

The Influence of Perceived Interactivity and Visual Appeal on Impulse Buying in Beauty Home Services: The Mediating Role of Perceived Enjoyment and A Multi-Group Analysis (MGA) Approach

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Abstract

This study aims to examine the relationship between perceived interactivity and visual aesthetics regarding impulse buying, with perceived enjoyment acting as a moderator in the context of beauty home services, and to analyze differences in consumer behavior based on the period of usage (≤ 2 years vs > 2 years). Grounded in the Stimulus-Organism-Response (S-O-R) theory, this explanatory quantitative study employed purposive sampling to collect data from 233 respondents in the Jabodetabek area. Data analysis was conducted using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4 software.

Structural analysis revealed no significant difference in path coefficients between the two groups new users (≤ 2 years) and experienced users (> 2 years). This indicates that, when using the service, both new and long-term users consistently exhibit the same effects, regardless of the duration of their experience.

Keywords:

Perceived Interactivity; Visual Appeal; Impulse Buying; Perceived Enjoyment; Multi-Group Analysis (MGA).

1. INTRODUCTION

The expansion of digital technology has completely revolutionized how modern urban consumers access and experience personalized lifestyle services, particularly in the creative beauty sector. One of the most prominent service innovations rising within this landscape is the "beauty home service" an on-demand beauty treatment that consumers can effortlessly browse, coordinate, and book through highly interactive social applications, such as Instagram and WhatsApp. In megapolitan areas like Jabodetabek, this trend has experienced rapid growth due to the high mobility of urban society. According to annual metrics from the ZAP Beauty Index (2024), a massive shift in urban consumption patterns has occurred, with over 40% of metropolitan clients shifting toward on-demand home treatments to maximize time efficiency and preserve personal privacy. Simultaneously, market records from Inventure Indonesia (2024) in the Indonesia Consumer Trends report document that annual transactions within the urban on-demand service ecosystem (including mobile beauty bookings) skyrocketed by 45% year-on-year. This strong wave emphasizes that accessibility, instant temporal flexibility, and communication speed make modern urbanites highly sensitive to external digital stimuli.

Within this competitive digital commerce environment, interactive platforms no longer function merely as information boards. Instead, they act as primary interfaces designed to lower consumer hesitation and build deep, immersive shopping experiences. Recent studies emphasize that the clever integration of interactive dialogue capabilities combined with sophisticated visual elements plays a critical role in generating immediate emotional involvement (Chen & Li, 2023; Zhang & Zhao, 2024). This synergy creates a state of pure amusement termed "perceived enjoyment" while users explore digital catalogs. However, this seamless blend of high connectivity and immediate visual gratification frequently brings mixed psychological

outcomes. Contemporary consumer behavioral research (e.g., Habib et al., 2024; Liu & Min, 2023) highlights that combining aggressive digital promotions and frictionless booking journeys does not merely deliver functional convenience. Rather, it significantly downregulates deliberate cognitive filtering, effectively inducing uncontrolled consumption choices and triggering immediate online impulse buying. As consumers derive heightened sensory pleasure from interactive dialogue with service representatives and the aesthetic appeal of before-and-after portfolios, their cognitive capacity for logical budgeting diminishes, thereby accelerating spontaneous purchase decisions.

Impulse buying describes spontaneous, unreflective purchasing actions executed without any initial intent or pre-shopping plan. In the context of digital beauty home services, this behavior is largely driven by online stimuli received during interface navigation. Two core environmental stimuli drive this process: Perceived Interactivity and Visual Appeal. Perceived Interactivity refers to a consumer's subjective assessment of how effectively a platform enables prompt, mutual two-way communication, characterized by conversational fluidity and rapid response rates elements recently identified as key predictors of digital engagement (Zhou et al., 2021; Wang et al., 2022). Conversely, Visual Appeal focuses on the aesthetic allure of the interface, encompassing balanced color harmonies, tidy grid alignments, and high-quality portfolio photography, which current research (Chen et al., 2023; Habib et al., 2024) identifies as essential for fostering initial trust and desire in service-based digital marketplaces.

Applying the overarching Stimulus-Organism-Response (S-O-R) theory framework, Perceived Interactivity and Visual Appeal function as ambient digital stimuli (S) that shape the user's internal psychological state (O), which is captured here through Perceived Enjoyment. This internal emotional state subsequently drives the ultimate behavioral outcome: online Impulse Buying (R). This structural dynamic builds upon prior findings by Lee et al. (2022), which demonstrated that mobile wallet system interfaces strongly shape the emotional reactions of consumers, thereby fueling spontaneous behavioral intentions.

While traditional consumer research confirms that visual and interactive elements drive impulsive purchase choices in standard e-commerce settings, an explicit research gap exists regarding on-demand services. Unlike tangible retail goods or transactional e-wallets, beauty home services are heavily service-based and carry high intangibility. Consumers cannot physically test or examine the service prior to actual delivery, making it highly reliant on experience qualities. Furthermore, because it involves physical proximity and requires a provider to enter the consumer's private home, it requires a high degree of trust to mitigate perceived privacy and security risks. Given this intense information asymmetry, consumers rely heavily on digital representations as primary indicators to eliminate doubt before committing to a spontaneous purchase.

Additionally, previous literature often treats consumer datasets as a singular, homogenous mass, ignoring the role of customer experience. To address this gap, this study adapts the original concept of user experience from Lee et al. (2022) into a time-based metric: Using Duration (≤ 2 years versus > 2 years). This metric serves as a categorical grouping variable within a Multi-Group Analysis (MGA) framework. Theoretically, long-term users are assumed to exhibit advanced platform literacy and more rational cognitive mapping, whereas newer clients may show greater vulnerability to emotional visual triggers.

Consequently, the primary objective of this study is to examine the direct and indirect impacts of Perceived Interactivity and Visual Appeal on Impulse Buying through the mediating path of Perceived Enjoyment within the beauty home service sector. It also aims to determine whether these structural relationships remain stable or vary across distinct consumer cohorts based on Using Duration via PLS-MGA.

2. RESEARCH METHOD

This study utilizes an explanatory quantitative research design to test the structural relationships within the S-O-R framework. Primary data were gathered through a structured web-based questionnaire distributed via Google Forms to beauty service users across the Jakarta, Bogor, Depok, Tangerang, and Bekasi (Jabodetabek) metropolitan areas. Non-probability purposive sampling was employed based on three explicit criteria: respondents had to be at least 17 years old, live within the Jabodetabek region, and have actively interacted with and booked a beauty home service through a digital platform.

To determine sample size adequacy, the study applied the Inverse Square Root Method. At a 5% significance level with a standard statistical power of 80% and a minimum path coefficient effect size detection threshold of 0.20, the minimum sample required was 155 cases. The final data collection yielded 233 valid, fully completed responses, satisfying the requirements for structural equation modeling and subgroup analysis.

The measurement instrument consists of 17 items adapted from validated scales, utilizing a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Perceived Interactivity (4 items) and Visual Appeal (4 items) represent the environmental stimuli. Perceived Enjoyment (4 items) captures the internal organism state, and Impulse Buying (5 items) serves as the behavioral response. Using Duration was captured as a categorical filter to segment the sample into two analytical cohorts: Novice Users (≤ 2 years; combining intervals of < 6 months, 6–12 months, and 1–2 years) and Experienced Users (> 2 years).

Data analysis was executed using Partial Least Squares Structural Equation Modeling (PLS-SEM) via SmartPLS 4. Following the best practices outlined by Hair et al. (2022) and Henseler et al. (2019), the analytical sequence involved a two-stage evaluation. First, the measurement model (outer model) was tested for convergent validity, discriminant validity, and internal reliability (construct reliability and validity). Second, the structural model (inner model) was evaluated using bootstrapping (5,000 resamples) to test the hypothesized paths. To conduct a rigorous multi-group comparison, the study applied the three-step Measurement Invariance of Composite Models (MICOM) procedure to verify configural invariance, compositional invariance, and the equality of composite means and variances (Henseler et al., 2019). After establishing invariance, the non-parametric PLS-MGA algorithm was executed to compare path coefficients between the two duration-based groups, ensuring that the results are statistically robust and valid for multi-group interpretation.

3. RESULTS AND DISCUSSION

3.1. Demographic Profile and Sample Characteristics

Of the 233 valid respondents, women comprised the prominent majority at 77.3% of the sample. The age distribution concentrated heavily within the young urban professional bracket, with 42.5% of respondents falling between 20 and 25 years old. Private sector employees formed the largest occupational segment (125 individuals). In terms of platform interaction longevity, the sample was divided into two distinct groups based on Using Duration: 58.4% were classified as Novice Users (≤ 2 years) and 41.6% were classified as Experienced Users (> 2 years).

3.2. Evaluation of the Measurement Model (Outer Model)

The outer model was assessed by checking factor loadings, Average Variance Extracted (AVE), Composite Reliability (CR), and Cronbach's Alpha.

As shown in Table 1, all indicator factor loadings exceeded the standard 0.70 threshold, confirming strong indicator reliability. Convergent validity was established, as the AVE for every latent construct exceeded the required 0.50 benchmark. Construct reliability was supported by Cronbach's Alpha and CR values that surpassed the 0.70 threshold across all variables.

Table 1. Results of Loading Factor and Average Variance Extracted (AVE)

Variable	Indicator	Outer Loading	Average Variance Extracted (AVE)	Composite Reliability(ρ_c)	Cronbach's alpha
Impulse Buying (IB)	IB1	0.801	0.658	0.906	0.870
	IB2	0.837			
	IB3	0.817			
	IB4	0.810			
	IB5	0.791			
Perceived Enjoyment (PE)	PE1	0.807	0.634	0.874	0.808
	PE2	0.758			
	PE3	0.806			
	PE4	0.814			
Perceived Interactivity (PI)	PI1	0.790	0.593	0.854	0.773
	PI2	0.772			
	PI3	0.789			
	PI4	0.728			
Visual Appeal (VA)	VA1	0.819	0.631	0.872	0.806
	VA2	0.786			
	VA3	0.790			
	VA4	0.781			

As shown in Table 1, all individual item factor loadings comfortably exceed the standard 0.70 threshold, confirming robust indicator reliability. Convergent validity is firmly established, as the AVE for every latent construct surpasses the mandatory 0.50 benchmark. Furthermore, internal consistency and construct reliability are thoroughly supported, with both Cronbach's Alpha and Composite Reliability (CR) values scaling well above the traditional 0.70 threshold across all modeled variables.

3.2.1. Fornell-Larcker Criterion Assessment

The Fornell-Larcker criterion establishes that the square root of the AVE for each individual construct must be strictly greater than its highest correlation value with any other latent construct in the structural model. The results are compiled in Table 2.

Table 2. Fornell-Larcker Criterion Matrix

Variable	Impulse Buying	Perceived Enjoyment	Perceived Interactivity	Visual Appeal
Impulse Buying	0.811			
Perceived Enjoyment	0.546	0.796		
Perceived Interactivity	0.540	0.408	0.770	
Visual Appeal	0.390	0.398	0.204	0.794

As demonstrated in Table 2, the diagonal entries typed in bold represent the square roots of each construct's AVE. Because each diagonal element is consistently higher than any off-diagonal correlation coefficient, the Fornell-Larcker requirement is fully satisfied.

3.2.2. Heterotrait-Monotrait Ratio (HTMT) Assessment

This study also implements the Heterotrait-Monotrait Ratio (HTMT) as a rigorous estimation tool to guarantee discriminant validity, where all calculated HTMT ratios between paired constructs must remain safely below the strict threshold of 0.85.

Table 3. Heterotrait-Monotrait Ratio (HTMT) Results

Variable	Impulse Buying	Perceived Enjoyment	Perceived Interactivity	Visual Appeal
Impulse Buying				
Perceived Enjoyment	0.646			
Perceived Interactivity	0.650	0.505		
Visual Appeal	0.464	0.487	0.251	

The structural proportions in Table 3 show that all inter-construct HTMT ratios fall completely below the conservative 0.85 boundary, with a maximum value recorded of 0.650. Consequently, the combination of both matrices proves that the model possesses excellent discriminant validity. The model's Standardized Root Mean Square Residual (SRMR) as show in Table 4, the SRMR value is 0.063, falling well below the 0.080 threshold, while inner Variance Inflation Factor (VIF) values range between 1.390 and 2.151(Table 5), confirming an acceptable overall model fit and the absence of multi-collinearity bias.

Table 4. Model Fit Assessment

Fit Index	Saturated Model	Estimated Model
SRMR	0.063	0.063

Table 5. Variance Inflation Factors (VIF)

Indicator	VIF	Indicator	VIF
IB1	1.889	PI1	1.690
IB2	2.151	PI2	1.571
IB3	2.010	PI3	1.447
IB4	1.927	PI4	1.390
IB5	1.899	VA1	1.791
PE1	1.693	VA2	1.660
PE2	1.542	VA3	1.487
PE3	1.700	VA4	1.660
PE4	1.662		

3.3. Hypotheses Testing and Structural Model Evaluation (Inner Model)

The structural model was evaluated using a complete bootstrapping procedure with 5,000 subsamples to analyze the direct and indirect path coefficients. The model explained a substantial portion of variance, with R² values confirming the predictive relevance of the endogenous constructs.

Table 6. Path Coefficients and Hypothesis Testing Results

Hypothesis	Path Structural Relationship	Original Sample	Sample mean	Standard Deviation	t-Statistic	p-value	Result Decision
H1	Perceived Interactivity → Perceived Enjoyment	0.341	0.346	0.060	5.693	0.000	Supported
H2	Perceived Interactivity → Impulse Buying	0.371	0.373	0.054	6.859	0.000	Supported
H3	Visual Appeal → Perceived Enjoyment	0.328	0.329	0.061	5.344	0.000	Supported
H4	Visual Appeal → Impulse Buying	0.188	0.191	0.051	3.663	0.000	Supported
H5	Perceived Enjoyment → Impulse Buying	0.319	0.318	0.056	5.742	0.000	Supported
H6	Perceived Interactivity → Perceived Enjoyment → Impulse Buying (Indirect)	0.109	0.110	0.028	3.862	0.000	Supported
H7	Visual Appeal → Perceived Enjoyment → Impulse Buying (Indirect)	0.105	0.104	0.026	4.026	0.000	Supported

The direct effect analysis supported hypotheses H1 through H5. Perceived Interactivity ($O = 0.341$, $t = 5.693$) and Visual Appeal ($O = 0.328$, $t = 5.344$) both exerted positive and statistically significant impacts on Perceived Enjoyment. Similarly, direct paths from Perceived Interactivity ($O = 0.371$, $t = 6.859$) and Visual Appeal ($O = 0.188$, $t = 3.663$) to Impulse Buying were positive and statistically significant. Perceived Enjoyment also demonstrated a significant positive effect on Impulse Buying ($O = 0.319$, $t = 5.742$), underscoring the vital role of internal emotional states in driving spontaneous purchase decisions.

Mediation analysis confirmed that Perceived Enjoyment serves as a significant mediator for both environmental stimuli (H6 & H7). The indirect effect of Perceived Interactivity on Impulse Buying was positive and significant ($O = 0.109$, $t = 3.862$), supporting H6. Correspondingly, the indirect effect of Visual Appeal on Impulse Buying was also significant ($O = 0.105$, $t = 4.026$), supporting H7. These findings align with recent developments in digital consumer behavior, where Nguyen et al. (2024) emphasize that high-quality visual stimuli and responsive interactions are no longer mere "features" but critical drivers that manipulate consumer emotional arousal in impulsive settings. Furthermore, as noted by Joo & Yang (2023), the seamless integration of these stimuli creates an "affective loop" that bypasses rational cognitive constraints, leading to immediate transaction decisions in the beauty service sector.

3.4. Measurement Invariance and Multi-Group Analysis

Before proceeding with the Multi-Group Analysis (MGA) to compare the structural path coefficients between the novice and experienced user groups, it is statistically mandatory to establish measurement invariance. This study employed the three-step Measurement Invariance of Composite Models (MICOM) procedure to verify that the latent constructs are measured consistently across both segments. The MICOM assessment consists of three sequential stages: (1) configural invariance to ensure identical model structure; (2) compositional invariance to confirm that the construct composites are equivalent; and (3) the equality of composite means and variances to rule out systematic measurement bias. The results of this procedure are summarized in the following table 7.

Table 7. Measurement Invariance Results

MICOM Step	Test Criteria	Result	Decision
Step 1: Configural Invariance	Same indicator treatment	Established	Pass
Step 2: Compositional Invariance	Correlation (c) $\geq$ Permutation 5%	c = 1.000	Pass
Step 3a: Equality of Means	Means Diff	p > 0.05	Pass
Step 3b: Equality of Variances	Variances Diff	p > 0.05	Pass

Given that full measurement invariance was successfully established, we proceeded with the MGA to compare the structural paths between novice and experienced users. The results, as presented in the previous section, confirm that there were no statistically significant differences in the path coefficients between these two groups (p > 0.05).

Table 8. Multi-Group Analysis (MGA) Results by Using Duration

Structural Path Specification	Original $\leq$ 2 Years (N=194)	Original > 2 Years (N=39)	Original Difference	p-Value	Result Decision
Perceived Interactivity $\rightarrow$ Perceived Enjoyment	0.313	0.584	-0.271	0.102	No Significant
Perceived Interactivity $\rightarrow$ Impulse Buying	0.381	0.262	0.119	0.457	No Significant
Visual Appeal $\rightarrow$ Perceived Enjoyment	0.201	0.102	0.099	0.499	No Significant
Visual Appeal $\rightarrow$ Impulse Buying	0.331	0.259	0.072	0.671	No Significant
Perceived Enjoyment $\rightarrow$ Impulse Buying	0.314	0.423	-0.108	0.513	No Significant

The multi-group analysis (MGA) was conducted to determine if the structural path coefficients differed significantly between novice users ($\leq$ 2 years) and experienced users ($>$ 2 years). As presented in Table 8, the path differences across all structural relationships were statistically insignificant, with all permutation p-values exceeding the 0.05 threshold.

These findings indicate that the S-O-R framework where Perceived Interactivity and Visual Appeal influence Impulse Buying via Perceived Enjoyment remains stable across both user cohorts. The lack of significant difference suggests that user experience duration does not act as a moderator in these structural relationships. Consequently, beauty home service providers can conclude that their digital stimulus strategy is equally effective for both new and long-term customers, as both segments respond to the platform's interactive and visual stimuli with a similar level of spontaneous buying intent.

4. CONCLUSION

This study demonstrates that within the digital beauty home service sector, Perceived Interactivity and Visual Appeal serve as highly effective environmental stimuli that drive online Impulse Buying behavior. The structural analysis confirms that Perceived Enjoyment acts as a key mediating organism state, capturing how positive emotional experiences bridge the gap between platform design and spontaneous purchasing actions. The Multi-Group Analysis yields a critical theoretical finding: the structural paths within the S-O-R framework remain stable across different user segments, showing no statistically significant variations based on Using Duration. This indicates that the combination of responsive, two-way digital communication and strong aesthetic appeal consistently triggers impulsive buying triggers, affecting both new and long-term customers equally.

From a managerial perspective, operators of beauty home services should focus on optimizing their digital touchpoints. Firms should invest in maintaining high-quality, professional visual portfolios and before-and-after imagery to maximize visual appeal. Concurrently, they must ensure rapid, fluid communication by utilizing dedicated customer care agents and responsive chat frameworks on platforms like WhatsApp and Instagram. By focusing on these elements to create an enjoyable browsing experience, beauty home service providers can effectively drive spontaneous bookings and increase sales across all customer segments.

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