

DOI: <https://doi.org/10.63332/joph.v5i4.977>

Generation Z's Smartphone Purchase Intentions and Behaviors: A Study Amongst Malaysian Higher Education Students

Chee Zhu Yang¹, Senathirajah Abdul Rahman², Shaikhah Al-Ainati³, Ameen Alharbi⁴, Rasheedul Haque⁵, Majid Isa⁶, Mohd Sofian Omar Fauzee⁷, Syriac Nellikunel Devasia⁸

Abstract

This study examines Generation Z students' smartphone buying intentions at Malaysian higher education institutions. The Theory of Planned Behavior (TPB) was chosen for its usefulness in studying Malaysian smartphone buying intentions. The study evaluates smartphone purchase intentions based on key factors such as attitudes (ATT), subjective norms (SN), perceived behavioral control (PBC), and perceived enjoyment (PE). This quantitative study collected data via survey questionnaires. Malaysian higher education Generation Z students are the targeted population. An analysis of 384 completed surveys was done. The study found that perceived usefulness, ease of use, subjective norms, product features, brand image, perceived price, and social influences from friends, family, coworkers, and society affect young consumers' smartphone purchase intentions. The results shed light on Generation Z students' smartphone buying intentions in Malaysian higher education institutions. Smartphone makers will use the findings to understand Generation Z's smartphone buying habits. The study may also encourage corporations to promote their products and services to Generation Z and improve product features to fit their wants, boosting brand loyalty and sales. This study provides new insights into Generation Z students' smartphone buying intentions in Malaysian higher education institutions. It addresses several underlying issues and gives smartphone marketers real insights into how different elements affect consumer experiences and buying behavior. This helps us understand Generation Z's smartphone buying intentions.

Keywords: Generation Z, Smartphone Market, Malaysia, Purchase Intentions, Sustainable Growth, Economic Growth.

Introduction

Generation Z, born between the mid-1990s and early 2010s, rely heavily on cellphones for communication, entertainment, and productivity. They are well-versed in and fond of brands, often choosing phones from reputable companies that align with their lifestyle. This generation is attracted to fashionable, cutting-edge, and socially conscious items, preferring smartphones with advanced features and technology. They favor devices equipped with high-quality cameras, fast processors, ample storage, and innovative technologies like AR and AI (Veybitha et al., 2021).

¹ Faculty of Business and Communication, INTI International University, Malaysia, Email: i22022990@student.newinti.edu.my

² Faculty of Business and Communication, INTI International University, Malaysia, Email: arahman.senathirajah@newinti.edu.my, (Corresponding Author), orcid.org/0000-0001-6044-9051

³ Business Department, College of Business Studies, PAAET, Kuwait.

⁴ University of Business and Technology, Saudi Arabia, Email: ameen@ubt.edu.sa.

⁵ Faculty of Business, Finance & IT (FOBFIT), MAHSA University, Malaysia, Email: rasheedul@mahsa.edu.my, orcid.org/0000-0001-8170-5413.

⁶ Faculty of Education and Liberal Arts, INTI International University, Malaysia, Email: abdmajid.mdisa@newinti.edu.my

⁷ Faculty of Education and Liberal Arts, INTI International University, Malaysia, Email: sofian.fauzees@newinti.edu.my

⁸ Faculty of Business, Economics and Finance, Perdana University, Malaysia, Email: syriac@perdanauniversity.edu.my



Despite valuing luxury, Generation Z are also frugal. Many are students or young professionals with limited financial resources, leading them to prefer mid-range or budget phones that balance cost and functionality (Leong et al., 2024). They are adept at researching and comparing phones online, reading reviews, and making purchases through e-commerce sites or mobile apps. This demographic is particularly drawn to futuristic technology; features such as 5G connectivity, flexible screens, and biometric security significantly influence their purchasing decisions (Tiwari & Joshi, 2020).

Generation Z is highly cost-conscious and seeks smartphones that offer a good balance between price and functionality. They may be willing to pay a premium for phones with superior features (Abdullah et al., 2021). User-friendly interfaces and responsive customer support are crucial, as they enhance the overall user experience by focusing on simplicity and utility (Liaw et al., 2024). Factors influencing their smartphone purchases include brand image, features, social media presence, cost, customization options, longevity, ease of online purchasing, and technological advancements (Huang & Copel, 2020). To attract and retain this demographic, smartphone developers and marketers must consider these factors.

Additionally, Generation Z change their cellphones more frequently than other age groups. In 2020, over 25% of Generation Z replaced their cellphones, and 27% planned to purchase a new phone in 2021, according to Statista (Ahmed, 2019). Recent data indicates that Generation Z in Malaysia exhibits a higher frequency of smartphone replacements compared to other age groups. A study by Nielsen highlighted that 99% of Malaysians aged 18-24 own a smartphone, underscoring their deep integration into digital lifestyles (Nielsen, 2019). This demographic's strong reliance on smartphones for daily activities contributes to their tendency to upgrade devices more frequently (Jamil & Khan 2025). In the broader Malaysian market, smartphone penetration reached 94.8% in 2021, reflecting the nation's high adoption rate (MCMC, 2021). The market is characterized by a diverse range of brands, with Apple leading at a 32.03% market share as of October 2024, followed by Samsung at 13.28%, Oppo at 11.12%, and Xiaomi at 10.6% (StatCounter, 2024). These statistics highlight the dynamic nature of smartphone usage in Malaysia, particularly among Generation Z, who are at the forefront of frequent device upgrades and digital engagement. While existing literature highlights university students as a significant market segment (Hemsley, 2016), the impact of various factors on their online purchasing intentions in Malaysia remains unclear, warranting further research (Aziz & Wahid, 2018).

Problem Statement

Generation Z is well-known for its distinct smartphone purchasing patterns and preferences, making it a challenging demographic for smartphone marketers to understand and engage effectively. Recognizing the factors that influence their buying intentions and behaviors is crucial. Advanced mobile phones facilitate global communication and data exchange, and since 1983, the US mobile phone industry has seen significant growth with the entry of renowned companies (Gupta & Singh, 2019). Students face the challenge of choosing a smartphone from a wide array of options. This decision impacts their academic, social, and personal lives as smartphones are integral to their daily routines. The multitude of choices, each with different features, specifications, and prices, can complicate the decision-making process (Siang et al., 2018). Financial constraints, varied preferences, and the need to balance features, brand loyalty, and peer influence further complicate this choice (Pooja et al., 2022). The diverse socioeconomic backgrounds of college students add complexity to this decision, as financial and cultural factors

influence their preferences and priorities (Haque et al., 2020). Social pressure and cultural expectations regarding smartphone brands and features can also complicate the decision-making process for students (Asheri et al., 2022).

To address these issues, it is essential to understand how students in higher education choose new smartphones. Approaches and resources that help students make informed decisions that meet their academic, social, and personal needs, while considering their financial and cultural constraints, should be explored (Josephine et al., 2018). These insights are crucial for educators, policymakers, and technology providers to assist students in navigating the evolving smartphone market (Almuhatresh et al., 2022). Additionally, introducing a newly developed questionnaire for measuring customer buying behavior would be beneficial. Several factors influence smartphone purchases, including intense competition between manufacturers (Aziz et al., 2022). This competition provides customers with numerous options, which can lead to indecision. The competition among smartphone manufacturers is a significant concern from various perspectives (Chowdhury et al., 2024). Buyers may struggle to choose as many vendors offer similar features and standards, leading to decision fatigue and purchase delays. Competition can lead to price wars, initially benefiting customers but potentially reducing manufacturers' profit margins and compromising quality or innovation (Yie & Shafi, 2023).

Smartphone manufacturers create separate ecosystems of applications, services, and accessories, leading to ecosystem fragmentation. This fragmentation can make it difficult for consumers to switch brands while maintaining their preferred environment. Although this can result in new features and performance improvements, it also causes devices to become obsolete quickly, forcing users to upgrade. The abundance of options raises consumer loyalty issues, making it challenging for manufacturers to retain customer loyalty. As brand loyalty declines, manufacturers find it increasingly difficult to keep customers (Yie & Shafi, 2023).

Generation Z's purchasing decisions are heavily influenced by peer recommendations and social proof. They choose smartphones based on advice from friends, family, virtual networks, and user-generated content such as reviews and unboxing videos. Gen Z prefers subscription services for smartphones and related services, valuing the flexibility, affordability, and convenience of subscription programs that offer regular updates, bundled services, and warranties. This generation also prioritizes privacy and data security more than previous generations, preferring strong encryption, biometric authentication, and transparent data processing (Veybitha et al., 2021). According to Statista (2024), the smartphone penetration rate in Malaysia has been on an upward trend, reaching 89% in 2023, with continuous growth forecasted for 2025. This indicates that penetrating the Malaysian smartphone market is becoming increasingly challenging due to strong competition and high ownership rates, with 9 out of 10 people already owning a smartphone. The rise in mobile phone companies has led to the entry of brands like Apple, Samsung, Lenovo, and Huawei into the Malaysian market (Li et al., 2023).

Research Objectives

The objective of the newly created questionnaire is to determine the key factors that affect towards smartphone purchase intentions-based Attitude (ATT), Subjective Norms (SN), Perceived Behavioural control (PBC) and Perceived Enjoyment (PE). The research questions for this study are as follows:

RQ1: What is the relationship between attitude and purchase intention of smart phones amongst university students in HEI in Malaysia.

RO2: What is the relationship between subjective norms and purchase intention of smart phones amongst university students in HEI in Malaysia.

RO3: What is the relationship between perceived behavioural control and purchase intention of smart phones amongst university students in HEI in Malaysia.

RO4: What is the relationship between perceived enjoyment and purchase intention of smart phones amongst university students in HEI in Malaysia.

RQ 5: What is the effect of the independent variables (Attitude (ATT), Subjective Norms (SN), Perceived Behavioural control (PBC) and Perceived Enjoyment (PE) on Purchase intentions in Smartphones for Gen Z in Higher Education Institutions Malaysia?

Literature Review and Hypothesis Development

Global Perspective of Behavioural Intention of Generation Z to purchase new smartphones

The propensity of Generation Z to obtain a new smartphone may differ based on their cultural background and physical location. Various widespread trends can be discerned at a global level. The Gen Z cohort is a highly networked generation that significantly depends on technology for their everyday endeavours. Their everyday activities consist of entertainment, interaction, and employment. The Gen Z demographic cohort exhibits a greater propensity to acquire novel smartphones in comparison to previous demographic cohorts. According to Statista's 2020 data, the global smartphone industry had a value of 497.75 billion USD in 2021 and is expected to surpass 700 billion USD by 2026. There is a substantial increase in the worldwide demand for smartphones (Laricchia, 2023). On a global scale, the cost of smartphones will be the foremost determinant for Generation Z's decision-making process. A significant portion of Generation Z individuals, especially those living in rural regions, exhibit a strong awareness of prices. They tend to use budget-friendly smartphones that offer a balanced blend of features. This issue is widespread in numerous developing countries characterised by a high cost of living and a persistently low average income. The perception of a brand plays a vital role in influencing the purchasing decisions of Generation Z. Apple and Samsung, two prominent smartphone manufacturers, hold a substantial portion of the market in different countries across the globe. Their devoted clientele remains unwavering as a result of their well-established brand awareness and dedication to manufacturing top-notch gadgets (Khalil & Haque, 2022). Furthermore, the influence of society has started to have a significant effect on a worldwide level. Various prominent social media platforms, such as Facebook, YouTube, and TikTok, are employing celebrities and influencers to promote their smartphone brands. This method has the capacity to influence the purchasing choices of Generation Z, as they may be motivated to select the brands endorsed by their beloved celebrities to distinguish themselves (Shaw, 2023). The behavioural intention of Gen Z individuals to purchase new smartphones may be influenced by a variety of cultural and national factors. Nevertheless, it is advisable to consider numerous factors such as cost, societal influence, and global brand standing, as indicated by Rakib et al., (2022)

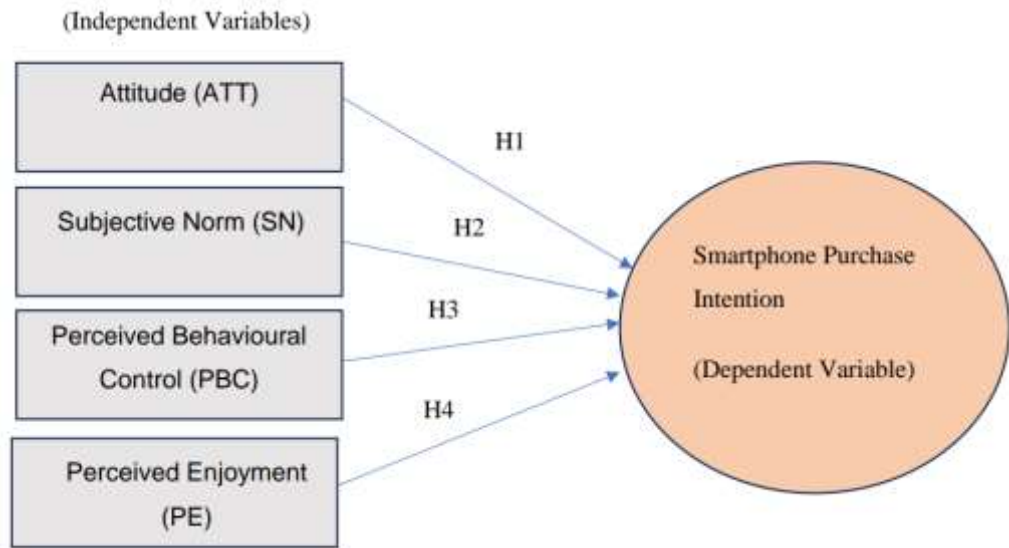


Figure 1 Research Model

Hypothesis Development

Attitudes are people's overall thoughts or emotions toward engaging in a certain activity. Acquiring a new smartphone may be affected by variables such as perceived utility, pleasure, and happiness with the device's features and abilities (Boateng, 2021). Gen Z customers in Penang may see smartphones positively if they consider them beneficial for communication, entertainment, education, and socialisation. Attitudes may be shaped by how individuals see certain smartphone brands. Gen Z customers may be highly motivated to buy smartphones if they see them as status symbols or have a desire to keep up with the newest technological trends. Purchase intentions might be influenced by practical requirements, such the need for dependable communication, social media access, educational tools, or gaming features (Chang & Wildt, 1994). The first hypothesis proposed is as follows:

H1: Attitude has a positive and significant influence on purchase intention of smartphones

Subjective norms (SN) refer to individuals' impressions of the social pressure or influence from important people on their conduct. Peer ideas, family opinions, and social media influences might affect personal criteria while choosing a new smartphone. Subjective norms significantly influence the purchasing intentions of Gen Z consumers in Penang, Malaysia, regarding smartphones. Peer influence, family dynamics, social media impact, and cultural/community norms all shape subjective norms, which impact the purchasing choices of Gen Z consumers. Marketers focusing on this age group must comprehend and use these social effects efficiently to synchronise their marketing tactics with the subjective norms predominant among Gen Z customers in Penang (La Barbera & Ajzen, 2020). The second hypothesis proposed is as follows:

H2: Subjective Norm has a positive and significant influence on purchase intention of smartphones

Perceived Behavioural Control (PBC) refers to an individual's evaluation of their ability to do an action, including internal and external factors that might facilitate or hinder the activity. Financial constraints, technological knowledge, and availability of purchasing options might

affect perceived control over behaviour when acquiring a new smartphone (Xu et al., 2022). Perceived behavioural control significantly influences Gen Z customers' purchase intentions for smartphoness in Penang, Malaysia. Factors including cost, knowledge access, resource availability and buying channel accessibility might impact perceived behavioural control, which then affects purchase intentions (Pathmanathan et al., 2022). Marketers aiming at this age group should take into account these aspects and work on overcoming any obstacles to perceived behavioural control in order to boost purchase intentions among Gen Z customers in Penang (Tsamwa et al., 2022). The third hypotheis proposed is as follows:

H3: PBC has a positive and significant influence on purchase intention on type of smartphones.

Perceived Enjoyment delight refers to an individual's expectation of the pleasure or happiness they would gain from participating in a certain activity, such as buying a new smartphone. Perceived pleasure significantly influences Gen Z customers' purchase intentions for smartphoness in Penang, Malaysia (Umesh et al., 2023). Factors including user experience, entertainment value, customisation possibilities, social connectedness, innovation, and novelty may impact perceived pleasure, which then affects purchase intentions. To effectively reach Gen Z customers in Penang, marketers should emphasise the positive features of smartphones and create user experiences that align with their tastes and lifestyles to boost buying intentions (Tiwari & Joshi, 2020). This hypothesis proposes that those who believe they would like to use a new smartphone are more likely to have favourable views regarding obtaining one. The smartphone's features, design, user interface, entertainment choices, and overall user experience may all have an impact on perceived pleasure (Haque et al., 2024). Individuals who expect to like these elements of the new smartphone are more likely to acquire positive views regarding acquiring it. The fourth hypotheis proposed is as follows:

H4: Perceived Enjoyment has a positive and significant influence on purchase intention on smartphones.

Research Methodology

Demographic Profile of the Respondents

The demographic profile of respondents are tabulated in Table 1.

Demographic	Characteristics of Sample	Frequency	Percentage
Gender	Male	88	51.5
	Female	83	48.5
Age	16 - 19 years old	43	25.1
	20 - 23 years old	60	35.1
	24 - 27 years old	68	39.8
Education level	Certificate / Foundation	31	18.1
	Diploma	73	42.7
	Degree	49	28.7
	Master degree & above	18	10.5
Monthly Income	Above RM8000	11	6.4
	RM6001-RM8000	18	10.5
	RM4001-RM6000	46	26.9

	RM2001-RM4000	40	23.4
	Below RM2000	56	32.7

Table 1: Respondents' Characteristics

Procedure

This research will focus on students from INTI, KDU, and SEGi College, which are Higher Education Institutions in Malaysia. The target population includes male and female students belonging to Generation Z. The research aims to involve a total of 384 students. According to the sample size determination table by GPower (Cohen, 1992), a sample size of 137 is required to ensure adequate representation for the four independent variables. To ensure adequate sample size for this study, a total of 171 respondents were included. The study will be conducted with students from these institutions who will participate by filling out a questionnaire created by the researcher on the Google platform. The survey questions will be designed to be clear and comprehensible to ensure effective data collection. Each survey is expected to be completed within a maximum of 15 minutes. Methodological practices from previous studies were utilized (Almonawer et al., 2023; Annathurai et al., 2023; Khalil et al., 2022; Gazi et al., 2024; Liew et al., 2024). The use of a qualitative approach departed from earlier studies that used a quantitative methodology (Jiang et al., 2023, Wider, 2023).

Questionnaire Development and Instrument

A three-section questionnaire was developed in English. Participants were asked to rate their agreement with statements using a 5-point Likert scale, ranging from 'Strongly Disagree' to 'Strongly Agree'. In this study, the Likert scale will be employed. The Cronbach's Alpha for the variables during the pilot test indicated acceptable reliability: Intentions (DV) 0.917, Attitude (IV1) 0.751, Subjective Norms (IV2) 0.781, Perceived Behavioral Control (IV3) 0.791, and Perceived Enjoyment (IV4) 0.885.

Section A collected demographic information, including gender, age, education level, time spent, purpose of phone use, and income level. Section B required responses to five questions about Generation Z's intentions to purchase new smartphones, adopted from Needle (2021). Section C comprised 20 questions, distributed across four variables with five questions each: Attitude (ATT) adopted from Nazir and Tian (2022), Subjective Norm (SN) adopted from La Barbera and Ajzen (2020), Perceived Behavioral Control (PBC) adopted from Hardin-Fanning and Ricks (2017), and Perceived Enjoyment (PE) adopted from Venkatesh et al. (2012).

Principal Component Analysis (PCA) was employed to reduce the dataset's dimensionality and improve data presentation before distributing the questionnaire. The Kaiser-Meyer-Olkin (KMO) measure and Bartlett's Test of Sphericity were used to assess the dataset's suitability for factor analysis. The KMO measure of 0.900 confirmed that the dataset was suitable for factor analysis, indicating sufficient correlation among the variables to identify relevant factors. Bartlett's Test of Sphericity yielded a significant result (Approx. Chi-Square = 2537.670, df = 300, $p < .001$), indicating significant correlations necessary for component analysis. The Total Variation Explained table from PCA showed that the first five components explained 65.44% of the dataset's variability, confirming that factor analysis can be used to understand the dataset's core structure (Ling et al., 2023). This study aims to uncover underlying constructs and relationships between variables, guiding future research and practice.

Ethical Consideration

Ensuring ethical concerns is critical for protecting the rights, well-being, and dignity of participants in a study, as well as preserving the research's integrity and credibility. This study was approved by the Institutional Review Board (IRB) or Ethics Review Committee, which evaluates research proposals to ensure they follow ethical guidelines.

Results and Findings

Descriptive Analysis and Reliability Results

Descriptive analysis employed measures such as mean, median, mode, standard deviation, skewness, and kurtosis to summarize and interpret a dataset, illustrating the average, spread, and distribution of the variables. It is essential to conduct descriptive analysis before performing statistical investigations to gain an understanding of the data. Reliability analysis was conducted to assess the internal consistency of the constructs. Cronbach's alpha of 0.925 indicated excellent internal consistency among the items used to evaluate intentions. Cronbach's alpha scores of 0.867 and 0.819 indicated high reliability for Subjective Norms and Perceived Enjoyment, respectively. However, Attitude and Perceived Behavioral Control demonstrated moderate internal consistency, with Cronbach's alpha values of 0.735 and 0.776, suggesting fair construct reliability. The reliability analysis shows varying levels of internal consistency among different constructs. Intentions were highly reliable with a Cronbach's alpha of 0.925. These findings underscore the importance of ensuring the reliability of assessment instruments for accurate result interpretation. The moderate reliability of the Attitude and Perceived Behavioral Control constructs highlights the need for ongoing monitoring and potential enhancement of the measurement tools to ensure consistency and accuracy.

Variable	Mean	Std Deviation	Skewness	Kurtosis	Distribution
Intentions (DV)	4.0316	0.92453	-1.468	1.581	Normal
Attitude (IV1)	4.0421	0.58459	-1.543	4.047	Not Normal
Subjective Norms (IV2)	3.6316	0.94642	-0.552	-0.55	Normal
Perceived Behavioral Control (IV3)	4.2596	0.48551	-2.074	11.018	Not Normal
Perceived Enjoyment (IV4)	4.1895	0.60089	-1.338	4.014	Not Normal

Table 2 Descriptive Statistics Results

Table 2 above tabulates the descriptive analysis of all the variables. Participants exhibited a generally positive inclination towards the desired behavior, with an average intention score of 4.03 (SD = 0.92). However, the intention scores displayed negative skewness (skewness = -1.47) and significant kurtosis (kurtosis = 1.58), indicating a departure from a normal distribution. Regarding attitude (IV1), participants held a mean attitude score of 4.04 (SD = 0.58), reflecting a favorable outlook on the behavior. Similar to intentions, attitude ratings also showed negative

skewness (-1.54) and peakedness (kurtosis = 4.05), signifying deviation from normal distribution. The mean score for subjective norms (IV2) stood at 3.63 (SD = 0.95), indicating a neutral perception of societal influences on behavior. The distribution displayed reasonably symmetric characteristics with negative skewness (-0.55) and minimal kurtosis.

Participants expressed a high level of perceived control over the behavior (IV3), with an average score of 4.26 (SD = 0.49). However, significant negative skewness (-2.07) and high kurtosis (11.02) suggested a departure from normality and potential outliers. Regarding perceived effectiveness (IV4), the mean score was 4.19 (SD = 0.60), indicating participants' belief in the behavior's efficacy. Similar to other variables, perceived effectiveness exhibited negative skewness (-1.34) and significant kurtosis (4.01), indicating deviations from normal distribution.

Key statistics for research variables were summarized. Mean scores for intentions, attitude, subjective norms (SN), perceived behavioral control (PBC), and perceived effectiveness (PE) were 4.03, 4.04, 3.63, 4.26, and 4.19, respectively. Standard deviations ranged from 0.48 to 0.95, indicating moderate to high variability.

Negative skewness was observed for all variables, suggesting a leftward distribution skew. Notably, PBC (-2.07) and PE (-1.34) displayed substantial skewness scores, indicating deviations from normality. Kurtosis values ranged from -0.55 to 11.02, indicating peakedness or flatness in distribution. PBC exhibited high kurtosis (11.02), suggesting the presence of heavy-tail enders and potential outliers. These findings highlight favorable attitudes and intentions towards the studied behavior, but caution is warranted due to significant deviations from normality and the potential impact of outliers, especially in the perceived behavioral control measure. Interpretation of study findings should consider these statistical characteristics carefully.

Pearson's Correlation Analysis

Refer to Table 3 below, the correlation matrix showed substantial connections between research variables. Intentions (dependent variable) correlated moderately with Attitude ($r = 0.540$, $p < .001$), Subjective Norms ($r = 0.585$, $p < .001$), Behavioural Control ($r = 0.329$, $p < .001$), and Enjoyment ($r = 0.500$, $p < .001$). Positive attitudes, subjective Norms, perceived Behavioral control, and reported enjoyment are associated with increased intentions to engage in the desired activity. The variables of Attitude (IV1), Subjective Norms (IV2), Perceived Behavioral Control (IV3), and Perceived Enjoyment (IV4) revealed moderate to high positive correlations ($r = 0.671$, $p < .001$). Positive attitudes are associated with greater subjective standards, increased behavioral control, and higher pleasure with the conduct. Subjective Norms (IV2) correlated positively with Perceived Behavioral Control (IV3) ($r = 0.396$, $p < .001$) and Perceived Enjoyment (IV4) ($r = 0.477$, $p < .001$). This suggests that people with stronger subjective Norms have more behavioral control and satisfaction. Perceived Behavioral Control (IV3) showed a moderate positive correlation with Perceived Pleasure (IV4) ($r = 0.631$, $p < .001$), indicating that individuals who feel more control over their behavior are also more likely to experience greater pleasure associated with it. All correlations were statistically significant at 0.01 (two-tailed), suggesting strong and stable links.

Variables	Intentions (DV)	Attitude (IV1)	Subjective Norms (IV2)	Perceived Behavioral Control (IV3)	Perceived Enjoyment (IV4)
Intentions (DV)	1	0.540**	0.585**	0.329**	0.500**
		<.001	<.001	<.001	<.001
Attitude (IV1)	0.540**	1	0.671**	0.607**	0.617**
	<.001		<.001	<.001	<.001
Subjective Norms (IV2)	0.585**	0.671**	1	0.396**	0.477**
	<.001	<.001		<.001	<.001
Perceived Behavioral Control (IV3)	0.329**	0.607**	0.396**	1	0.631**
	<.001	<.001	<.001		<.001
Perceived Enjoyment (IV4)	0.500**	0.617**	0.477**	0.631**	1
	<.001	<.001	<.001	<.001	

** . Correlation is significant at the 0.01 level (2-tailed).

Table 3 Pearson's Correlation Analysis

Multicollinearity Statistics

The regression model was used to predict intentions was tested for multicollinearity among the predictor variables (Attitude, Subjective Norms (SN), Perceived Behavioral Control (PBC), and Perceived Enjoyment (PE)). The research yielded the following tolerance and variance inflation factor (VIF) values:

- Attitude: Tolerance = 0.386, VIF = 2.593
- Subjective Norms (SN): Tolerance = 0.540, VIF = 1.851
- Perceived Behavioral Control (PBC): Tolerance = 0.522, VIF = 1.914
- Perceived Enjoyment (PE): Tolerance = 0.507, VIF = 1.973

Tolerance values indicate the amount of variance in each predictor variable that is not accounted for by other predictors in the model. A tolerance value close to 1 indicates low multicollinearity. Variance Inflation Factor (VIF) values measure how much multicollinearity increases the variance of a predictor variable. VIF values below 10 are typically considered acceptable (Kianifard et al., 1990). This study shows that all predictor variables have tolerances well above the commonly recommended threshold of 0.1 (Kianifard et al., 1990). This indicates that each variable retains substantial variance even after accounting for other variables. Additionally, all VIF values are below 10, suggesting no significant multicollinearity in the model. The findings demonstrate that the predictor variables in the regression model are generally independent and

not multicollinear. Therefore, the results of the regression analysis are more reliable, and the interpretations of the model are stronger.

Multiple Regression Analysis

Multiple regression analysis explores the relationship between a dependent variable and multiple independent variables. It aids researchers in understanding how well the independent variables predict or explain the variability of the dependent variable. Through this analysis (refer to Table 4 & Table 5), regression coefficients for each independent variable are estimated, forming an appropriate regression model. These coefficients indicate the effect of a one-unit change in each independent variable on the dependent variable, holding all other variables constant. The suitability of the regression model and the impact of each independent variable in predicting the dependent variable are evaluated. This evaluation involves examining statistical indicators such as R-squared, adjusted R-squared, F-statistic, and p-values associated with each independent variable's coefficient. does this.

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.648a	.420	.406		.71239

Table 4 Model Summary of Regression

a. Predictive variables: (constant), PE, SN, PCB, Attitude

b. Dependent variable: Intentions

The accuracy of predicting target behavior intentions was evaluated using a regression model with Perceived Enjoyment (PE), Subjective Norms (SN), Perceived Behavioral Control (PCB), and Attitude as predictive factors. The regression model was found to be statistically significant in explaining variance in intentions ($R^2 = .420$, adjusted $R^2 = .406$, $F(4, N = [\text{sample size}]) = [\text{F-value}]$, $p < .001$). This indicates that the predictor variables account for 42% of the variance in intentions. The model significantly contributed to explaining how people's intentions toward the target behavior change. These findings highlight the importance of considering multiple factors when understanding and predicting human behavior.

Model		Sum of Squares	df	Mean Square	F	Sig
1	Regression	61.065	4	15.266	30.082	<.001 ^b
	Residual	84.244	166	.507		
	Total	145.309	170			

Table 5 ANOVA Results

a. Dependent Variable: Intentions

b. Predictors: (constant), PE, SN, PCB, Attitude

ANOVA was employed to evaluate the regression model's efficacy in predicting target behavior intentions, considering Perceived Enjoyment (PE), Subjective Norms (SN), Perceived Behavioral Control (PCB), and Attitude. The analysis revealed a significant impact of the regression model on intentions ($F(4, 166) = 30.082, p < .001$), indicating that the combined effect of the predictor variables can effectively predict intentions related to the desired activity.

The regression sum of squares ($SSR = 61.065$) and corresponding mean square ($MS = 15.266$) demonstrated that the regression component explains a substantial portion of the variance in intentions. This suggests that the regression model accounts for a significant amount of the variability in intentions beyond what would be expected by chance. However, the residual sum of squares ($SSE = 84.244$) and mean square ($MS = 0.507$) represent the amount of variation in intentions that is not explained by the predictor variables. Despite this residual variation, the model retains a high level of significance, indicating its robustness in predicting intentions using the specified predictors. These findings underscore the importance of the model in comprehending and forecasting people's behavioral intentions. The ANOVA results solidify the regression model's ability to capture the diversity of intentions, providing valuable insights for both theoretical frameworks and practical applications.

Model		Unstandardized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig. (p value)
1	(Constant)	.607	.503		1.207	.229
	Attitude	.290	.151	.184	1.930	.055
	SN	.364	.079	.372	4.629	<.001
	PCB	-.197	.156	-.103	-1.265	.208
	PE	.422	.128	.275	3.307	.001

Table 6 Coefficients of Multiple Regression

a. Dependent Variable: Intentions

Multiple regression coefficients were utilized to examine the relationships among Attitude, Subjective Norms (SN), Perceived Behavioral Control (PCB), Perceived Enjoyment (PE), and intentions. Despite not meeting the standard threshold for statistical significance ($B = 0.290, \beta = 0.184, p = .055$), Attitude showed a positive influence on intentions. Favorable opinions regarding the behavior were associated with increased intentions to participate, albeit not significantly at the usual $p < .05$ level. On the other hand, positive Subjective Norms (SN) significantly impacted intentions ($B = 0.364, \beta = 0.372, p < .001$). Higher perceived social norms related to the activity were significantly linked to a greater desire to engage.

Perceived Behavioral Control (PCB) did not exhibit a significant effect on intentions ($B = -0.197, \beta = -0.103, p = .208$), indicating that individuals' sense of control over the behavior did not significantly influence their intentions to engage. Perceived Enjoyment (PE) significantly

contributed to intentions. Specifically, individuals who perceived the behavior as enjoyable were more inclined to participate. In summary, multiple regression coefficients elucidate how each predictor variable contributes to explaining the variance in people's intentions regarding the target behavior. While Attitude did not reach statistical significance, Subjective Norms and Perceived Enjoyment emerged as significant predictors of intentions. Perceived Behavioral Control did not notably impact intentions.

Hypothesis Testing

The researcher validated previous theories before concluding with supported hypothesis testing.

Hypothesis 1 (H1): There exists a positive and statistically significant correlation between Malaysian university students' smartphone attitudes and purchasing intentions. The study revealed a substantial positive correlation between attitude and purchase intention ($r = 0.540$, $p < .001$), thus affirming Hypothesis 1. This indicates that university students who have a positive view of cellphones are more inclined to buy them.

Hypothesis 2 (H2): Malaysian university students' smartphone buying intentions exhibit a direct and statistically significant correlation with subjective norms. The research validated Hypothesis 2 by demonstrating a significant positive correlation between subjective norms and purchase intention ($r = 0.585$, $p < .001$). Consequently, university students who are aware of smartphone social norms are more likely to make purchases.

Hypothesis 3 (H3): The willingness of Malaysian university students to purchase cellphones is positively and statistically correlated with their reported behavioral management abilities. The findings supported Hypothesis 3 by indicating a significant positive correlation between perceived behavioral control and purchase intention ($r = 0.329$, $p < .001$). This implies that students who feel more in control of their smartphone purchases are more inclined to buy.

Hypothesis 4 (H4): There is a direct and statistically significant correlation between Malaysian university students' smartphone purchasing intention and reported pleasure. The study validated Hypothesis 4 by revealing a substantial positive correlation between perceived enjoyment and intention to buy ($r = 0.500$, $p < .001$). These results demonstrate that students who derive pleasure from cellphones are more likely to acquire them.

The results provide solid empirical evidence supporting all assumptions, showcasing strong and significant relationships between attitude, subjective norms, perceived behavioral control, perceived pleasure, and smartphone purchase intention among Malaysian university students.

Hypothesis	IV	Std Beta (B)	t-value	p-value	VIF	R ²
Hypothesis 5 (H5): All the independent variables jointly have a	Attitude (IV1)	$\beta=0.184$	$t > 1.207$	$p > 0.05$	2.593	0.420
	Subjective Norms (IV2)	$\beta=0.372$	$t > 1.930$	$p < 0.01$	1.851	

positive and significant effect on purchase intention of smart phones amongst university students in HEI in Malaysia.	Perceived Behavioral Control (IV3)	$\beta = -0.103$	$t = 1.265$	$p > 0.05$	1.914	
	Perceived Enjoyment (IV4)	$\beta = 0.275$	$t > 3.307$	$p < 0.01$	1.973	

Table 7 Summary of Hypothesis Testing Results (Based on Multiple Regression Analysis)

Hypothesis 5 (H5): posits that Attitude, Subjective Norms, Perceived Behavioral Control, and Perceived Enjoyment positively and significantly influence smartphone purchase intentions among Malaysian university students in higher education institutions (HEIs). This hypothesis underwent testing through multiple regression analysis to assess how these factors impact purchase intention.

The substantial and positive beta coefficient indicates that subjective norms strongly influence university students' smartphone buying intentions. The statistical study, with a t-value and p-value of < 0.01 , highlights the significant impact of social and peer pressures on student decision-making. The Variance Inflation Factor (VIF) for "Subjective Norms" is well below 5, indicating minimal concern about multicollinearity affecting the model's reliability.

On the other hand, as perceived control over the purchasing process decreases, the negative beta coefficient suggests a decrease in purchasing desire. However, this predictor did not achieve statistical significance ($p > 0.05$), implying that students' perceptions of their behavioral control in buying a smartphone may not significantly influence their purchase decisions. The VIF analysis further confirms that multicollinearity does not undermine perceived behavioral control's representation in the model (Malnaad et al., 2022).

Perceived enjoyment is strongly correlated with student cellphone ownership, as evidenced by the positive beta coefficient. The significant t-value and p-value (< 0.01) indicate that cellphone satisfaction significantly impacts purchase intentions. Multicollinearity in perceived enjoyment is not a concern, with a VIF below 2, affirming the reliability of the perceived pleasure coefficient.

The results of Hypothesis 5 are inconclusive. While Subjective Norms and Perceived Enjoyment significantly affect purchasing intentions, Attitude and Behavioral Control do not show significant effects. Despite this variability, the overall model, with an R^2 value of 0.420, explains a significant portion of the heterogeneity in purchase intentions. This suggests that although not all indicators are statistically significant individually, collectively, they shed light on Malaysian university students' smartphone purchasing behavior. The low multicollinearity, as indicated by a VIF of 2.593, suggests minimal impact of independent variables on each other. Additionally, the R^2 value of 0.420 demonstrates that the independent variables explain 42.0% of the variability in purchase intentions, indicating the model's significant explanatory power.

In conclusion, understanding and predicting university students' purchase intention behavior should involve considering various factors, including attitude. Malaysian academics and industry stakeholders can derive valuable insights from these findings.

Conclusion and Recommendation

Summary of Research Findings

These results provide varying degrees of support for the four research areas examined in this study. They reveal that smartphone purchase intention is influenced by Attitude, Subjective Norms, Perceived Behavioral Control, and Perceived Enjoyment among Malaysian HEI students. The empirical evidence strongly supports all theories. The study identified substantial and significant relationships among attitude, subjective norms, perceived behavioral control, perceived enjoyment, and smartphone purchase intention among Malaysian university students (Haque et al., 2022). In essence, all four hypothesis factors contribute to Malaysian university students' intentions to purchase cellphones.

Research Question 1

RQ1: What is the relationship between attitude and purchase intention of smart phones amongst university students in HEI in Malaysia?

Attitude and Purchase intention of smart phones amongst university students in HEI in Malaysia

H1: There is a positive and significant relationship between attitude and purchase intention of smart phones amongst university students in HEI in Malaysia.

Drawing from consumer behavior research and theoretical frameworks, hypothesis H1 posits a robust and meaningful correlation between smartphone attitude and purchase intention among university students in Malaysian Higher Education Institutions (HEIs). This hypothesis finds support in numerous studies that have linked attitude and purchasing intention.

The Theory of Planned Behavior (TPB) proposed by Ajzen (1991) elucidates how attitude influences intentions, particularly in purchasing decisions. Ajzen emphasizes that one's approach to conduct plays a pivotal role in shaping behavioral intentions. Studies focusing on consumer behavior within the smartphone industry have consistently demonstrated a positive association between attitude and purchase intention. For instance, Lim and Ting (2012) uncovered a significant positive relationship between smartphone attitude and the intention to buy among Malaysian consumers, echoing similar findings in Western contexts and highlighting the global relevance of these concepts. Their study revealed a strong correlation between smartphone attitudes and buying intentions. In another study, Shin (2013) delved into the behavior of smartphone users and revealed that attitudes toward innovative features and user-friendliness significantly influenced purchase intentions. This highlights distinct attitudes that can impact consumer behavior, particularly in technology-related purchases, which may also apply to Malaysian university students' decisions regarding smartphone purchases (Narayanan et al., 2024). Consequently, these findings underscore the strong predictive power of attitude on purchasing intention. In summary, existing consumer behavior studies and theoretical frameworks provide substantial support for hypothesis H1, demonstrating a positive and considerable association between smartphone attitude and purchase intention among Malaysian university students in HEIs (Rajendran & Haque, 2022). These studies offer insights into consumer decision-making psychology and carry implications for devising effective smartphone marketing strategies (Lim et al., 2024). The researcher confirmed that Research Question 1's hypothesis was validated based on this evidence.

Research Question 2

What is the relationship between subjective norms and purchase intention of smart phones amongst university students in HEI in Malaysia?

Subjective Norms and Purchase intention of smart phones amongst university students in HEI in Malaysia

H2: There is a positive and significant relationship between Subjective Norms and purchase intention of smart phones amongst university students in HEI in Malaysia.

Hypothesis H2 proposes that subjective norms have a positive and significant impact on smartphone purchasing intentions among Malaysian university students in HEIs. Students' decisions to acquire cellphones are greatly influenced by social pressures or influences from peers and family members.

The Theory of Reasoned Action (TRA) and the Theory of Planned Behavior (TPB) rely on subjective norms, positing that societal contexts and personal beliefs play a crucial role in

shaping behavior. This influence is particularly pronounced in collectivist societies like Malaysia, where social and familial perspectives carry significant weight. Positive endorsements from friends and family members can sway students' decisions, sometimes more effectively than advertisements. Smartphones enable classmates to easily share information, learn, and engage in enjoyable activities, which in turn motivates them to make purchases for similar benefits. Moreover, smartphones may symbolize a university student's social status or identity, with owning the latest version or a specific brand potentially enhancing one's social standing among peers. Numerous studies have explored the connection between subjective norms and purchasing intentions, consistently yielding similar results and references. For example, Zhang and Mao (2016) discovered that subjective norms influenced behavioral intentions to use mobile payment services in China, underscoring the significance of social influences in technology adoption. Similarly, Alalwan, Dwivedi, and Rana (2017) found that subjective norms strongly impacted Jordanian consumers' adoption of mobile banking, highlighting the role of societal pressures and norms in financial technology adoption. These studies collectively demonstrate that subjective considerations significantly influence university students' decisions regarding smartphone purchases and usage. Hypothesis H2 implies a substantial and meaningful association, aligning with studies on technology adoption and reflecting Malaysia's socially oriented culture.

Based on this evidence, the researcher confirmed that Research Question H2's hypothesis was validated.

Research Question 3

What is the relationship between perceived behavioural control and purchase intention of smart phones amongst university students in HEI in Malaysia.

Perceived Behavioral Control and Purchase intention of smart phones amongst university students in HEI in Malaysia

H3: There is a positive and significant relationship between Perceived Behavioral control and purchase intention of smart phones amongst university students in HEI in Malaysia.

Hypothesis 3 posits that there exists a strong and positive correlation between perceived behavior regulation (PBC) and the desire to own smartphones among university students in Malaysian

Higher Education Institutions (HEI). This indicates that students who are confident in their ability, knowledge, and opportunities to acquire cellphones are more likely to intend to do so. The Theory of Planned Behavior (TPB) asserts that an individual's perception of how easy or difficult an activity is can significantly impact their behavioral intentions. The concept of Perceived Behavioral Control (PBC), often associated with purchasing power parity, reflects one's ability to purchase goods and services based on their financial resources. PBC, measured by one's smartphone affordability using available funds, affects students' decisions regarding smartphone acquisition. Those who perceive cellphones as affordable are more inclined to make a purchase. Moreover, students who are knowledgeable about smartphone features and usage are also more likely to buy one. The convenience of purchasing a smartphone, whether online or in-store, plays a role in influencing their decision, with availability in local retail outlets or reputable online platforms increasing the likelihood of purchase.

Numerous studies across various countries have established a connection between Perceived Behavioral Control (PBC) and intentions for technology adoption. These findings align with the Theory of Planned Behavior (TPB) proposed by Ajzen (1991), which emphasizes the predictive power of PBC, along with attitude and subjective norms, in determining behavioral intentions across different contexts, including consumer choices. A meta-analysis conducted by Armitage and Conner (2001) further validated PBC's predictive capability regarding behavioral intentions, thus supporting the TPB framework in multiple scenarios. Studies such as Khalifa and Limayem's (2003) investigation into online banking adoption and Zhang, Zhu, and Liu's (2012) research on Chinese mobile purchasing also highlighted the significance of perceived behavioral control in predicting technology adoption and purchase intentions.

These collective findings affirm the hypothesis that Malaysian university students' intentions to purchase smartphones are positively associated with their perceived behavioral control. This correlation suggests that strategies such as financial incentives, educational campaigns, and technical training could enhance students' likelihood of purchasing smartphones. The researcher concluded that Research Question 3's hypothesis was indeed validated.

Research Question 4

What is the relationship between perceived enjoyment and purchase intention of smart phones amongst university students in HEI in Malaysia.

Perceived Enjoyment and Purchase intention of smart phones amongst university students in HEI in Malaysia

H4: There is a positive and significant relationship between perceived enjoyment and purchase intention of smart phones amongst university students in HEI in Malaysia.

Hypothesis 4 posits a strong correlation between Malaysian university students' enjoyment of using cellphones and their willingness to purchase them. This implies that students who derive pleasure from using cellphones are more inclined to desire owning one. Within the framework of the technology acceptance model (TAM), perceived satisfaction plays a crucial role and is linked to intrinsic motivation as per self-determination theory. Pleasure and satisfaction derived from technology significantly influence intentions to use that technology. In the context of acquiring smartphones, perceived delight refers to the level of enjoyment one experiences while using the device, regardless of the outcomes achieved. When students find satisfaction in using smartphones for activities such as gaming, social networking, or exploring new apps, their desire to own one increases. Factors like user interface design, availability of diverse apps,

communication capabilities with friends and family, or the novelty of a device can contribute to the enjoyment of using smartphones. Numerous studies have demonstrated a connection between enjoyment and behavioral intentions, particularly in technology adoption and purchase decisions. For instance, Bagozzi et al. (1992) argued that subjective pleasure predicts intentions to use technology within the TAM framework, emphasizing that the fun aspect of technology can drive its usage beyond utilitarian purposes. Van van Heijden (2004) found that perceptions of pleasure strongly influenced the inclination to use hedonic information systems such as video games and multimedia applications, highlighting the significance of enjoyment in entertainment-focused technologies. Choi and Kim (2004) explored variables related to mobile gaming adoption and concluded that enjoyment significantly impacted mobile game usage, indicating the importance of fun in the uptake of mobile apps beyond mere entertainment. Hsu and Lin (2015) delved into factors influencing social media use and discovered that users' intentions to use these platforms were driven by the enjoyment derived from them, emphasizing the role of pleasure in sustained technology use.

These findings collectively suggest that smartphone enjoyment plays a crucial role in influencing Malaysian university students' decisions to purchase smartphones. The correlation between perceived enjoyment and purchase intention underscores the importance for smartphone manufacturers and marketers to highlight the fun and enjoyable aspects of smartphones to attract university students. The researcher confirmed the validation of Hypothesis 4 based on the findings related to Research Question 4.

Research Question 5

What is the effect of the independent variables (Attitude (ATT), Subjective Norms (SN), Perceived Behavioural control (PBC) and Perceived Enjoyment (PE) on Purchase intentions in Smartphones for Gen Z in Higher Education Institutions Malaysia?

H5: All the independent variables jointly have a positive and significant effect on purchase intention of smart phones amongst university students in HEI in Malaysia.

Hypothesis 5 proposed that attitude (ATT), subjective norms (SN), perceived behavioral control (PBC), and perceived enjoyment (PE) collectively and significantly influence Generation Z university students' intentions to purchase smartphones in Malaysian Higher Education Institutions (HEIs). This holistic approach acknowledges the intricate and diverse nature of customer decision-making, particularly among Gen Z individuals who are highly connected, value-oriented, and technologically adept.

The integration of the Theory of Planned Behavior (TPB) enables the examination of how specific factors impact Gen Z students in Malaysian HEIs regarding cellphone purchases. These factors encompass attitude, subjective norms, perceived behavioral control, and perceived enjoyment, which are widely utilized in social psychology and information systems research to comprehend behavioral intentions and actions. The theoretical framework commences with attitude, which reflects an individual's positive or negative perception of an activity. Gen Z students' perception of smartphones as essential or beneficial can influence their purchase decisions. Subjective norms (SN) denote the societal pressure perceived by an individual to engage or refrain from certain actions. Influences from social media, peers, and family members can sway college students' decisions, making them more inclined to purchase cellphones if these influential groups endorse smartphone ownership. Perceived enjoyment (PE) refers to the

pleasure derived from using technology, irrespective of its performance. Smartphones entice users with their user-friendly interfaces, features, and entertainment capabilities.

Hypothesis 5 states: "The independent variables collectively exert a positive and statistically significant influence on the smartphone purchase intentions of university students in Malaysian HEIs." This hypothesis implies that all these elements jointly affect Gen Z students' inclinations to purchase smartphones. Multivariate analyses like multiple regression can assess this hypothesis, using purchase intention as the dependent variable and ATT, SN, PBC, and PE as independent variables.

Studies by Ajzen (1991) highlight the influence of perceived behavioral control and technological attitudes on young people's technology adoption, while research in Malaysia emphasizes the significance of cultural and social factors, constituting social norms (Mohamed, Nor, & Baharudin, 2012). These elements collectively provide a comprehensive framework for understanding Gen Z's smartphone acquisition intentions in Malaysian HEIs, aiding academic research, marketing strategies, and the applications of smartphone companies. This model can help align efforts with psychological and social elements that influence consumer behavior, especially for complex decisions like smartphone purchases among Gen Z students in Malaysia (Ying et al., 2023). Marketers and educators can better comprehend and impact this significant demographic's buying behavior by considering these aspects holistically.

The researcher confirmed the validation of Hypothesis 5 based on the findings related to Research Question 5.

Implications of the Study

The findings derived from this study carry considerable weight in offering numerous critical implications, particularly within the theoretical and practical spheres of the universities in Malaysia.

Managerial Implications

The study's insights into how attitude (ATT), subjective norms (SN), perceived behavioral control (PBC), and perceived enjoyment (PE) impact smartphone purchase intentions among Generation Z university students in Malaysian Higher Education Institutions (HEIs) hold significant implications for managers. This data is crucial for marketers, smartphone manufacturers, educators, and regulators seeking to comprehend and influence the buying behavior of this population. Here are some key managerial implications:

1. Marketers: It's important for marketers to assess both the functional and financial aspects of smartphones, alongside their aesthetic appeal and entertainment value. Advertisements targeting Generation Z that emphasize smartphone enjoyment and social status may be more impactful. Given the subjective nature of purchasing criteria, leveraging social media influencers aligned with Generation Z can influence purchase intentions. Employing social media strategies that encourage smartphone sharing and discussions can bolster subjective norms.

2. Manufacturers: Manufacturers should prioritize aspects such as camera performance, gaming features, and unique design to enhance customer satisfaction. Including customizable and interactive features can further cater to Gen Z's desire for personalization and technological engagement. Educational institutions and regulators could develop digital literacy programs tailored for Generation Z, covering smartphone basics and promoting responsible usage. This could boost students' confidence in their purchasing decisions and perceived behavioral control.

3. Continuous Market Research: Understanding the preferences and motivations of Gen Z groups is crucial for marketers to tailor their strategies effectively. Staying updated and engaging with this audience necessitates ongoing market research to monitor trends and preferences. Actively seeking and analyzing feedback from Generation Z customers can uncover insights for product enhancements and refined marketing approaches.

4. Engagement Strategies: Engaging Generation Z customers requires a multifaceted approach. Employing co-creation workshops or innovation labs can foster customer engagement and loyalty. This collaborative approach allows businesses to align their offerings with Gen Z's evolving needs and preferences.

In summary, this research underscores the importance of adopting a nuanced strategy to engage Generation Z customers effectively. Understanding the diverse factors influencing smartphone purchases can empower businesses, educational institutions, and policymakers to better cater to this vital demographic.

Limitations of the Study

Acknowledging and embracing the limitations of a study enhances its credibility and lays the groundwork for subsequent research endeavors. A study focusing on how attitude (ATT), subjective norms (SN), perceived behavioral control (PBC), and perceived enjoyment (PE) impact smartphone purchase intentions among Generation Z university students in Malaysian Higher Education Institutions (HEIs) faces several constraints.

Firstly, confining the study to Generation Z university students in Malaysian HEIs may restrict its generalizability to other age groups, cultures, or educational settings. Future studies could broaden their scope by including diverse demographic groups. Moreover, the cultural, economic, and technological context specific to Malaysia may significantly influence the study's outcomes. Conducting cross-cultural investigations is imperative to ascertain the universal applicability of the observed correlations, mitigating this limitation.

Additionally, reliance on self-reported assessments introduces potential biases such as social desirability or recall biases. Incorporating objective measurements or implementing continuous monitoring methods could enhance the accuracy of self-reports, providing deeper insights into purchase patterns (Wangyanwen et al., 2023).

While the study highlights the influence of ATT, SN, PBC, and PE on purchase intention, other factors like perceived risk, brand loyalty, and personal innovativeness may also play crucial roles. Neglecting these variables may result in an incomplete understanding of consumer behavior (Chawdhury et al., 2022). Furthermore, the practice of quantifying intricate psychological traits may oversimplify their nuanced effects on behavior. Future research could employ qualitative methods to delve into Generation Z customers' motivations and perspectives, enriching our understanding.

Acknowledging these limitations does not diminish the study's conclusions but rather signifies avenues for further exploration. Addressing these constraints in future research endeavors will facilitate a deeper comprehension of Generation Z's smartphone purchase intentions and enhance the applicability of findings across diverse demographic segments (Haibao & Haque, 2023).

Recommendation for Future Study

The study's limitations and findings regarding the impact of attitude, subjective norms, perceived behavioral control, and perceived enjoyment on Generation Z university students' smartphone purchase intentions in Malaysian Higher Education Institutions (HEIs) point towards several avenues for future research. These recommendations aim to address gaps, enhance research reliability, and explore novel areas of inquiry.

1. Broadening Demographic Coverage: Future studies should encompass a wider range of age groups, employment statuses, and educational levels to ensure inclusivity. Additionally, conducting a cross-cultural study can compare Generation Z's smartphone buying intentions across different countries, shedding light on the influence of cultural contexts.

2. Longitudinal Studies: Longitudinal studies can unveil how attitudes, norms, perceptions, and intentions evolve over time, especially in response to technological advancements and societal shifts. Incorporating variables like perceived risk, brand image, personal innovativeness, and environmental consciousness can provide a deeper understanding of Generation Z's smartphone purchases.

3. Methodological Enhancements: Employing mixed-methods approaches that integrate qualitative methods such as interviews and focus groups with quantitative surveys can offer comprehensive insights into smartphone usage and purchasing motivations. Leveraging real purchase data, statistical analyses, or social media analytics can validate and enhance self-reported data.

4. Impulse Purchasing Behavior: Research by Isa et al. (2020) highlighted impulse purchase orientation as a significant predictor of online purchase intentions among Malaysian consumers. Investigating impulse purchase behavior among Generation Z, considering their strong emotional responses, can be a valuable area of future inquiry.

By addressing these areas in future research endeavors, we can deepen our understanding of Generation Z's smartphone purchase intentions and adapt strategies accordingly to meet their evolving needs and preferences.

Conclusion

The study delved into how attitude, subjective norms, perceived behavioral control, and perceived enjoyment impact Generation Z university students' intentions to purchase smartphones in Malaysian higher education institutions. The findings offer insights into the intricate decision-making processes of this tech-savvy group, affirming behavioral theories and unveiling Generation Z's preferences, influencers, and motivations in Malaysia. This conclusion outlines the collective findings, theoretical advancements, practical implications, and future research avenues.

The amalgamation of results demonstrates that smartphone attitude (ATT), encompassing utilitarian and aesthetic evaluations, significantly shapes purchasing intentions. This underscores how product features, functionality, and design play a pivotal role in influencing Generation Z's smartphone acquisitions. Subjective norms (SN) highlight the sway of social circles, including friends, family, and online communities, on the behavioral intentions of young consumers. Given Generation Z's strong internet connectivity, these norms wield substantial influence. Perceived behavioral control (PBC) underscores the impact of self-assurance and resources on smartphone purchases, where factors like financing options and technical knowledge affect

intentions, emphasizing the need for straightforward, accessible technology. Perceived enjoyment (PE), representing the positive motivations behind smartphone usage, robustly predicts purchase intentions, highlighting the significance of entertainment, leisure, and personal fulfillment in Generation Z's cellphone choices.

This study utilized the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM) to explore Generation Z's smartphone buying behaviors, contributing to academic discourse. It underscores the importance of subjective enjoyment alongside behavioral expectations, demonstrating how young customers engage with technology and emphasizing the influence of both aesthetic and functional aspects on their purchasing decisions.

By enhancing our understanding of what influences Malaysian Generation Z smartphone buyers, this research illuminates the interplay of personal viewpoints, cultural elements, perceived control, and enjoyment. Keeping pace with technological advancements and evolving generational attitudes and behaviors necessitates continuous research. This study enriches our insights into consumer behavior and technology adoption, offering valuable insights for both academic exploration and practical applications.

References

- Ahmed, N. (2019). Generation Z's smartphone and social media usage: A survey. *Journalism and Mass Communication*, 9(3). <https://doi.org/10.17265/2160-6579/2019.03.001>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-t](https://doi.org/10.1016/0749-5978(91)90020-t)
- Almonawer, N. et al. (2023) 'Transformational Leadership Style and School Transformation: The Case of Secondary Schools in Kuwait', *International Journal of Operations and Quantitative Management*, 29 (1), pp. 51 - 67. doi: 10.46970/2022.29.1.4. Available at: <https://submissions.ijoqm.org/index.php/ijoqm/article/view/160/51> (accessed: 28 January 2024).
- Almuhatresh, O.A., Senathirajah, A.R.S. & Haque, R. (2022). Factors Influencing Online Purchase Intention Of Smartphones In Bahrain. *International Journal of Operations and Quantitative Management*, 28(2), 617-629. DOI: <https://doi.org/10.46970/2022.28.2.12>
- Annathurai, Y., Senathirajah, A. R. S., Haque, R., & Devasia, S. N. (2023). The impact of operation revitalisation strategies in power generation plants on customer satisfaction. *International Journal of Professional Business Review*, 8(5), e01897. <https://doi.org/10.26668/businessreview/2023.v8i5.1500>
- Aziz, N. N. & Wahid, N. (2018). Factors Influencing Online Purchase Intention among University Students. *International Journal of Academic Research in Business and Social Sciences*, 8. 702-717.
- Aziz, R.A., Nor, S.M., Ong, N.T.W., Ooi, E.F., Murugesu, S.R., Tan, H.N., Haque, R., Senathirajah, A.R.S.. (2022). Factors Influencing Consumer Purchase Intention Towards Organic Food: Evidence From Malaysia. *Journal of Pharmaceutical Negative Results*, 13(8), 3283-3296. <https://doi.org/10.47750/pnr.2022.13.S08.403>
- Chawdhury, B., Haque, R., Senathirajah, A.R.S., Khalil, M.I., & Ahmed, S. (2022). A Structural Path Study Modelling Factors Influencing Social Entrepreneurship Intention: A Bangladeshi Youth Case Study. *International Journal of Operations and Quantitative Management*, 28(2), 418-440. <https://doi.org/10.46970/2022.28.2.2>
- Chowdhury, T. A., Naheed, S., & Idrish, S. (2024). Exploring human-centric attributes of smartphone set and their influence on brand advocacy by the customers: Testing the moderating role of gender identity. *Journal of Global Marketing*, 37(1), 24–41. <https://doi.org/10.1080/08911762.2023.2253525>
- Cohen J. (1992). A power primer. *Psychol Bull.* 112(1), 155-9. doi: 10.1037//0033-2909.112.1.155. PMID: 19565683.

- Dolot, A. (2018). The characteristics of generation Z. *E-Mentor*, 74(2), 44–50. <https://www.ceeol.com/search/article-detail?id=737237>
- Garcia, A. M., & Patel, S. J. (2022). Enhancing job satisfaction through diverse career advancement opportunities: A study in contemporary organizations. *International Journal of Human Resource Management*, 38(2), 201-220.
- Gazi, Md. A. I., Rahman, Md. K. H., Yusof, M. F., Masud, A. A., Islam, Md. A., Senathirajah, A. R. bin S., & Hossain, Md. A. (2024). Mediating role of entrepreneurial intention on the relationship between entrepreneurship education and employability: a study on university students from a developing country. *Cogent Business & Management*, 11(1). <https://doi.org/10.1080/23311975.2023.2294514>
- Gupta, O. J., & Singh, A. (2019). Influence of product's price on consumers' willingness to purchase Chinese mobile phones: Controlling the effect of product quality & design. *Effulgence-A Management Journal*, 17(2), 25. <https://doi.org/10.33601/effulgence.rdias/v17/i2/2019/25-36>
- Haibao, W., & Haque, R. (2023). Digital Transformation and Sustainable Development of Automobile Insurance Claims Departments. *MAHSA International Journal of Business and Social Sciences*, 3(1), 42-47. <https://mahsaacademy.com.my/conference/Ejournal/#/view>
- Haque, R., Senathirajah, A.R.b.S., Khalil, M.I., Qazi, S.Z.; Ahmed, S. (2024). A Structural Path Analysis Bangladeshi SMEs' Sustainability through Social Media Marketing. *Sustainability*, 16(13), 5433. <https://doi.org/10.3390/su16135433>
- Haque, R., Senathirajah, A.R.S., & Kow, A.P.A., (2020), Factors Affecting Customer's Satisfaction and Loyalty in Hospitals in China. *Asian Journal of Technology & Management Research*, 10(1), 101-115. <http://www.ajtmr.com/archives.aspx>
- Haque, R., Siddiqui, T.A., San, L.H. & Din, F.M.B.O. (2022). Data Visualization: A Study Of Tools And Challenges. *MAHSA International Journal of Business and Social Sciences*, 2(1), 71-78. <https://mahsaacademy.com.my/conference/Ejournal/#/view>
- Hardin-Fanning, F., & Ricks, J. M. (2017). Attitudes, social Norms and perceived Behavioral control factors influencing participation in a cooking skills program in rural Central Appalachia. *Global Health Promotion*, 24(4), 43–52. <https://doi.org/10.1177/1757975916636792>
- Huang, O., & Copel, L. (2020). Gen Z, Instagram influencers and hashtags influence on purchase intention of apparel. *Academy of Marketing Studies Journal*, 24(3), 1–14. <https://search.proquest.com/openview/35695d4930345e596f2c9e332a49bbd1/1?pq-origsite=gscholar&cbl=38744>
- Isa, N. F., Syed Annuar, S.N., Gisip, I. A., & Lajuni, N. (2020). Factors influencing online purchase intention of millennials and gen Z consumers. *Journal of Applied Structural Equation Modelling*, 4(2), 21-43.
- Jiang, Y., Abdullah, SINW., Lim, BJH., Wang, R. and Phuah, KT. (2023). The Role of Marketing Stimuli And Attitude In Determining Post-COVID Buying Decisions Toward Organic Food Products: Evidence From Retail Consumers In Beijing, China. *Front. Sustain. Food Syst.* 7:1051696. doi: 10.3389/fsufs.2023.1051696
- Jamil, R. A., & Khan, T. I. (2025). Lenient return policies and religiosity: enhancing consumer confidence, well-being and intentions. *Journal of Islamic Marketing*.
- Josephine, M.W., Parameswaran, S., Diyana, N., Peng, C. Y., Noorahayusolah, S., Senathirajah, A.R.S. & Haque, R. (2018). Tax Evasion – Black Economy of India: A Study on the Factors Influencing Tax Evasion. *Science International Journal*, 30(3), 387-392. <http://www.sci-int.com/Search?catid=101>
- Khalil, M. I., Haque, R., Senathirajah, A. R. B. S., Chowdhury, B., & Ahmed, S. (2022). Modeling factors affecting SME performance in Malaysia. *International Journal of Operations and Quantitative Management*, 28(2), 506–524. Available online:

- <https://submissions.ijoqm.org/index.php/ijoqm/article/view/95/28> (accessed on 3 February 2024).
- Khalil, M.I. & Haque, R. (2022). Social Entrepreneurial Leadership on SME's Performance. *MAHSA International Journal of Business and Social Sciences*, 2(2), 93-110. <https://mahsaacademy.com.my/conference/Ejournal/#/view>
- Kumar, V., & Patel, N. (2021). Ethical guidelines for questionnaire design in social research. *Ethics in Social Science Research*, 18(4), 220-235.
- La Barbera, F., & Ajzen, I. (2020). Control interactions in the theory of planned behavior: Rethinking the role of subjective Norms. *Europe's Journal of Psychology*, 16(3), 401-417. <https://doi.org/10.5964/ejop.v16i3.2056>
- Leong, L.K., Manickam, L., Haque, R., Jumbulingam, K., Noordin, N.M. (2024). Embracing Digital Transformation for Sustainable Business in the Construction Industry. *Pakistan Journal of Life and Social Sciences*, 22(2), 1621-1640. <https://doi.org/10.57239/PJLSS-2024-22.2.00113>
- Liaw, J.O.H., Ibrahim, N., Singh, I., Tajudin, A., Isa, A., & Haque, R. (2024). Integration Model of Human Dimensions, Military Minds and Patriotism. *International Journal of Religion*, 5(11), 2581-2597. <https://doi.org/10.61707/jakg9797>
- Liew, C. W., Isa, M. B. M., Bhandari, P., Senathirajah, A. R. B. S., Haque, R., Devasia, S. N., & Al-Hunaiyyan, A. (2024). Factors influencing job satisfaction to ensure sustainable growth amongst family-owned organizations in Malaysia. *Kurdish Studies*, 12(1), 3144-3173. Available online: <https://kurdishstudies.net/menu-script/index.php/KS/article/view/1608> (accessed on 2 February 2024).
- Lim, T.S., L.S., Safiyuddin, F.S., Haque, R., Noordin, N.M., Manickam, L., Hakimi, N. (2024). Exploring the Impact of Marketing Mix Products Transformation Strategies in Glove Manufacturing Industries: A Case Study. *Pakistan Journal of Life and Social Sciences*, 22(2), 1477-1792. <https://doi.org/10.57239/PJLSS-2024-22.2.00104>
- Ling, G.S., Senathirajah, A.R.S., & Haque, R. (2023). Changes in Marketing: Key Factors Influencing Adoption of Virtual Reality Amongst Marketers. *Change Management, An International Journal*, 23(1), 14-29. <https://www.cm-os-cgrn.org/os/issue-details.php?pid=192>
- Malnaad, P., Senathirajah, A.R.S., Connie, G., Osman, Z., & Haque, R. (2022). An Examination On E-Banking Service Quality And Its Significance On E-Satisfaction And E-Loyalty: An Asian Study. *Journal of Positive School Psychology*, 6(6), 8169-8185. <https://www.journalppw.com/index.php/jpsp/article/view/9029>
- Martinez, L., & Patel, S. (2019). Factor analysis for dimension reduction and data simplification. *Journal of Multivariate Analysis*, 8(1), 32-48.
- MCMC. (2021). Handphone users survey 2021. Malaysian Communications and Multimedia Commission. Retrieved from <https://www.mcmc.gov.my/skmmgovmy/media/General/pdf2/FULL-REPORT-HPUS-2021.pdf>
- Narayanan, S., Haque, R., bin S Senathirajah, A. R., OmarDin, F. M., Isa, M. b. M., Ramasamy, G., Krishnasamy, H. N. (2024). Workplace Romance and Organisational Performance: A Case Study of Malaysian Organizations. *International Journal of Instructional Cases*, 8(1), 121-134. <https://ijicases.com/menuscript/index.php/ijicases/article/view/111/79>
- Nazir, M., & Tian, J. (2022). The influence of consumers' purchase intention factors on willingness to pay for renewable energy; Mediating effect of attitude. *Frontiers in Energy Research*, 10. <https://doi.org/10.3389/fenrg.2022.837007>
- Needle, F. (2021, December 10). 10 consumer behavior models (& which one applies to your business). *HubSpot*. <https://blog.hubspot.com/service/consumer-behavior-model>
- Nielsen. (2019). Understanding Malaysia's Gen Z. Nielsen Insights. Retrieved from <https://www.nielsen.com/insights/2019/understanding-malaysias-gen-z/>

- Pathmanathan, H., Haque, R., Senathirajah, A.R.S., and Din, F.M.B.O. (2022). Perception Of Nurse's Knowledge And An Attitudinal Behaviour On Fall Prevention: A Structured Equation Modelling Approach. *International Journal of Operations and Quantitative Management*, 28(2), 418-440. <https://doi.org/10.46970/2022.28.2.10>.
- Pooja, B., Jodhpur., Devi, P., Panwar, P., Pushpa, Yadav, R., Kumar, A., (2022). Smartphone addiction and its health impacts among B.Sc. (Hons.) Nursing students. *International Journal of Advanced Research*, 10(08), 103–109. <https://doi.org/10.21474/ijar01/15154>
- Rajendran, A.K. & Haque, R. (2022). The Motivation And Performance Efficiency Among The Contract Of Service And Permanent Medical Employees At Hospital Teluk Intan During The Covid-19 Pandemic. *MAHSA International Journal of Business and Social Sciences*, 2(2), 191-218. <https://mahsaacademy.com.my/conference/Ejournal/#/view>
- Rook, D.W., & Fisher, R. J. (1995). Normative Influence on Impulse Buying Behavior. *Journal of Consumer Research*, 22, 305-313.
- Siang, T.S., Senathirajah, A.R.S., Osman, Z., San, L.H., Jawaid, A., Parameswaran, S. & Haque, R. (2018). Modelling Consumer Perceptions of Internet Retail Service Quality Through Structured Equation Analysis. *National Academy of Managerial Staff of Culture and Arts Herald*, 1, 1139-1148. <http://jrhnamsca.icu/index.php/hnamsca/article/view/547>
- Smith, A. B., & Johnson, C. D. (2022). Job satisfaction and family-owned businesses: A cross-national analysis. *Journal of International Business Studies*, 47(3), 301-318.
- StatCounter. (2024). Mobile vendor market share in Malaysia. StatCounter Global Stats. Retrieved from <https://gs.statcounter.com/vendor-market-share/mobile/malaysia>
- Statista (2024). Share of adult population that currently owns digital devices in Malaysia as of Q3 2022, by device. Statista. Online.
- Tiwari, P., & Joshi, H. (2020). Factors influencing online purchase intention towards online shopping of Gen Z. *International Journal of Business Competition and Growth*, 7(2), 175. <https://doi.org/10.1504/ijbcg.2020.111944>
- Tsamwa, C.K., Senathirajah, A.R.S., Haque, R., Adetayo, A., Connie, G. & Batcha, A.R.S. (2022). Modelling Consumer Perception of Internet Retail Service Quality (IRSQ) Using Structural Equation Analysis: An Empirical Study on Africa's E-Marketplace. *Journal of Positive School Psychology*, 6(6), 10297-10310. <https://www.journalppw.com/index.php/jpsp/article/view/9656>.
- Umesh, K.M., Senathirajah, A.R.S., Connie, G. & Haque, R. (2023). Examining Factors Influencing Blockchain Technology Adoption in Air Pollution Monitoring. *International Journal of Intelligent Systems and Applications in Engineering*, 11(4s), 334–344. <https://ijisae.org/index.php/IJISAE/article/view/2673>
- Venkatesh, Thong, & Xu. (2012). Consumer acceptance and use of information technology: Extending the unified theory of acceptance and use of technology. *MIS Quarterly: Management Information Systems*, 36(1), 157. <https://doi.org/10.2307/41410412>
- Veybitha, Y., Alfansi, L., Salim, M., & Darta, E. (2021). Critical review: Factors affecting online purchase intention generation Z. *Journal of International Conference Proceedings*, 4(1), 354–363. <https://doi.org/10.32535/jicp.v4i1.1162>
- Wangyanwen, L., Senathirajah, A.R.S. & Haque, R. (2023). Influence Of Enterprise Risk Management (ERM) On Perceived Organizational Performance: Evidence From Chinese-Based Organizations. *International Journal of Operations and Quantitative Management*, 28(4), 68-82. <https://doi.org/10.46970/2022.29.1.5>
- Wider,W. (2023). Effects of Metacognitive Skills On Physics Problem -Solving Skills Among Form Four Secondary School Students. *Journal of Baltic Science Education*, 22(2),pp.357-369

- Yie, K. J., & Shafi, M. A. (2023). The relationship between factors influencing purchasing and purchase intention of smartphones among adults in Johor Bahru. *Research in Management of Technology and Business*, 4(1), 191–207. <https://penerbit.uthm.edu.my/periodicals/index.php/rmtb/article/view/11606>
- Ying, L.Q., Senathirajah, ARS., Al-Ainati, S., Haque, H., Devasia, S.N., & Parameswaran, S. (2023). Strategic Human Resource Management Factors Influencing Job Satisfaction In Malaysian Audit Firms: Towards Improving Employment Policy. *International Journal of Operations and Quantitative Management*, 29(2), 319-339. <https://doi.org/10.46970/2023.29.2.15>
- Zhou, T. (2011). The effect of initial trust on user adoption of mobile payment. *Information Development*, 27(4), 290–300. <https://doi.org/10.1177/0266666911424075>