

STUDENTS' ONLINE PURCHASE FREQUENCY: INVESTIGATING PERCEIVED ENJOYMENT AS A BRIDGE BETWEEN USEFULNESS, EASE OF USE AND BEHAVIOR

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Abstract: *The study investigates the influence of perceived usefulness (PU), perceived ease of use (PEOU), and perceived enjoyment (PE) on students' online purchase frequency, with perceived enjoyment acting as a mediating variable. With the fast-paced growth of e-commerce, understanding the factors that drive students' online purchasing behavior is essential for both marketers and educators. This study employed quantitative research design, with data gathered through a structured questionnaire distributed to 279 students from the Commerce Department. The data were analyzed using PLS-SEM via SmartPLS 4. The findings reveal that perceived usefulness and perceived enjoyment have significant positive effects on online purchase behavior, indicating that students tend to shop online more frequently when they perceive the activity as both beneficial and enjoyable. In contrast, perceived ease of use showed no significant direct effect on online purchase behavior, suggesting that students are already familiar with using online shopping platforms. However, perceived ease of use demonstrated a strong positive effect on perceived enjoyment. Mediation analysis confirmed that perceived enjoyment partially mediated the relationships between both perceived usefulness and perceived ease of use with online purchase behavior. The model explained 41.8% of the variance in online purchase behavior and 60.2% in perceived enjoyment, indicating moderate explanatory power. These findings underscore the importance of enhancing perceived enjoyment and usefulness to foster more engaging and satisfying online shopping experiences for students. This study contributes to the growing literature on digital consumer behavior and offers practical insights for e-commerce marketers targeting student populations.*

Keywords: *Perceived Ease of Use (PEOU), Perceived Usefulness (PU), Perceived Enjoyment (PE), Online purchase, Student consumers, PLS-SEM.*

Introduction

The expansion of e-commerce has reshaped how consumers, particularly students, purchase product and services. With the growing stages of internet retailing platforms such as Lazada, Tiktok Shop, Lazada and etcetera, students are now able to shop anywhere and anytime through their smartphones. Online purchasing is not only motivated by convenience but also by psychological and emotional experience such as enjoyment and pleasure. This shift in behavior can be explained by perceived usefulness, perceived ease of use (utilitarian) and enjoyment or pleasure (hedonic) perspectives of consumer behavior.

Technology Acceptance Model (TAM Model) introduced by Davis (1989), proposed two major factors on perceive, which are usefulness and ease of use. The factors determine the acceptance and usage of individual towards technology. As of purchasing online, the stated factors represent how practical and effortless a shopping platform is for the user. However, hedonic such as perceived enjoyment, adds another dimension that reflects users' emotional pleasure when engaging in online shopping.

Students, as active users of technology and social media, represent an important consumer segment in the digital economy. They are exposed to a wide range of online marketing stimuli, including promotions, influencer recommendations, and interactive features that make online shopping entertaining. Yet, not all students purchase online with the same frequency, despite similar access to technology. Therefore, it is important to investigate on how perceived usefulness, ease of use and enjoyment influence students' online purchase frequency. Understanding this relationship can provide insight into how these factors shape students' online buying behavior.

Many students engage in online purchases not only because it is convenient and time-saving but also because they find the experience enjoyable. Several studies have emphasized the importance of perceive usefulness and perceived ease of use in foreseeing technology adoption and purchase intentions (Davis, 1989; Venkatesh & Davis, 2000). Nevertheless, more recent research suggests that perceived enjoyment may be equally, if not more, important in influencing continuous purchase behavior (Childers et al., 2001; Kim et al., 2020). In addition, perceived enjoyment may act a mediating role by relaying the positive effects of usefulness and ease of use onto actual online shopping behavior. This means that even is a platform is easy to use and perceived as useful, students are more likely to make repeated or continual purchase when they also find the engaging and enjoyable experience.

Regardless of these findings, limited empirical studies have focused specifically on how these three factors jointly influence online purchase frequency among students, especially in the Malaysian context. Most prior research concentrates on purchase intention rather than actual behavior or frequency. Understanding which factor; enjoyment, usefulness and ease of use have the major contributing factor on students' purchasing frequency, and how enjoyment mediates these relationships, will offer meaningful insights for online retailers, educators, and policymakers. Hence, this research aims to explore the influence of perceived ease of use, perceived usefulness, and perceived on online purchase frequency among students, with enjoyment serving as a mediating variable.

Literature Review

The rapid growth of e-commerce has significantly transformed consumer purchasing behavior, especially among younger populations, including students. Understanding the determinants of online shopping behavior has become increasingly important to identify the factors that encourage or inhibit online purchase. The TAM Model (Davis, 1989) provides a theoretical foundation to explain technology adoption.

Perceived Ease of Use and Online Purchase Frequency

Perceived ease of use refers to the degree to which a person believes that using a particular system will be free of effort (Davis, 1989). In online shopping, this includes simple navigation, quick transactions and clear product information. If the platform of online shopping is ease of use, students are more inclined to make repeat purchases because the process feels effortless. Empirical studies support the direct influence of perceived ease of use (PEOU) on online shopping behavior such as, Mohammed et al., (2024) found that PEOU positively influences online shopping behavior among university students in Nigeria. Similarly, recent evidence during COVID-19 pandemic highlights that young consumers' online purchase behavior is significantly affected by system ease of use (Frita et al., 2024). However, some studies report non-significant effects. Hasan and Towfiq (2021) found that PEOU was not statistically significant on intention in online purchasing, case in Bangladesh. Suggesting contextual differences in user experience and technological familiarity. These inconsistencies imply that PEOU may exert its influence differently depending on demographic, cultural or technological contexts.

Overall, despite some mixed results, the majority of empirical evidence supports the notion that easier online shopping systems encourage greater purchasing activity. Therefore, this study proposes that PEOU plays a direct and meaningful role in shaping online purchase frequency among students.

H1: Perceived ease of use has a positive influence on online purchase frequency among students.

Perceived Ease of Use and Perceived Enjoyment

The connection between perceived ease of use and perceived enjoyment reflects the principle that an easy-to-use platform can enhance intrinsic pleasure during the online shopping experience. When users face minimal effort barriers, they can focus on enjoyment and satisfaction, increasing engagement with the platform. Empirical evidence supports this relationship. Jasin (2022) reported that perceived ease of use positively affects PE in e-commerce wallet usage, which in turn enhances behavioral intentions. Similarly, studies in Indonesia's online food delivery context demonstrate that PEOU significantly enhances perceived enjoyment (Frita et al., 2024). Together, these studies suggest that reducing effort not only facilitates task completion but also strengthens the emotional appeal of online platforms, highlighting the important roles of perceived ease of use in enhancing users' enjoyment.

H2: Perceived ease of use has a positive influence on perceived enjoyment.

Perceived Enjoyment and Online Purchase Frequency

Davis et al. (1992) suggested that perceived enjoyment refers to the pleasure from using an online shopping platform. It reflects enjoyment, where users engage in online shopping not

merely for efficiency but for fun and entertainment (Childers et al., 2001). Excitement significantly influences online shopping intentions and repeats purchases (Koufaris, 2002; Lim et al., 2020). For students, the sense of excitement, relaxation, or emotional satisfaction gained from browsing or buying online products may increase the frequency of purchases. Empirical research consistently demonstrates that enjoyment influences online purchase behavior. Koufaris (2002) and Lim et al. (2020) found that higher levels perceived enjoyment are associated with increased purchase intentions and repeat transactions. Collectively, these studies indicate that enjoyment functions as a key driver of online purchase frequency, especially among young consumers who value both efficiency and entertainment in digital shopping experiences.

H3: Perceived enjoyment has a positive influence on online purchase frequency among students.

Perceived Usefulness and Online Purchase Frequency

Perceived usefulness is a positive statement that consumer feel about a product that provides a benefit (Chandon et al., 2000). A study by Soares et al. (2023) recorded that perceived usefulness significantly influences consumers' online purchase intention. This indicate that when consumer perceived the platform as is useful, they are tend to perform the online purchasing. Past studies (Gefen et al., 2003; Thong et al., 2006) have shown that perceived usefulness strongly affects consumers' intention to use and frequency of use. Students who find online shopping useful for their daily needs are more likely to purchase product regularly. Drawing from these studies, it is evident that perceived usefulness serves both as a cognitive motivator enhancing the perceived value of online shopping and as a behavioral predictor, increasing the likelihood of repeated purchases. In the context of students, who often seek efficiency and convenience I acquiring daily necessities, platforms perceived as useful encourage more regular online shopping activity. Therefore, the integration of these studies underscores the significance of perceived usefulness as a key determinant of online purchase frequency, providing a rationale for examining its influence among Malaysian students.

H4: Perceived usefulness has a positive influence on online purchase frequency among students.

Perceived Usefulness Perceived Enjoyment

Perceived usefulness can also influence the intrinsic satisfaction or enjoyment derived from system use. Users who perceive high utility from a platform are more likely to experience positive emotions and engagement, leading to higher enjoyment levels. Studies by Frita et al. (2024) confirm that PU positively impacts PE. Additional empirical evidence suggests that users' perception of a system's usefulness can enhance their perceived enjoyment (Jennah & Hartono, 2025; Khairilisani & Wulandari, 2025). Research inboth educational and technological contests further strengthens this connection. For instance, Suki and Suki (2011) highlighted that students' perceptions of usefulness and ease of use significantly shape their enjoyment and intention to continue using 3G technologies. Similarly, Kumar Kakar (2017) showed that overtime, the perceived usefulness of software products contributes to higher perceived enjoyment, which reinforces technology acceptance. Taken together, these studies suggest that perceived usefulness acts as both a cognitive and hedonic motivator: it not only helps users achieve functional benefits but also promotes positive emotional experiences, thereby fostering greater engagement and usage.

H5: Perceived usefulness has a positive influence on perceived enjoyment.

Mediating Role of Perceived Enjoyment

Several studies indicate that the influence of PEOU on online shopping behavior is partially mediated by perceived enjoyment. When a system is easy to use, users derive enjoyment from the process, which subsequently motivates purchasing behavior. Hasan (2023) demonstrated this mediating effect, and similar findings were reported in Indonesian e-commerce research (Frita et al., 2024).

Similarly, the effect of perceived usefulness on online purchase can be mediated by perceived enjoyment. Although perceived usefulness may not directly translate into online shopping behavior in some contexts, the experience of enjoyment arising from perceived benefits enhance purchase behavior. Evidence from Frita et al., (2024) supports this indirect relationship. Sun and Zhang (2006) found that PE partially mediates the effect of perceived ease of use on Internet usage, suggesting that enjoyment is an important but not sole pathway through which ease of use affects behavior. Hasan et al. (2021) investigated the determinants of online shopping intentions and found that perceived enjoyment partially mediates the relationships between perceived usefulness, perceived ease of use and online shopping intentions. Specifically, their results suggest that while perceived useful and perceived ease of use directly influence shopping intentions, a significant portion of this effect operates through the enjoyment experienced by consumers.

H6: Perceived enjoyment mediates the relationship between perceived ease of use and online purchase frequency.

H7: Perceived enjoyment mediates the relationship between perceived usefulness and online purchase frequency.

The literature indicates that both perceived ease of use and perceived usefulness are essential determinants of online shopping behavior, with perceived enjoyment playing a critical mediating role. Testing these relationships among Malaysian polytechnic students can provide valuable insights into how ease of use, usefulness, and enjoyment interact to shape online purchase behavior. The inclusion of PE as a mediator extends TAM and offers a nuanced understanding of online consumer behavior in a higher education context.

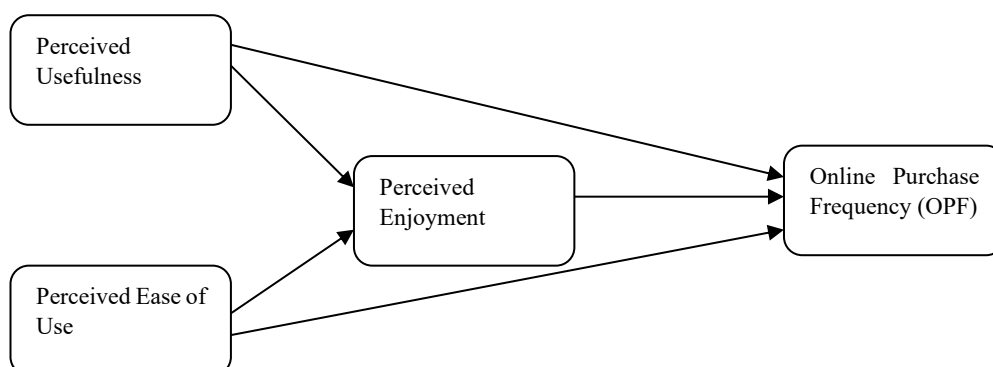


Figure 1: Proposed Research Model

Research Method

This study is quantitative research that uses statistical numbers in processing and collecting data. This quantitative research uses an explanative method with a causal relationship. The population of this study is Commerce Department student from local institution, Politeknik Kuching Sarawak. Moreover, the respondent must had at least performed online purchase in any e-retailing or online platform. A convenience sampling technique was applied due to accessibility and academic scheduling considerations. Data were collected using an online questionnaire in Google forms, with program coordinators and lecturers assisting in disseminating the survey through official platforms such as WhatsApp and Telegram. Participation was voluntary and a total of 279 complete and valid responses were obtained after eligibility screening.

Ethical procedure and instrument validation were prioritized to uphold research quality. The first page of the Google form contained an informed consent statement explaining the purpose of the study, confidentiality assurances, the voluntary nature of participation, and how the data would be used solely for academic purpose. No personal identifiable information was collected.

In order to maintain the reliability and validity of the questionnaire items, these are adapted from several past researchers. The adapted items underwent expert validation by two lecturer's familiars with e-commerce and consumer behavior studies. A pilot test was also conducted to examine clarity and internal consistency. Minor wording adjustments were made based on feedback. Cronbach alpha values for all constructs exceeded the acceptable threshold of 0.70, confirming adequate internal reliability. The survey instruments contain 5 sections. Section A includes different personal and demographic variables. This section includes gender, current semester, average monthly online spending (RM) and frequency of online purchase. Section B until Section E includes the latent variables that are essential in the study. The variables include perceived enjoyment, perceived usefulness, perceived ease of use and online purchase frequency. The sources of the adopted instrument summarized:

Table 1: Research Instrument

Section variable/description:	No. Items	Source
Perceived Enjoyment	4	HA & Stoel (2012); Van der Heijden (2004); Childers et al. (2001); Davis et al. (1992)
Perceived Usefulness	4	Alalwan et al. (2019); Davis (1989) & Gefen et al. (2003)
Perceived Ease of Use	4	Ariffin et al. (2021); Davis (1989); Ventakesh & Davis (2000)
Online Purchase	4	Lim & Dubinsky (2004); Suki (2013); Zhou, Dai, & Zhang (2007)

Data analysis

SmartPLS was used to analyze measurement and structural models. Factor loading, Cronbach alpha, composite reliability, and average variance (AVE) were used to analyze the measurement model. Consequently, the structural model was analyzed through bootstrapping with 5000 subsamples. Moreover, effect size (f^2) were analyzed to measure the model's predictive relevance. The path coefficients were interpreted to determine the strength and direction of

relationships among constructs, while their statistical significance was validated through the bootstrapping procedure. Together, these analyses provide a robust evaluation of both the measurement and structural models, ensuring reliability, validity, and predictive capability of the proposed research framework.

Findings

Table 2: Demographic information

Variable	n	Percentage (%)
Gender		
Male	83	29.7
Female	196	
Current Semester		
Semester 1 & 2 (year 1)	98	35.1
Semester 3 & 4 (year 2)	114	40.9
Semester 5 and above (year 3)	67	24.0
Average monthly online spending (RM)		
Below RM50	73	26.2
RM51 – RM150	129	46.2
RM151 – RM200	36	12.9
RM201 and above	41	14.7
Frequency of online shopping platform browsing		
Daily		
Weekly	10	3.6
Monthly	55	19.7
Rarely	112	40.1
	102	36.6

A total of 279 students participated in this study. Table 2 summarizes their demographic and online purchase behavior. There were 196 female respondents (70.3%) and 83 male respondents in the entire sample. The following is the distribution of participants by academic level; Among the respondents, 98 were in Semester 1 and 2, 114 were in Semester 3 and 4 and 67 were in Semester 5 and beyond. Most were second-year students. In term of their monthly online spending habits, 129 respondents said they spent between RM51 and RM150, while 73 respondents said they spent less than RM50. Spending between RM151 and RM200 and RM201 and above was less common. These numbers imply that respondents have moderate online spending habits. Regarding the frequency of online platform browsing, 36.6% of respondents did so infrequently, whereas 40.1% did so monthly. Just 3.6% reported daily browsing, while 19.7% reported weekly browsing. This suggests that the majority of participants do not regularly browse online shopping platforms.

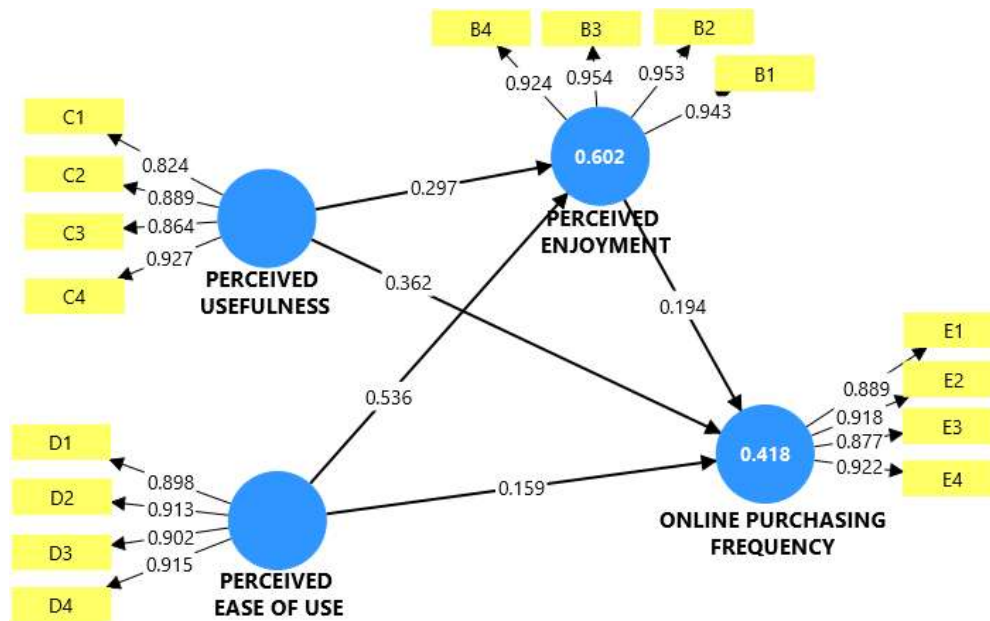


Figure 2: Structural Model of Online Purchasing Behavior with Perceived Enjoyment as Mediator

Table 3: Reliability and validity of measurements

Variables	Items	Factor loadings	Cronbach's alpha (α)	Composite Reliability (CR)	Average variance extracted (AVE)
Perceived Enjoyment	I enjoy browsing online shopping websites.	0.943	0.959	0.970	0.891
	I find online shopping entertaining.	0.953			
	Online shopping is fun activity for me.	0.954			
	I feel happy when purchasing product online.	0.924			
Perceived Usefulness	Online shopping helps me save time.	0.824	0.899	0.929	0.767
	Online purchasing is an efficient way to buy what I need.	0.889			
	I find online shopping useful for my daily needs.	0.864			
	Shopping online improves the effectiveness of my purchasing.	0.927			
Perceived Ease of Use	Learning to use online shopping platforms is easy for me.	0.898	0.928	0.949	0.823
		0.913			
		0.902			
		0.915			

	It is easy to find what I need when shopping online.				
	I find it simple to complete a purchase transaction online.				
	Overall, online shopping platforms are user-friendly.				
Online Purchase Frequency	I frequently make purchase online.	0.889			
		0.918			
	I often buy products through e-commerce platforms.	0.877			
		0.922	0.923	0.946	0.813
	I prefer online shopping over traditional stores.				
	I plan to continue buying products online regularly.				

As indicated in Table 3, factor loadings, Cronbach's alpha (α), Composite Reliability (CR), and Average Variance Extracted (AVE) were used to evaluate the validity and reliability of the measurement items. All items in the four constructs – Online Purchase Frequency (OPF), Perceived Ease of Use (PEOU), Perceived Usefulness (PU), and Perceived Enjoyment (PE) – showed strong factor loadings between 0.824 and 0.954, surpassing the suggested cutoff of 0.70. This suggests that the items accurately reflect their respective constructs (Hair et al., 2017; Henseler et al., 2015).

The constructs had a high degree of internal consistency. As stated in Table 3, values of Cronbach's alpha are ranged from 0.899 to 0.959, and the values of all Composite Reliability were ranged from 0.929 to 0.970, both demonstrating the values greater than 0.70 standard. These validating the measurement scales reliability (Nunnally & Bernstein, 1994; Hair et al., 2017). This indicates that the scales are reliable for measuring the intended constructs and that their internal consistency is statistically acceptable. Moreover, the Average Variance Extracted (AVE) values showed sufficient convergent validity and exceeded the 0.50 criterion, ranging from 0.767 to 0.891 (Fornell and Larcker, 1981).

All things considered, these findings show that the measurements model has outstanding convergent validity and reliability, guaranteeing that the constructs are measured precisely and consistently.

Table 4: Discriminant validity Heterotrait-monotrait ratio (HTMT)

Variables	Online Purchase Frequency (OPF)	Perceived Ease of Use (PEOU)	Perceived Enjoyment (PE)	Perceived Usefulness (PU)
Online Purchase Frequency (OPF)	-			
Perceived Ease of Use (PEOU)	0.605	-		
Perceived Enjoyment (PE)	0.590	0.792	-	
Perceived Usefulness (PU)	0.661	0.781	0.731	-

The Heterotrait-Monotrait ration (HTMT) is used to evaluate discriminant validity, as shown in Table 4. Since all HTMT values fall below the suggested cutoff point of 0.90 (Henseler et al., 2015), the constructs' discriminant validity is deemed satisfactory. Perceived Enjoyment (PE) and Perceived Ease of Use (PEOU) have the strongest correlation (0.792), followed by Perceived Usefulness (PU) with PEOU (0.781) and PE (0.731). There are moderate relationships between Online Purchase Frequency (OPF) and PE (0.590), PEOU (0.605), and PU (0.661). These findings support the validity of the measurement model for additional structural analysis by confirming that each construct is empirically distinct.

Table 5: Discriminant validity Fornell-Larcker Criterion

Variables	Online Purchase Frequency (OPF)	Perceived Ease of Use (PEOU)	Perceived Enjoyment (PE)	Perceived Usefulness (PU)
Online Purchase Frequency (OPF)	0.902			
Perceived Ease of Use (PEOU)	0.562	0.907		
Perceived Enjoyment (PE)	0.559	0.747	0.944	
Perceived Usefulness (PU)	0.607	0.712	0.679	0.877

As stated in Table 5, given that the square roots of the AVE values (which range from 0.877 to 0.944) are greater than their corresponding inter-construct correlations, the results of the Fornell-Larcker criterion validate discriminant validity among the constructs. This suggests that each construct – online purchase frequency, perceived usefulness, perceived enjoyment, and perceived ease of use – is empirically separate and assesses a different facet of online shopping behavior. Perceived enjoyment has the highest AVE (0.944), followed by perceived ease of use (0.907), online purchase frequency (0.902), and perceived usefulness (0.877). These results support the measurement model's construct validity and robustness, as do the HTMT results (Fornell and Larcker, 1981; Henseler, Ringle and Sarstedt, 2015). As both result of discriminant validity, it confirms that the constructs are empirically distinct from one another.

Table 6: Multicollinearity between constructs

	VIF
Perceived Ease of Use (PEOU) -> Online Purchase Frequency	2.752
Perceived Ease of Use (PEOU) -> Perceived Enjoyment (PE)	2.031
Perceived Enjoyment (PE) -> Online Purchase Frequency	2.512
Perceived Usefulness (PU) -> Online Purchase Frequency	2.252
Perceived Usefulness (PU) -> Perceived Enjoyment (PE)	2.031

Multicollinearity between constructs was assessed using the inner VIF values. The VIF values ranged from 2.031 to 2.752, which are below the recommended threshold of 3.3 (Diamantopoulos and Siguaw, 2006) and well below 5.0 (Hair et al., 2021). Therefore, multicollinearity is not a concern in the structural model, indicating that the predictor constructs are distinct and can reliably explain the variance in the dependent constructs.

Table 7: Coefficient of Determination (R^2)

Endogenous	R^2	Interpretation
Online Purchase Frequency (OPF)	0.418	Moderate explanatory power: 41.89% of variance in OPF is explained by its predictors (PEOU,PU,PE)
Perceived Enjoyment (PE)	0.602	Moderate to strong explanatory power: 60.2% of variance in PE is explained by its predictors (PEOU,PU)

The R^2 value for Online Purchasing Frequency (OPF) is 0.418, indicating that approximately 41.8% of the variance in OPF is explained by Perceived Ease of Use, Perceived Usefulness, and Perceived Enjoyment. The adjusted R^2 value of 0.411 provides a more conservative estimate, accounting for the number of predictors. For Perceived Enjoyment (PE), the R^2 value is 0.602 and the adjusted R^2 is 0.599, suggesting that 60.2% of the variance in PE is explained by Perceived Ease of Use and Perceived Usefulness. According to Hair et al. (2021), these values indicate moderate to strong explanatory power of the model.

Table 8: Effect size (f^2)

Predictor	Dependent	f^2
PEOU	OPF	0.016
PEOU	PE	0.355
PE	OPF	0.026
PU	OPF	0.100
PU	PE	0.109

Effect size (f^2) measures the impact of each predictor construct on the endogenous construct (Cohen, 1988; Hair et al., 2017). The effect sizes (f^2) were assessed to determine the contribution of each predictor construct to its respective endogenous construct. Perceived Ease of Use has a small effect on Online Purchasing Frequency ($f^2 = 0.016$) but a large effect on Perceived Enjoyment ($f^2 = 0.355$). Perceived Enjoyment exhibits a small effect on Online Purchasing Frequency ($f^2 = 0.026$). Perceived Usefulness shows small-to-medium effects on both Online Purchasing Frequency ($f^2 = 0.100$) and Perceived Enjoyment ($f^2 = 0.109$). These results indicate that Perceived Ease of Use strongly influences Perceived Enjoyment, which in turn contributes moderately to Online Purchasing Frequency, highlighting the importance of user experience in online shopping behavior (Hair et al., 2021; Henseler et al., 2015).

Table 9: Hypothesis Testing Results

Hypothesis	Relationship	Path Coefficient (β)	T Statistics	P Values	Decision	Interpretation
H1	Perceived Ease Of Use (PEOU) → Online Purchase Frequency	0.159	1.679	0.093	Not Supported	PEOU has a positive but non-significant direct effect on OPF
H2	Perceived Ease Of Use (PEOU) →	0.536	8.258	0.000	Supported	PEOU has a strong positive

	Perceived Enjoyment (PE)					and significant effect on PE.
H3	Perceived Enjoyment (PE) → Online Purchase Frequency (OPF)	0.194	2.401	0.016	Supported	PE has a positive and significant effect on OPF
H4	Perceived Usefulness (PU) → Online Purchase Frequency (OPF)	0.362	4.509	0.000	Supported	PU has a moderate positive and significant effect on OPF
H5	Perceived Usefulness (PU) → Perceived Enjoyment (PE)	0.297	4.524	0.000	Supported	PU has a positive and significant effect on PE
H6	Perceived Ease Of Use (PEOU) → Perceived Enjoyment (PE) → Online Purchase Frequency (OPF)	0.104	2.222	0.026	Supported	PE partially mediates the relationship between PEOU and OPF
H7	Perceived Usefulness (PU) → Perceived Enjoyment (PE) → Online Purchase Frequency (OPF)	0.058	2.217	0.027	Supported	PE partially mediates the relationship between PU and OPF

The structural model analysis revealed that Perceived Ease of Use (PEOU) does not have a significant direct effect on Online Shopping Frequency (OPF) ($\beta = 0.159$, $t = 1.679$, $p = 0.093$), indicating that H1 is not supported. This result was supporting the studies by Zhang et al., (2023) where the findings revealed that perceived ease of use did not significantly affect purchase intention directly. Instead, its influence was mediated through trust and perceived usefulness. In contrast, PEOU strongly and positively influences Perceived Enjoyment (PE) ($\beta = 0.536$, $t = 8.258$, $p < 0.001$), supporting H2. Perceived Enjoyment has a significant positive effect on OPF ($\beta = 0.194$, $t = 2.401$, $p = 0.016$), supporting H3, while Perceived Usefulness (PU) significantly affects both OPF ($\beta = 0.362$, $t = 4.509$, $p < 0.001$) and PE ($\beta = 0.297$, $t = 4.524$, $p < 0.001$), supporting H4 and H5.

Mediation analysis showed that PE partially mediates the effects of PEOU ($\beta = 0.104$, $t = 2.222$, $p = 0.026$) and PU ($\beta = 0.058$, $t = 2.217$, $p = 0.027$) on OPF, supporting H6 and H7. These findings suggest that while PEOU has no significant direct impact on online shopping frequency, it exerts an indirect effect through PE. Sari and Dewi (2021) also revealed that perceived enjoyment mediated the relationship between PEOU, PE, and repurchase intention. Other study by Vita and Sugiyanto (2023) found that PE significantly mediated the relationship between PEOU, PU and behavioral intention to use ShopeePay platforms. Similarly, PU affects OPF both directly and indirectly via PE, though the mediated effect is relatively small. Overall,

PE plays a crucial role as a mechanism linking both PEOU and PU to online purchase frequency.

The findings of this study indicate that Perceived Ease of Use (PEOU) does not directly influence Online Shopping Behavior (OPF), but it exerts a strong indirect effect through Perceived Enjoyment (PE). Perceived Usefulness (PU), on the other hand, positively affects OPF both directly and indirectly via PE. These results highlight the key mediating role of PE, emphasizing the importance of hedonic motivation in shaping online shopping behavior. Overall, the findings support a partial mediation model, suggesting that enjoyment partially explains the relationship between system-related perceptions (PEOU and PU) and online shopping behavior.

5. Discussion

This study aimed to examine the influence of perceived ease of use (PEOU), perceived usefulness (PU), and perceived enjoyment (PE) on online purchase frequency (OPF) among students, with enjoyment as a mediating variable. Unlike prior research that primarily investigates purchase intentions, this study focuses on actual purchase frequency, addressing a gap in empirical evidence, particularly in the Malaysian student context. Understanding which factors drive repeated online purchases and how enjoyment mediates these relationships offers practical insights for online retailers, educators and policymakers.

The results indicate that PEOU does not directly influence online purchase frequency, suggesting that ease of use alone is insufficient to motivate repeated purchases. However, PEOU significantly enhances perceived enjoyment, highlighting that an intuitive, user-friendly interface increases students' positive emotions while shopping. This indirect pathway demonstrates the critical role of hedonic motivation in translating system usability into actual behavior.

Perceived enjoyment itself significantly impacts online purchase frequency, confirming that intrinsic satisfaction is a key driver of repeated transactions., students who enjoy the process of browsing and purchasing are more likely to engage in frequent online shopping, supporting prior findings on the importance of hedonic factors in online consumer behavior (Chin et al., 2015; Hansaram et al., 2022).

Perceived usefulness exerts a significant positive effect on both purchase frequency and enjoyment. This aligns with the Technology Acceptance Model (Davis, 1989); Ramayah and Ignatius, 2005), indicating that students value platforms that are effective and beneficial, which enhances both their utilitarian satisfaction and enjoyment.

Mediation analysis shows that perceived enjoyment partially mediates the relationships PEOU dan online purchase frequency and between PU and purchase frequency. While PEOU influences OPF indirectly via enjoyment, PU affects behavior both directly and indirectly. These findings underscore enjoyment as a key mechanism linking system perceptions to actual purchasing behavior, demonstrating that hedonic motivation complement utilitarian considerations in driving repeated purchases.

Overall, this study contributes to the literature by emphasizing that when the focus is on actual purchases frequency, perceived enjoyment, play a more prominent role. Ease of use primarily

operates through enhancing enjoyment, whereas usefulness retains a stronger direct influence. Practically, these insights suggest that online retailers targeting students should prioritize not only usability and functional benefits but also engaging, enjoyable experiences through interactive features, gamification, personalized interfaces.

In conclusion, perceived enjoyment is a crucial mediator connecting system-related perceptions to online purchase frequency. These findings extend TAM by integrating hedonic motivation and applying it to actual purchasing behavior, providing meaningful guidance for designing effective and engaging online shopping platforms in the Malaysian student context. Despite this contribution, the study has several limitations. First, the focus on Malaysia higher institution students limits the generalizability of findings to other populations or cultural contexts. Second, the cross-sectional design prevents definitive causal conclusion; the longitudinal studies could better capture behavioural changes over time. Third, only three factors (PEOU, PU, PE) were examined; other influences such as trust, social influence, price sensitivity, or promotion were not included. Finally, the focus on purchases frequency rather than intention limits comparability with prior research.

Theoretically, this study highlights that enjoyment mediates the relationship between perceptions and behavior, emphasizing the combined importance of utilitarian and hedonic factors in online shopping. Practically, online retailers targeting students should prioritize usability, functionality, and enjoyable experiences through gamification, interactive interfaces, or personalized recommendations. Educational institutions and policymaker can leverage these insights to better understand students' online consumptions patterns.

Future research could explore larger, more diverse populations, adopt longitudinal designs, incorporate additional behavioral determinants such as trust and social influence, and integrate both purchase frequency and intention measures to provide a more holistic view of online shopping behavior. These directions can deepen understanding of how system-related perceptions and hedonic motivation jointly shape online consumer behavior, informing the design of more engaging, effective and enjoyable e-commerce platforms

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