200*	.983	100	.243
	Gen Y	.105	110	.005	.981	110	.127

After the outlier test was conducted, the sig. value for the Gen Z variable increased to 0.2. This means that the data for the Gen Z variable has been normally distributed or above 0.05. However, for the Gen Y variable, the sig. value is still below 0.05, meaning that the data is not normally distributed.

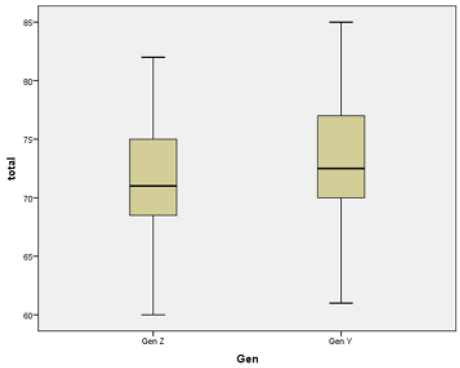

Figure 10. Boxplot of Variables After Outliers

Based on the image above, the recommendation to remove outliers is no longer there. This means that even though the data is not normally distributed, there are no outliers recommended to be removed. However, if you look at the Q Plot for the Gen Y variable, the data distribution has moved normally. So the data for the Gen Y variable can still be used for further analysis.

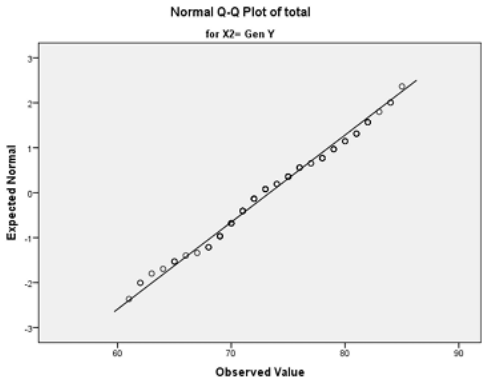

Figure 11. Normal Q-Q Plots of Gen Y Variables

3.3.2. CFA Test Results

The results of the Confirmatory Factor Analysis (CFA) conducted on variables influencing shopping behavior indicate that cultural, social, personal, and psychological variables are confirmed as key determinants. Among these, the cultural factor has the most significant impact, with quality and brand serving as the indicators with the highest loading factors. Social factors also strongly influence shopping behavior, with trend and recommendation as the primary indicators with high loading factors. Personal factors are shaped by price and variety indicators, while psychological factors are represented by loyalty and promotion indicators.

3.3.3. T-test

The Independent Sample T-test is applied to evaluate whether there is a significant difference in the means of two unrelated (independent) groups, under the assumption that the data is normally distributed. The purpose is to determine whether the average values of the two groups differ significantly. In this study, the test is used to examine differences in shopping behavior between Generation Z and Millennials. The hypotheses formulated for this test are as follows:

H_0: there is no difference between Gen Z and Millennial shopping behavior

H_a: there is a difference between Gen Z and Millennial shopping behavior

The T-test was conducted using the SPSS version 24 program and produced information as can be seen in the following table:

Table 3. Data Statistics

	Gen	N	Mean	Std.Deviation	Std.Error Mean
Total	Gen Z	100	71.49	4.972	.497
	Gen Y	100	73.37	5.163	.492

Output Group Statistics informs that the amount of data on Gen Z is 100, the average value is 71.49. The standard deviation is 4.972, and the standard error of the mean is 0.497. While the data on Gen Y is 110, the average value is 73.37. The standard deviation is 5.163 and the standard error of the mean is 0.492.

Table 4. Independent Samples Test

			Total	
			Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F		.163	
	Sig.		.687	
t-test for Equality of Means	t		-2.686	-2.691
	df		208	207.303
	Sig. (2-tailed)		.008	.008
	Mean Difference		-1.883	-1.883
	Std. Error Difference		.701	.700
	95% Confidence Interval of the Difference	Lower	-3.265	-3.262
		Upper	-.501	-.503

Before performing the t-test, a variance equality (homogeneity) test was conducted using the F-test (Levene's Test). Based on the results of this test, the t-test uses either the Equal Variance Assumed approach (if the variances are equal) or the Equal Variance Not Assumed approach (if the variances are unequal). The hypotheses for the F-test are as follows:

H_o: Both variances are the same (Gen Z and Gen Y variances are the same)

H_a: Both variances are different (Gen Z and Gen Y variances are different)

The test criteria are if sig. >0.05 then H_0 is accepted. If sig. <0.05 then H_0 is rejected.

The F-test yielded a significance value of 0.687. Since this value is greater than 0.05, the null hypothesis (H_0), which states that the variances of the two groups are equal, is accepted. Therefore, it can be concluded that the variance between the Gen Z and Gen Y groups is homogeneous. As a result, the Independent Sample T-test is conducted using the Equal Variance Assumed approach.

To conduct a T-test, the test criteria are if t count ≥ t table then H_a is accepted and H_0 is rejected. If t count ≤ t table then H_0 is accepted and H_a is rejected. When viewed from the significance, if sig. >0.05 then H_0 is accepted. If sig. <0.05 then H_0 is rejected. The t table in the t test is 1.9715, while the t count is 2.686. This means that t count ≥ t table (2.686 ≥ 1.9715) and the Sig. value. 0.008.

The results of this study confirm that digital technology plays a crucial role in shaping Generation Z's shopping behavior. Features such as virtual carts, recommendation systems, and digital payment integration have been shown to drive the conversion of purchase intentions into actual purchase decisions. This shows that the shopping experience is no longer just based on price and product, but also depends on the convenience and personalization offered by digital platforms. Therefore, e-commerce that is able to present an intuitive and responsive user experience is more likely to attract Gen Z [57], [58].

Confirmatory Factor Analysis (CFA) shows that Gen Z shopping behavior is shaped by four main factors: cultural, social, personal, and psychological [59]-[61]. Cultural factors, consisting of quality and brand, are the most dominant determinants, indicating that Gen Z pays attention to the symbolic value and reputation of products [62], [63]. Social factors such as trends and recommendations also have a significant influence, reflecting the important role of social media and influencers in shopping decisions [64]. Meanwhile, personal (price and variety) and psychological (loyalty and promotion) factors show that although Gen Z likes novelty, they still consider practical benefits.

The t-test shows significant differences in shopping behavior between Gen Z and Gen Y. Gen Z is more likely to make purchases based on trends and social influences, while Gen Y is more price sensitive and loyal to certain brands [65], [66]. This difference reflects the basic characteristics between generations, where Gen Z grew up in a digital environment with high exposure to technology and fast information. These results are important to help business actors develop more targeted marketing strategies based on generational segmentation.

The findings of this study have significant practical implications, especially for online businesses and technology developers. To attract Gen Z, marketing approaches must be more interactive, visually oriented, and leverage digital features that speed up and simplify the shopping process. In addition, e-commerce platforms need to develop recommendation algorithms that are tailored to individual preferences and offer a seamless user experience from product exploration to payment [67]. This is key to increasing conversion rates and loyalty of young customers.

This study has a significant impact on understanding Generation Z shopping behavior in the digital era, especially how technological features such as virtual baskets, recommendation systems, and digital payments affect purchasing decisions in real terms. The results of this study can be a reference for business actors and e-commerce platform developers in designing marketing strategies and user interfaces that are more in line with the preferences of the younger generation. However, this study has several limitations, including the limited location of respondents who only focused on one area, and the use of a cross-sectional survey method that cannot capture the dynamics of consumer behavior over time. Further research is needed with a wider coverage area and a longitudinal approach to strengthen the generalizability of the results.

4. CONCLUSION

The results of this study indicate that the factors that influence shopping behavior are cultural, social, personal, and psychological factors, with indicators that form each factor such as brand and quality for culture, trends and recommendations for social, price and variety for personal, and loyalty and promotion for psychological. Although generations Z and Y have the same tendency to use technology, their shopping behavior is different. Further research is recommended to be conducted on a wider and geographically diverse population to obtain a more representative picture of Gen Z shopping behavior. A longitudinal approach can also be used to observe changes in consumer behavior along with the development of digital technology and e-commerce trends.

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