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An Empirical Analysis of Buy Now, Pay Later Mechanism and Its Impact on Customer Retention in Digital Commerce

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Abstract – The "Buy Now, Pay Later" (BNPL) mechanism has transformed e-commerce payment systems by providing consumers with enhanced financial flexibility. This study examines the influence of four key factors—interest rate, customer age, credit limit, and income level—on customer retention, aiming to elucidate the relationships among these variables. Utilizing a sample of 385 Malaysian consumers, the study employs both descriptive and inferential statistical analyses. The findings indicate that all four independent variables exert a significant positive impact on customer retention. Specifically, lower interest rates alleviate financial burdens, thereby fostering higher retention rates. Increased credit limits enhance purchasing power and financial flexibility, leading to sustained engagement with BNPL services. Younger consumers exhibit higher retention rates due to their preference for flexible payment solutions, while older users demonstrate consistent BNPL usage, contributing to long-term retention. Additionally, lower-income consumers rely more on BNPL to manage financial constraints, which results in higher retention within this demographic. Notably, usage frequency serves as a significant mediator between customer age and retention, as younger consumers' frequent BNPL usage partially accounts for their elevated retention rates. Conversely, interest rate, credit limit, and income level directly influence retention without substantial mediation by usage frequency. These findings provide valuable insights for e-commerce platforms and policymakers in optimizing BNPL frameworks to accommodate diverse consumer segments and enhance long-term customer loyalty.

Keywords: "Consumer Behaviour", "E-Commerce", "Financial Flexibility", "Mediating Effect", "Payment Solutions"

1. Introduction

E-commerce has transformed the global retail landscape, offering unprecedented convenience and accessibility to consumers. Central to this transformation is the integration of innovative payment systems like Buy Now, Pay Later (BNPL), which is a regulatory-free fintech credit service that allows consumers to defer payments and repay them in interest-free instalments (Guttman-Kenney et al., 2023). BNPL plans can enhance customer retention

by offering flexible payment options. Research shows that consumers who use BNPL are more likely to return to platforms that offer this payment option because it reduces the financial stress of making a purchase. Relevant studies show that the average conversion rate of e-commerce platforms has increased by 20 to 30% due to the addition of BNPL (Perlin, 2021). BNPL helps increase customer loyalty and retention through its flexible payment options.

Despite its rapid adoption, the implications of BNPL on long-term customer retention remain underexplored. Younger demographics, who constitute a significant share of BNPL users, often exhibit impulsive spending behaviours, raising concerns about financial sustainability and loyalty. High interest rates, hidden fees, and limited transparency further complicate these dynamics, posing challenges for both consumers and service providers. The unique socioeconomic context of Malaysia, where income disparities and digital adoption coexist, offers a critical case for studying BNPL's effectiveness in fostering customer loyalty.

The primary problem addressed in this study is the uncertainty surrounding how BNPL features influence customer retention in Malaysia's e-commerce ecosystem. Specifically, factors such as interest rates, credit limits, customer age, and income levels require deeper examination to identify their direct and indirect effects. Without such insights, e-commerce platforms may struggle to balance customer acquisition with long-term retention strategies. In addition, the study also incorporates mediation analysis to assess whether factors like platform usage frequency influence these relationships.

Using a mixed-method approach, this quantitative study employs a structured questionnaire with a five-point Likert scale and open-ended questions, particularly for interval-valued responses in mediation analysis. The findings contribute to both academic discourse and practical applications, offering empirical insights to help e-commerce platforms optimize BNPL offerings while informing policymakers on effective regulatory frameworks. By balancing customer satisfaction with financial stability, this research aims to enhance BNPL's long-term viability as a tool for customer retention.

2. Literature Review

2.1. Customer Retention

Customer retention is the dependent variable in this study. It refers to the ability of e-commerce platforms to maintain their BNPL users over time. Retention reflects the frequency of repeated interactions, customer satisfaction, and loyalty toward a specific service provider. Retention is not only a measure of repeat transactions but also an indicator of the trust and perceived value a customer attributes to BNPL services. Effective customer retention strategies often involve loyalty programs, personalized communication, and minimizing barriers to continued usage. For BNPL services, factors such as the clarity of payment terms, repayment flexibility, and perceived financial security play crucial roles. In the Malaysian e-commerce context, customer retention is further influenced by cultural and socioeconomic factors, making it a dynamic variable that requires careful examination. This

study explores how customer retention is influenced by the interplay of independent variables which include interest rate, customer age, credit limit, and income level, mediated by BNPL usage frequency.

2.2. Interest Rate

Interest rates are one of the most critical factors influencing consumer decision-making in BNPL services. Low interest rates reduce users' repayment burden, improve affordability and encourage continued usage. Research shows that platforms offering zero or minimum interest rates significantly outperform competitors in retaining customers because users perceive these services as cost-effective and user-friendly (Fung, 2024). Transparency in interest rate disclosure further enhances trust, which is critical to customer loyalty. Conversely, hidden fees or fluctuating interest rates undermine customer confidence and discourage repeat usage. For the Malaysian market, which is highly price-sensitive, competitive and communicated interest rates are essential for customer retention.

2.3. Customer Age

Age demographics significantly influence the adoption and usage patterns of BNPL services. Young users aged 18-34 are digital natives who prioritize convenience and flexibility, making them more likely to adopt BNPL as their primary payment method. They often use BNPL to pay for discretionary expenses such as fashion, travel and electronics (Stavins, 2024). However, this group's impulsive spending tendencies pose a risk of financial instability, which could affect their long-term retention. Older users aged 35 and above are slower to adopt BNPL but use it more consistently. They value reliability, straightforward terms, and low-risk financial products. Platforms that address these different needs with targeted solutions are expected to improve customer retention across all age groups.

2.4. Credit Limit

The credit limit is a decisive factor influencing consumer behaviour and retention. High credit limits allow users to make large purchases without upfront payments, thereby increasing the perceived utility of BNPL services. Research shows that platforms that offer a tiered credit system (increasing limits based on repayment history and income level) have higher customer satisfaction and loyalty (Huang, 2021). However, excessively high credit limits may lead to irresponsible spending, especially among younger users. To mitigate this, BNPL providers in Malaysia have begun implementing dynamic credit limits that adjust based on individual repayment behaviour, balancing flexibility and financial responsibility.

2.5. Income Level

Income level fundamentally affects how consumers view and use BNPL services. For low-income groups, BNPL acts as a financial enabler, allowing them to obtain basic goods and services without immediate financial stress (Mukhtar et al., 2023). This group relies heavily on flexible repayment terms and affordable instalment plans. In contrast, high-income users view BNPL as a tool for cash flow management and convenience rather than a necessity (Guttman-Kenney et al., 2023). These users are more likely to leverage BNPL to make high-value purchases or to obtain promotional offers. In Malaysia, platforms that offer

differentiated products (e.g., low interest rates for low-income users and premium services for high-income users) have achieved better retention rates across socioeconomic strata.

2.6. Hypothesis Statement
Our research aims to testify to the following hypotheses:
H_1: There is a significant monotonic relationship between interest rate and customer retention rate in BNPL schemes.
H_2: There is a significant monotonic relationship between customer age and customer retention rate in BNPL schemes.
H_3: There is a significant monotonic relationship between credit limit and customer retention rate in BNPL schemes.
H_4: There is a significant monotonic relationship between income levels and customer retention rate in BNPL schemes.

3. Methodology of Study

3.1. Data Collection

This study employed structured questionnaires as the primary data collection instrument. The questionnaire consisted of two sections: demographic information and questions related to the dependent variable (customer retention) and independent variables (interest rate, customer age, credit limit, and income level). The questionnaire was distributed online through social media platforms and email to reach a broader audience of BNPL users in Malaysia.

The target population for this study includes Malaysian consumers who have used e-commerce platforms and BNPL services at least once within the past year. This group represents active BNPL users who can provide relevant insights into the study variables.

The sample size was determined using Morgan's table (Krejcie, 1970) for a confidence level of 95% and a margin of error of 5%. Based on Morgan's table, a minimum of 384 respondents were required for statistical significance. This sample size ensures statistical significance and represents the broader population of BNPL users in Malaysia. In line with this, our research selected $N = 385$.

3.2. Procedures For Data Analysis
3.2.1. Descriptive Statistics
Descriptive statistics were used to summarize characteristics of respondents such as age, income level, and BNPL usage patterns. Measures such as mean, median, and standard deviation were calculated to provide insights into the central tendencies and variability of the collected data.

3.2.2. Inferential Statistics

Inferential statistical methods were applied to test the research hypotheses and provide deeper insights into the relationships between variables. Reliability tests, such as Cronbach's Alpha, were used to evaluate the internal consistency of the questionnaire items, ensuring the reliability of the scales.

Spearman's correlation coefficient was employed to assess the monotonic relationships between the independent variables (interest rate, customer age, credit limit, and income level) and the dependent variable (customer retention), providing a non-parametric measure of association.

Hypothesis testing was conducted to validate the significance of the relationships between the independent variables and customer retention, identifying the extent and direction of these effects. Mediation analysis was performed using Hayes' Process Macro (Hayes, 2009). to examine the mediating effect of usage frequency on the relationship between the independent variables and the dependent variable. This analysis revealed both direct and indirect effects, highlighting the pathways through which BNPL features influence customer retention. All analyses were conducted using SPSS software version 27, and the results were carefully reviewed to ensure validity and actionable insights.

4. Data Analysis and Results

Among the 385 respondents, a balanced gender representation was observed, with males accounting for 51.2% and females for 48.8%. The majority of respondents belonged to the age group of 18-24 years (29.6%), followed by 25-34 years (21.3%). Ethnic representation included Chinese (38.4%), Indians (29.1%), and Malays (21.0%), reflecting Malaysia's multicultural demographics. Most respondents were employed (56.6%), with students making up 30.4%, while the remaining were self-employed or unemployed. Regarding income, 30.9% earned RM5001 and above, followed by 28.1% earning less than RM1500. In terms of platform preferences, Shopee was the most frequently used, with 46.2% of respondents selecting it as their primary BNPL platform, followed by Lazada (35.8%) and Grab (17.9%). This distribution highlights the prominence of Shopee in the Malaysian e-commerce landscape and its role as a significant driver of BNPL adoption. These demographic insights provide the foundation for understanding the factors influencing customer retention and their relationship with BNPL services.

4.1. Reliability Test

Reliability testing was conducted to evaluate the internal consistency of the questionnaire items. Cronbach's Alpha was calculated for all scales, including dependent, independent, and mediating variables. The results, as shown in *Table 1*, indicated that all constructs exceeded the acceptable threshold of 0.70, confirming the reliability of the instrument. This ensured that the data collected were consistent and suitable for further statistical analysis.

Table 1: The test of reliability

Scale	Cronbach's Alpha	Number Of Items	Remark

DV: Customer Retention (CR)	0.962	5	Excellent
IV1: Interest Rate (IR)	0.931	5	Excellent
IV2: Customer Age (CA)	0.921	5	Excellent
IV3: Credit Limit (CL)	0.944	5	Excellent
IV4: Income Level (IL)	0.948	5	Excellent

4.2.Correlation Analysis

Spearman's correlation analysis was utilized to explore the relationships between the independent variables (interest rate, customer age, credit limit, and income level) and the dependent variable (customer retention) (Kim, 2017), as shown in *Table 2*.

Table 2: Spearman's correlation (N = 385)

	Customer Retention	Interest Rate	Customer Age	Credit Limit	Income Level
Customer Retention	1.000	.860**	.831**	.862**	.736**
	.	(<.000)	(<.000)	(<.000)	(<.000)
Interest Rate	.860**	1.000	.822**	.873**	.681**
	(<.000)	.	(<.000)	(<.000)	(<.000)
Customer Age	.831**	.822**	1.000	.829**	.640**
	(<.000)	(<.000)	.	(<.000)	(<.000)
Credit Limit	.862**	.873**	.829**	1.000	.676**
	(<.000)	(<.000)	(<.000)	.	(<.000)
Income Level	.736**	.681**	.640**	.676**	1.000
	(<.000)	(<.000)	(<.000)	(<.000)	.

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

The analysis revealed strong positive monotonic relationships between all independent variables and customer retention. Spearman's correlation coefficient for interest rate and customer retention was 0.860, indicating that lower interest rates significantly enhance customer loyalty. A correlation of 0.831 between customer age and retention highlighted that younger users exhibit higher retention rates due to their preference for flexible payment methods. Credit limit showed a very strong positive correlation of 0.862, demonstrating that higher credit limits enhance purchasing power and flexibility, fostering continued BNPL usage. Income level exhibited a correlation of 0.736, suggesting that lower-income groups rely more on BNPL for financial management, leading to higher retention, while higher-income users primarily use the service for convenience.

4.3.Mediation Analysis

Building on the findings obtained above, mediation analysis was applied to assess the mediating role of usage frequency in the relationships between the independent variables

(interest rate, customer age, credit limit, and income level) and customer retention. The analysis, conducted using Hayes' Process Macro, produced the following results in *Table 3*.

Table 3: Direct and indirect effects of independent variables on customer retention rate via the frequency of using e-commerce platforms

Path	Direct Effect	Bootstrapped Indirect Effect
Interest Rate → Frequency Of Using E-Commerce Platforms → Customer Retention Rate	0.9678 (P = 0.0000)	0.0039 (BootSE = 0.0030. BootCI : [-0.0011, 0.0107])
Customer Age → Frequency Of Using E-Commerce Platforms → Customer Retention Rate	1.0138 (P = 0.0000)	0.0053 (BootSE = 0.0033. BootCI : [0.0002, 0.0131])
Credit Limit → Frequency Of Using E-Commerce Platforms → Customer Retention Rate	0.9181 (P = 0.0000)	0.0064 (BootSE = 0.0042. BootCI : [-0.0012, 0.0152])
Income Levels → Frequency Of Using E-Commerce Platforms → Customer Retention Rate	0.9955 (P = 0.0000)	0.0031 (BootSE = 0.0023. BootCI : [-0.007, 0.0083])

The mediation analysis provides critical insights into the mechanisms through which interest rate, customer age, credit limit, and income level influence customer retention in BNPL services. The direct effects of all four independent variables on customer retention were statistically significant (p = 0.000), with coefficients of 0.9678 for interest rate, 1.0138 for customer age, 0.9181 for credit limit, and 0.9955 for income level. These findings underscore the substantial role of these financial and demographic factors in shaping consumer loyalty within BNPL ecosystems. However, the bootstrapped indirect effects, which assess mediation through usage frequency of e-commerce platforms, exhibited divergent results, indicating that mediation is only significant in the case of customer age.

Specifically, the indirect effect of customer age on retention through usage frequency was 0.0053 (BootSE = 0.0033, BootCI: [0.0002, 0.0131]), demonstrating a significant mediation effect since the confidence interval did not include zero. This suggests that younger consumers' frequent utilization of e-commerce platforms partially explains their higher retention rates within BNPL services. Their engagement with digital transactions reinforces their dependence on BNPL as a preferred financial tool, leading to sustained usage and long-term retention.

In contrast, the indirect effects for interest rate (0.0039, BootSE = 0.0030, BootCI: [-0.0011, 0.0107]), credit limit (0.0064, BootSE = 0.0042, BootCI: [-0.0012, 0.0152]), and income level (0.0031, BootSE = 0.0023, BootCI: [-0.007, 0.0083]) were not statistically significant, as their confidence intervals included zero. These results indicate that usage frequency does not serve as a meaningful mediator in these relationships. Instead, the influence of interest

rates, credit limits, and income levels on retention is predominantly direct, implying that customers' decisions to continue using BNPL services are driven more by financial considerations and structural incentives than by their frequency of engaging with e-commerce platforms.

Overall, these findings highlight that while customer age influences retention both directly and indirectly through e-commerce usage frequency, other variables exert their impact primarily through direct mechanisms. This distinction is crucial for e-commerce platforms and financial service providers seeking to enhance BNPL adoption and retention. Tailored strategies should focus on optimizing financial incentives, such as competitive interest rates and flexible credit limits, while simultaneously leveraging digital engagement strategies to maintain high retention rates, particularly among younger consumers.

5. Discussion and Conclusion

This study explored the relationships between interest rate, customer age, credit limit, and income level with customer retention in BNPL services. All four hypotheses were supported by the data, confirming significant positive monotonic relationships between the independent variables and customer retention. Specifically, lower interest rates significantly improved customer retention by reducing financial burdens (H_1), younger users exhibited higher retention rates due to their preference for flexible payment methods (H_2), higher credit limits contributed to increased financial flexibility and higher retention (H_3), and lower-income groups showed stronger retention due to their reliance on BNPL services to manage financial constraints (H_4). These findings confirm that BNPL features, such as competitive interest rates and flexible credit limits, play a vital role in enhancing loyalty.

Usage frequency was identified as a significant mediator in the relationship between customer age and retention. Younger users, who tend to use BNPL services more frequently, were more likely to show higher retention rates. For the other variables—interest rate, credit limit, and income level—the direct effects on retention were more pronounced, with no significant mediation by usage frequency. This suggests that the influence of these variables on customer retention operates primarily through direct pathways, without the need for frequent usage to explain their effects.

E-commerce platforms are encouraged to focus on offering tailored BNPL services that cater to different user segments, particularly younger and lower-income groups who are more likely to rely on BNPL services. Offering competitive interest rates, higher credit limits, and flexible payment terms will attract and retain customers while promoting responsible usage through loyalty programs and transparency can ensure long-term retention. Policymakers should also consider regulations that support ethical lending practices and financial literacy to further enhance the sustainability of BNPL services.

Despite the valuable insights provided, this study is limited by its cross-sectional design and focus on Malaysian users, which may not fully generalize to other contexts. Future research

should include more diverse samples, particularly from rural populations, and adopt longitudinal approaches to assess the long-term impacts of BNPL on customer retention. Plus, examining external factors such as economic conditions and marketing strategies could provide a more comprehensive understanding of BNPL's role in customer retention.

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