

Clicking with Confidence: Understanding Consumer Information Processing Using the Heuristic-Systematic Model in the Indonesian Context

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Abstract

This study aims to examine the processing of advertising information by customers in the context of e-marketplaces, specifically regarding the influence of personalization, trust in recommendation product, flow experience, application design quality, and advertising value on advertising click behavior. Data collection in this study used a questionnaire designed using a Likert scale and then distributed to respondents using a purposive sampling technique. The respondent criteria in this study included customers who had shopping experience at one of the three largest e-marketplaces in Indonesia. Data analysis was conducted using the Structural Equation Modeling (SEM) method with a path analysis approach. Personalization, application design quality, and flow experience have a positive influence on advertising value. Meanwhile, trust in recommendation products have no influence on advertising value. In addition, advertising value has a positive influence on advertising click. This research contributes closely to information processing and the use of customer data as a strategy for mapping information that must be presented to customers in the context of digital advertising. This study provides suggestions for optimizing the interface design of platforms in e-marketplaces to facilitate information search, create accurate recommendation systems, and optimally utilize customer data to design personalized advertising, so that match their preferences or product search history.

Mengklik dengan Percaya Diri: Memahami Pemrosesan Informasi Konsumen Menggunakan Model Heuristik-Sistematis dalam Konteks Indonesia

Abstrak

Penelitian ini bertujuan untuk mengkaji pengolahan informasi iklan oleh pelanggan dalam konteks e-marketplace, khususnya mengenai pengaruh personalisasi, kepercayaan rekomendasi produk, pengalaman mengalir, kualitas desain aplikasi, dan nilai iklan terhadap perilaku klik iklan. Pengumpulan data dalam penelitian ini menggunakan kuesioner yang dirancang menggunakan skala Likert dan kemudian didistribusikan kepada responden menggunakan teknik purposive sampling. Kriteria responden dalam penelitian ini meliputi pelanggan yang memiliki pengalaman berbelanja di salah satu dari tiga e-marketplace terbesar di Indonesia. Analisis data dilakukan menggunakan metode Structural Equation Modelling (SEM) dengan pendekatan analisis jalur. Personalisasi, kualitas desain aplikasi, dan pengalaman mengalir memiliki pengaruh positif terhadap nilai iklan. Sementara itu, kepercayaan rekomendasi produk tidak berpengaruh terhadap nilai iklan. Selain itu, nilai iklan memiliki pengaruh positif terhadap klik iklan. Penelitian ini memberikan kontribusi yang erat terhadap pengolahan informasi dan penggunaan data pelanggan sebagai strategi pemetaan informasi yang harus disajikan kepada pelanggan dalam konteks periklanan digital. Penelitian ini memberikan saran untuk mengoptimalkan desain antarmuka platform di e-marketplace untuk mempermudah pencarian informasi, menciptakan sistem rekomendasi yang akurat, dan memanfaatkan data pelanggan secara optimal untuk mendesain iklan yang dipersonalisasi, sehingga sesuai dengan preferensi atau riwayat pencarian produk mereka.

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INTRODUCTION

Information processing is something that customers go through during the search process until they decide to purchase a product in an e-marketplace. Basically, online shopping offers users the convenience of conducting business transactions via an internet connection, and, of course, the desired product is available on the e-marketplace (Ngah et al., 2022). Information processing in a virtual environment means that individuals cannot physically

inspect products before purchasing, so they must rely on information provided by online retailers (Overmars & Poels, 2015). According to Kim (2019), with the rapid development of digital technology, digital product presentation strategies will continue to evolve. Product presentation also depends on the platform retailers use to offer or market their products. The following is data related to the platforms most used by customers to search for information to support online purchasing activities:



Figure 1. The Digital Window Shopper: Preferred Online Browsing Platforms

Source: Indonesia E-Commerce Trends –2nd Semester of 2024 from Jakpat Premium Report

Figure 1 shows that customer search activity in digital channels is highest for goods via e-marketplaces at 90%, followed by 43% for goods via social media. The dominance of product searches on e-marketplaces is possible because they provide a variety of products, sellers, information, reviews, and recommendations in a single shopping environment, allowing consumers to continue exploring without immediately completing a transaction. Search activities through digital channels are also closely related to the flow experience customers experience when processing information, which ultimately supports online purchasing. This highlights the relevance of e-marketplaces as a subject of study for consumer product search behavior in digital channels. This condition underscores the relevance of window shopping as a form of consumer behavior in an e-marketplace environment, where product

search and exploration can occur as a separate experience before a purchase decision is made.

In this study, e-commerce and e-marketplace are understood as two distinct yet interrelated concepts. Electronic business, or e-commerce, is a transaction using the internet that focuses on products and services (Bandyopadhyay et al., 2021). E-commerce transactions often use online marketplaces as platforms for sales. Online marketplaces provide a virtual space for retailers to place advertisements, as Hasan et al. (2024) describe the product information customers need. In fact, the source of product information in online marketplaces is not only product sales information but also a lot of information related to promotions, packaged as attractive advertisements. Therefore, the diverse information available in online marketplaces is attractive and profitable for customers. In

addition to benefiting customers, selling in online marketplaces also benefits retailers. According to Andriani & Susilo Nugroho (2025), the most significant advantage of selling through online marketplaces is that companies obtain more detailed and accurate customer information that can be mapped into patterns in designing advertising strategies.

Attractive advertising is not only about packaging information but also about aligning with customer preferences, making them feel special and fulfilled. Developing and delivering personalized advertising requires accurate personal information (Morimoto, 2021). This is known as advertising personalization. Advertising personalization is defined as a communication strategy that involves various important elements in information that refer to the recipient's personal characteristics, such as name, gender, place of residence, occupation (Murthi & Sarkar, 2003; Baek & Morimoto, 2012; Li, 2016; Shanahan et al., 2019) previous knowledge about the customer's relationship with the product, preferences, attitudes, emotions, goals (Wu et al., 2018), transactional, behavioral, and demographic data (Taylor et al., 2009). This aims to facilitate customers' processing of processing according to their needs and makes it easier for retailers to define customer desires more precisely.

Advertising personalization is the product recommendation system. Product recommendations are generated based on what customers have viewed, liked, or purchased. The system then predicts other products customers might be interested in, providing instant suggestions (Gai & Klesse, 2019). Recommendation systems have become an integrated part of e-marketplaces to promote product sales, making them a popular research area in the current era (Bandyopadhyay et al., 2021). Product recommendation systems are an essential service for enhancing customer shopping experiences and fostering long-term relationships (Zhang et al., 2018). Consumer

trust in recommendations is an important factor in building consumer behavior in the e-marketplace.

Another important factor determining whether customers have a long-term relationship with an online marketplace and its activities is their flow experience while browsing the marketplace. The flow experience factor is a psychological element for customers in the information search process in online marketplaces. Barta et al. (2021) and Xu et al. (2021) argue that the flow experience is a psychological state considered an optimal experience for customers. Barta et al. (2021) also emphasize that the online marketplace environment allows customers to focus and lose track of time while using the application, allowing them to enjoy the flow of activities.

Personalization, trust recommendations, product, and flow experiences will be more optimal in influencing customer behavior if supported by a quality online marketplace application. A study conducted by Kim (2019) showed that customer information processing is triggered by visual and verbal stimuli as a presentation of digital products in the context of an e-marketplace. The quality of the application display is visually pleasing to the eye, indicated by a combination of harmonious colors, and the easy-to-understand navigation process, which supports information processing by customers. Furthermore, images and text-based product descriptions are considered important sources for product presentation in the ever-evolving digital context (Kim, 2019). Therefore, the quality of application design is a crucial factor for customers in searching for information in online marketplaces.

An engaging application design not only enhances the user's experience but also strengthens customers' perceptions of the value of the advertisement displayed. Advertising value is a representation and overall assessment of the value of information (Zha et al., 2015). Customers will

evaluate the messages received as valuable information if it suits their needs or contains valuable information for purchase (Martins et al., 2019). Therefore, considering the value of advertising information is crucial to attract customers to explore it.

The various types of information appearing in online marketplaces typically lead customers to click on advertising based on the information embedded within them (Yu et al., 2019). Clicking is a behavior that indicates customer interest in a piece of information or advertisement. Anything designed to be attractive and easy to navigate by customers will encourage them to explore the information presented. This is expected to continue into the purchasing process in online marketplaces. Valuable content support and interactive visual quality can provide comfort to customers in the process of searching for a product to make online purchases.

Based on the literature study conducted by (Liu-Thompkins, 2019; Mou et al., 2019), it is stated that the construct of advertising personalization is relatively new, so it is still very possible to find variations in new scientific research results related to this construct. Furthermore, research by Sheth (2021) also states that information seeking, recommendations, new uses of products, and how to use them are areas of research that still need extensive research. Therefore, this study is a response to the literature review study that has summarized research topics that need to be explored further by examining the constructs of advertising personalization and trust recommendations product as antecedents. This study also uses the Heuristic Systematic Model (HSM) from (Chaiken & Maheswaran, 1994) as a theoretical framework to explain customer behavior in the context of online marketplaces. Several existing studies, such as those by (Kim et al., 2018; Xiao et al., 2018; Gilbert-Saad et al., 2021; Eslami et al., 2024; Zheng et al., 2024), use HSM to explain customer behavior in the context of

social media. This certainly adds novelty to this study.

The urgency of this research lies in the importance of understanding the various factors that shape consumer perceptions of advertising value in an e-marketplace environment that is full of information and marketing stimuli. When searching or window shopping, consumers are not only confronted with product information that they are actively searching for, but also receive recommendations, personalized content, platform displays, and various advertisements that appear during the process. However, the presence of these stimuli does not automatically ensure that an advertisement is perceived as valuable by the consumer. Therefore, it is important to understand the factors that make consumers perceive an advertisement as valuable and subsequently encourage them to click on it. This study aims to examine the influence of ad personalization, trust in recommendation product, app design quality, and flow experience on ad value and advertising value on advertising clicks. This study uses path analysis in hypothesis testing.

This study contributes both theoretically and practically. Theoretically, this study also advertising to the literature of research results related to personalization and recommendations, as revealed by several previous studies, which state that these two constructs are still very possible to be explored in depth to add variety to the latest scientific discoveries. This study also expands the use of HSM not only relevant in the context of social media as some existing studies, but can also be applied to capture phenomena in the context of online marketplaces, specifically describing customer behavior in processing advertising information. Meanwhile, the practical contribution of this study is to provide suggestions on optimizing the interface design of platforms in online marketplaces to facilitate searching, information processing, and decision-making by

customers.

The novelty of this research specifically lies in the use of the Heuristic-Systematic Model (HSM) to explain the formation of customer responses to advertisements in the context of e-marketplaces. Unlike previous studies that primarily identified factors influencing advertising value and advertising clicks as customer responses, this study positions them as outcomes of the consumer information-processing process. The HSM is employed to explain how consumers process information systematically while simultaneously utilizing heuristic cues available during product searches. Thus, this study offers a theoretical perspective on information processing and cue utilization in e-marketplace environments, illustrating how these elements shape advertising value and subsequently drive advertising clicks.

Hypothesis Development

The Heuristic Systematic Model (HSM)

The Heuristic Systematic Model (HSM) developed by (Chaiken & Maheswaran, 1994) is an information processing model categorized into two modes: systematic and heuristic (Bahn & Boyd, 2014). Systematic information processing suggests that individuals tend to consider all relevant information received and then make decisions through systematic thinking (Tan et al., 2021). Conversely, heuristic information processing suggests that individuals may rely on a few simple, unrelated pieces of information to make decisions (Chu et al., 2020). Systematic processing is effortful and comprehensive information processing, while heuristic processing tends to make decisions quickly with minimal cognitive effort (Kim et al., 2018; Lee & Hong, 2021; Chauhan & Gupta, 2024; Eslami et al., 2024). Chauhan & Gupta (2024) also added that heuristic information processing does not require a long time for customers to make decisions. Of course, this is the opposite of

systematic information processing, which requires time for thorough analysis before customers decide. Customers are more likely to use heuristic processing in situations where the message recipient lacks the motivation or ability to process information systematically, or when time and cost are a concern (Lee & Hong, 2021).

According to Lee & Hong (2021), motivation and ability play a key role in choosing between the two information processing modes in HSM. Individuals can essentially use both modes simultaneously or alternately based on motivation, ability, and the availability of cognitive resources (Chauhan & Gupta, 2024; Eslami et al., 2024). Eslami et al. (2024) also added individual and contextual factors, including topic relevance, distraction, and the individual's need for cognition, determining the cognitive processing mode in each situation.

The HSM is more relevant than the Elaboration Likelihood Model (ELM) as an overarching theory because it is more suitable for explaining consumer information processing that uses heuristic and systematic cues to evaluate information. Although ELM and HSM explain the information processing process, ELM emphasizes the route aspect: central route and peripheral route based on the level of individual elaboration of a message. Meanwhile, HSM more clearly explains that individuals can use both systematic processing cues and heuristic processing cues in forming judgments, including when both processing cues occur simultaneously.

The HSM in this research explain how consumers process various information and cues available in the e-marketplace environment before forming an evaluation of an advertisement. The HSM essentially comprises two information processing routes: systematic processing and heuristic processing. In this study, trust in product recommendation and personalization are positioned closer to syste-

matic processing because both are related to consumer evaluation of the relevance, credibility, and suitability of information provided by e-marketplaces to consumer needs. This process entails a higher level of cognitive effort. Meanwhile, application design quality and flow experience are positioned closer to heuristic processing because visual appeal, ease of interaction, sense of flow, and experience during use the application can be cues that help consumers in evaluating advertisements with relatively low cognitive effort. Furthermore, advertising value represents the outcome of the consumer's evaluation of the advertisement's informational worth, which can subsequently drive advertising clicks as a behavioral response. Thus, the HSM provides a framework for understanding that consumers can form perceptions of advertising value through either systematic or heuristic information processing within an e-marketplace environment.

The Relationship between Personalization and Advertising Value

Personalization in advertising is a strategy for delivering of information related to product offerings tailored to customer needs and preferences (Andriani & Susilo Nugroho, 2025). Advertising information that is tailored to customers' needs and preferences is expected to meet customer expectations and is therefore considered meaningful information.

Studies conducted by Lee et al. (2017) and Aydin (2018) state that advertising personalization has a positive influence on advertising value. When customers receive advertisements that refer to what they need and align with their preferences, their perception of the advertisement will improve. This is believed because customers consider advertisements to be valuable information and provide benefits to them in product search activities. Therefore, hypothesis one is formulated as follows:

H1: Personalization has a significant po-

sitive effect on the quality of application design.

The Relationship between Trust in Recommendation Product and Advertising Value

Recommendation systems have become a major concern on many online platforms because they help customers find relevant product information based on their interests and previous interactions (Nguyen et al., 2024). A study by Chen et al. (2019) found that product recommendations lead customers to make impulsive purchases due to trust in the recommender. Furthermore, another study by Gai & Klesse (2019) also found that product recommendations increase the potential for clicks, emphasizing the similarities sought between potential customers and customers who have previously purchased the product.

Several previous studies have shown that recommendations provide guidance for customers to make decisions based on the product information or advertisements they receive. When customers receive recommendations for a product through the system in an online marketplace or recommendations from previous customer reviews, customers have the potential to accept the recommendation because it is considered valuable information or advertising. Therefore, hypothesis 2 is formulated as follows:

H2: Trust in recommendation product has a significant positive effect on advertising value.

The Relationship of Flow Experience to Advertising Value

The concept of flow refers to an optimal and enjoyable experience when customers engage in an activity with full involvement, concentration, and enjoyment (Martins et al., 2019). This indicates that customers are in a flow mental state following the flow of an online marketplace application. Customers with flowing fee-

lings indicate that customers enjoy it, thus creating happiness in shopping. The joy of shopping tends to encourage users to spend more time on the application (Rizky & Marsasi, 2024).

According to Xu et al. (2021), the flow experience increases customers' purchase intention, supports the online site, and maintains application usage. Barta et al. (2021) added that when consumers experience flow in an online marketplace, a series of positive consequences will emerge. Positive consequences can be reflected as a good response to information or advertisements displayed on customers' online marketplace accounts. A good response indicates that the information or advertisements received by customers are valuable. When customers feel comfortable and enjoy the flow of browsing online marketplaces, they are more likely to perceive the advertisements they receive as valuable. Therefore, hypothesis three is formulated as follows:

H3: Flow experience has a significant positive effect on advertising value.

The Relationship between Application Design Quality and Advertising Value

Application design quality is crucial for information processing in online marketplaces. According to Venkatakrisnan et al. (2023), the role of application design quality strengthens the relationship between service quality and customer satisfaction. Customers feel satisfied because good quality applications will make it easier for them to obtain valuable information. This is also reinforced by a study conducted by Cebi (2013) that the quality of website design influences customer intentions. Customers will have an intention if they find something of value, in this case meaningful information.

Furthermore, studies by Amin et al. (2021) and Qalati et al. (2021) also revealed that website quality influences customer trust. Trust can arise if the information is perceived as valuable by customers.

When users perceive that an application is of good quality, the various information, including advertisements displayed within it, tends to be perceived as valuable, relevant, and convincing. Therefore, Hypothesis 4 is formulated as follows:

H4: Application design quality has a significant positive effect on advertising value.

The Relationship between Advertising Value and Advertising Click

Advertising value was introduced by Ducoffe (1995) as a subjective evaluation of the relative value or utility of advertising for customers. This evaluation refers to customers' perceptions or responses to product information presented in advertisements. The value of an advertisement can serve as an indicator of customer satisfaction with a company's communication products (Arora & Agarwal, 2019). Meanwhile, advertising clicks refer to the behavior of customers who tend to click after seeing an advertisement that indicates customer response (Zhang & Mao, 2016).

Based on research conducted by Zhang & Mao (2016) and Chen et al. (2023), it is stated that advertising value has a positive influence on advertising clicks and a study by Sharma et al. (2022) also confirmed that advertising value influences purchase intention where purchase intention in the context of online marketplaces can be represented as clicking behavior. When advertisements as product information are considered meaningful or valuable, they have the potential to motivate customers to click on advertisements. Therefore, hypothesis 5 is formulated as follows:

H5: Advertising value has a significant positive effect on advertising clicks.

Based on the hypothesis that has been developed, the following is the research model in Figure 2 that we formulated:

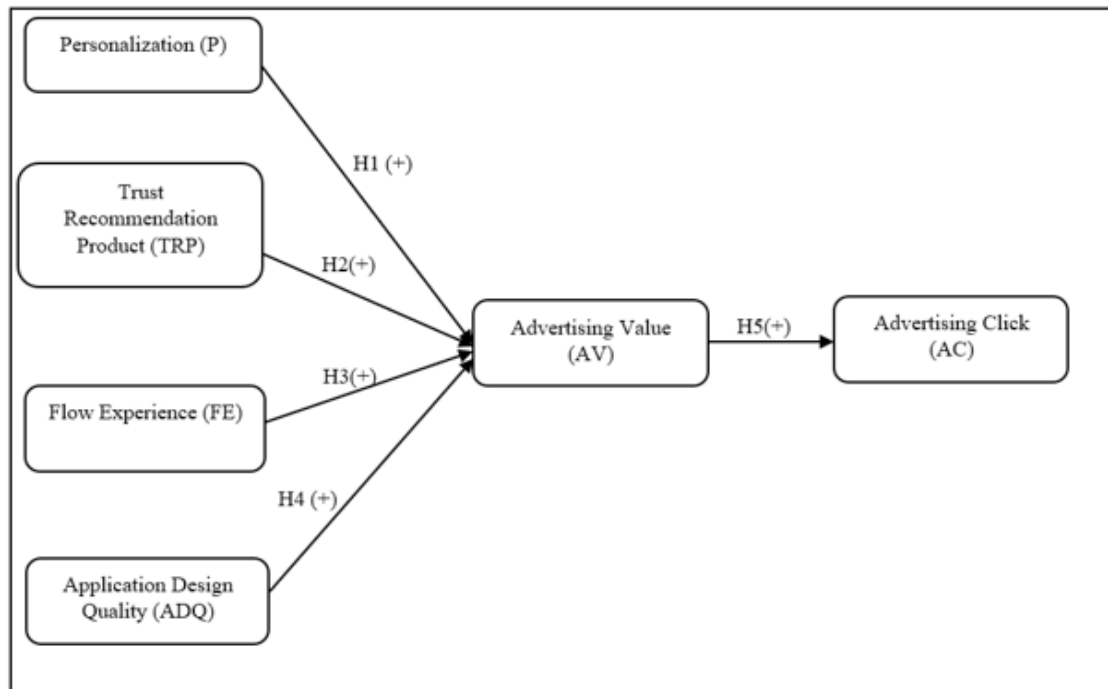


Figure 2. Conceptual Research Model

Source: Author (2026)

METHOD

This research is a quantitative study examining the relationships between variables. Purposive sampling was employed, with the criterion that respondents must have shopped on one of Indonesia's three largest online marketplace: Shopee, Tokopedia, or Lazada within the past year. The total sample size obtained in this study was 339 respondents. The data used in this research are primary data obtained through online questionnaires.

The measurement items used in the questionnaire in this study were adapted from previous studies, including personalization from research Baek & Morimoto (2012), trust in recommendation product from research Li (2019), flow experience from research Martins et al. (2019), application design quality from research Ha & Im (2012), advertising value from research Ducoffe (1995) and advertising clicks from Zhang & Mao (2016). Furthermore, all instruments used in the questionnaire

were translated into Indonesian and then adapted to the context of this study. Measurement items in the questionnaire used a Likert scale of 1 (strongly disagree) to 5 (strongly agree). The testing stages in this study were: first, outer model test for instrument feasibility testing, consisting of validity and reliability tests; second, inner model test for structural model testing to examine causal relationships and significance between constructs in a complex research model; and third, hypothesis testing using path analysis. The entire series of tests were conducted using SMART-PLS software.

Operational Definition of Variables

This research also formulates operational definitions of variables to ensure that each construct can be measured empirically, drawing upon concepts and indicators established in previous research. Table 1 presents the operational definitions of the variables in this study.

Table 1. Operational Definition of Variables

Variables/Construct	Conceptual Definitions	Operational Definitions
Personalization	A form of promotional message that is customized and delivered to consumers individually via paid media based on personal information (Baek & Morimoto, 2012)	The level of consumer perception regarding an e-marketplace's ability to display products in a customized manner based on consumer preferences, shopping experiences, and search history.
Trust in recommendation product	Consumer confidence and willingness to rely on the reliability and credibility of product recommendations on social commerce platforms (Li, 2019)	The level of consumer trust in product recommendations provided by e-marketplaces and displayed on their platforms.
Flow Experience	A psychological state in which an individual feels cognitively efficient, motivated, and happy while fully engaged in an activity (Martins et al., 2019)	The level of consumer experience when they feel enjoy and immerse in the activity of searching for product information on e-marketplaces
Application Design Quality	Evaluation of the website's visual atmospheric elements, such as layout, color, typography, and multimedia features (Ha & Im, 2012)	Consumer perceptions of the visual appearance, layout, navigation, and information organization of the e-marketplace application interface.
Advertising Value	Subjective evaluation of the relative value or utility of advertising to consumers (Ducoffe, 1995)	The level of consumer perception of advertisements displayed on e-marketplaces that are considered valuable.
Advertising Clicks	An individual's behavioral response in clicking on display advertisements to understand the product further, obtain information, or make a purchase (Zhang & Mao, 2016)	The tendency of consumers to click on advertisements or promotional content displayed on e-marketplaces to obtain further information about the products offered.

Source: Processed Data (2026)

RESULT AND DISCUSSION

Respondent Demographics

The demographics of respondents in this study were dominated by women as much as 61.9%, the majority of respondents' domiciles were on the island of Java and its surroundings, as much as 74.3%, from the age aspect, respondents aged 26

to 35 years were dominated by 47.8%, from the educational background aspect, they were dominated by university graduates as much as 64.9%, from the average monthly expenditure aspect, they were dominated in the range of IDR 2,500,001 to IDR 5,000,000 as much as 28.6%, from the aspect of the most favorite online marketplace was Shopee as much as 74.9%,

from the aspect of purchasing frequency, there were 28.6% transactions per month. This indicates that respondents are in a productive period of high intensity for conducting transactions on online marketplaces. Therefore, the respondents are

highly representative of the phenomenon of advertising information processing by customers in online marketplaces. Respondent demographic data is presented in full in Table 2.

Tabel 2. Respondent Demographics

Demographics Type	Description	Frequency	Percentage (%)
Gender	Male	129	38.1
	Female	210	61.9
Domicile	Java and Surrounding Areas	252	74.3
	Sumatera and Surrounding Areas	32	9.4
	Bali and Surrounding Areas	18	5.3
	Kalimantan and Surrounding Areas	14	4.1
	Nusa Tenggara and Surrounding Areas	10	2.9
	Sulawesi and Surrounding Areas	8	2.4
	Papua and Surrounding Areas	5	1.5
Age (in year)	16-25	125	36.9
	26-35	162	47.8
	36-45	46	13.6
	46-55	4	1.2
	>55	2	0.6
Education Background	Senior High School	41	12.1
	Vocational	16	4.7
	Bachelor	220	64.9
	Master	58	17.1
	Doctor	4	1.2
Average Expenditure per Month	<Rp 1.000.000	62	18.3
	Rp 1.000.000 - Rp 2.500.000	128	37.8
	Rp 2.500.001 - Rp 5.000.000	97	28.6
	Rp 5.000.001 - Rp 7.500.000	30	8.8
	Rp 7.500.001 - Rp 10.000.000	13	3.8
	>Rp 10.000.000	9	2.7
E-marketplace	Shopee	254	74.92
	Tokopedia	65	19.2
	Lazada	20	5.88
Purchase Frequency in month	1 – 5 times	70	20.6
	6 – 10 times	97	28.6
	11 – 15 times	49	14.5
	16 – 20 times	34	10
	More than 20 times	89	26.3
Total		339	100

Source: Processed Data (2026)

Outer Model Test

Data analysis was conducted following the stages of the SEM method using SmartPLS. The outer model assesses the quality of the instruments used in the study. The instrument quality test consists of a validity test and a reliability test. Reliability was assessed based on Cronbach's alpha and Composite Reliability values, both of which were required to exceed 0.7 (Hair et al., 2014). Meanwhile, the validity

test in this study consists of a convergent validity test by looking at the AVE value must be more than 0.5 and a discriminant validity test consisting of the Fornell-Larcker criterion test and the heterotrait-monotrait test (HTMT) by reviewing the square root value of the AVE must be greater than its correlation with other constructs (Hair, 2014). The results of the outer model assessment are presented in Tables 3, 4, and 5.

Table 3. The Result of Validity and Reliability Test

Constructs	Items	Loading Value	AVE	CA	CR
Personalization (P)	P1: Online advertisements appearing on online marketplaces provide product recommendations tailored to my needs.	0.851	0.647	0.863	0.901
	P2: Online advertisements appearing on online marketplaces are tailored to my preferences.	0.815			
	P3: Online advertisements appearing on online marketplaces are tailored to my needs.	0.859			
	P4: The appearance of online advertisements on online marketplaces that are tailored to my needs makes me feel like a special customer.	0.721			
	P5: I believe that online advertisements on online marketplaces are customized to my needs.	0.769			
Trust in recommendation product (TRP)	TRP1: I find online marketplace product recommendations credible.	0.908	0.836	0.902	0.939
	TRP2: I trust online marketplace product recommendations.	0.929			
	TRP3: I believe that product recommendations from online marketplaces are trustworthy.	0.906			
Flow Experience (FE)	FE1: Online advertising allows me to control my purchase intentions.	0.754	0.616	0.793	0.865
	FE2: I stay focused on the ads I'm browsing without being distracted by other online activities.	0.737			
	FE3: I feel compelled to click on ad content on online marketplaces.	0.773			
	FE4: I enjoy paying attention to ads on online marketplaces.	0.870			

Application Design Quality (ADQ)	ADQ1: I find online marketplaces engaging.	0.832			
	ADQ2: Online marketplaces use fonts appropriately.	0.862			
	ADQ3: Online marketplaces use layout colors appropriately.	0.863	0.728	0.876	0.914
	ADQ4: Online marketplaces utilize multimedia features effectively.	0.855			
Advertising Value (AV)	AV1: For me, advertising in online marketplaces is valuable.	0.920			
	AV2: For me, advertising on online marketplaces is beneficial.	0.913	0.842	0.906	0.941
	AV3: For me, advertising on online marketplaces is important.	0.919			
Advertising Click (AC)	AC1: I click on online marketplace advertisements to learn more about the advertised product.	0.909			
	AC2: I click on online marketplace advertisements to make a purchase.	0.863	0.782	0.860	0.915
	AC3: I click on online marketplace advertisements to get more information about the advertised product.	0.880			

Source: Processed Data (2026)

Table 4. Fornell-Larcker Criterion

Variables/Constructs	AC	AV	ADQ	FE	P	TRP
Advertising Click (AC)	0.884					
Advertising Value (AV)	0.719	0.917				
Application Design Quality (ADQ)	0.492	0.513	0.853			
Flow Experience (FE)	0.678	0.681	0.518	0.785		
Personalization (P)	0.58	0.652	0.457	0.574	0.805	
Trust in recommendation product (TRP)	0.587	0.563	0.629	0.614	0.504	0.914

Source: Processed Data (2026)

Table 5. Heterotrait-Monotrait (HTMT)

Variables/Constructs	AC	AV	ADQ	FE	P	TRP
Advertising Click (AC)						
Advertising Value (AV)	0.814					
Application Design Quality (ADQ)	0.557	0.566				
Flow Experience (FE)	0.802	0.790	0.603			
Personalization (P)	0.669	0.732	0.522	0.672		
Trust in recommendation product (TRP)	0.666	0.621	0.699	0.720	0.566	

Source: Processed Data (2026)

Based on the results of the instrument feasibility test, all indicators used in the questionnaire met the validity and reliability tests so that they are reliable and accurate for use in this study. After the instrument feasibility test was completed, the researchers then tested the structural model and hypotheses using path analysis.

Inner Model Test

The inner model assessment in this study comprises tests for collinearity, the coefficient of determination, and predictive relevance. The collinearity test is based on the VIF value which must be below 10 so that it can be declared free from collinearity (Hair et al., 2014) as in Table 6.

Table 6. Collinearity Statistics (VIF)

Item	VIF
AC1	2.712
AC2	1.937
AC3	2.283
ADQ1	1.777
ADQ2	2.430
ADQ3	2.739
ADQ4	2.454
AV1	3.004
AV2	2.834
AV3	2.987
FE1	1.605
FE2	1.553
FE3	1.789
FE4	2.087
P1	2.337
P2	2.111
P3	2.501
P4	1.450
P5	1.772
TRP1	2.656
TRP2	3.215
TRP3	2.826

Source: Processed Data (2026)

Next, the coefficient of determination to see the contribution of influence received by the dependent variable. If the adjusted R-squared value is 0.75, it has a strong level of accuracy, if the adjusted R-squared value is 0.50, it has a moderate level of accuracy, and if the adjusted R-squared value is 0.25, it has a low level

of accuracy (Hair et al., 2014). A higher adjusted R-squared value indicates a good model (Sholihin & Ratmono, 2013). The coefficient of determination test is based on the adjusted R-squared value to indicate the degree of influence exerted on the dependent variable, as presented in Table 7.

Table 7. Coefficient Determination

Dependent Constructs	R Square	R Square Adjusted
Advertising Click	0.517	0.515
Advertising Value	0.584	0.579

Source: Processed Data (2026)

The predictive relevance test is based on the Q squared value to state how well the model has predictive relevance to the dependent construct. Good predictive re-

levance has a Q squared value greater than 0, as Table 8 states that predictive relevance in this study is categorized as good.

Table 8. Predictive Relevance

Dependent Variables	Q Square
Advertising Click	0.400
Advertising Value	0.485

Source: Processed Data (2026)

Based on various structural model tests, the model in this study has met the required criteria, enabling it to proceed to hypothesis testing.

Hypothesis Test Results

Hypothesis testing is conducted based on the path coefficient, t-value, and p-value. The hypothesis is considered supported or accepted if the path coefficient

approaches +1 (Hair et al., 2014), t-value >1.645, and p-value <0.05. Based on the results of the path analysis, there are 4 supported hypotheses, namely hypotheses 1, 3, 4 and 5, while 1 hypothesis is not supported, namely hypothesis 2. The results of the hypothesis testing in SMART PLS are presented in Figure 3 and summarized in Table 9.

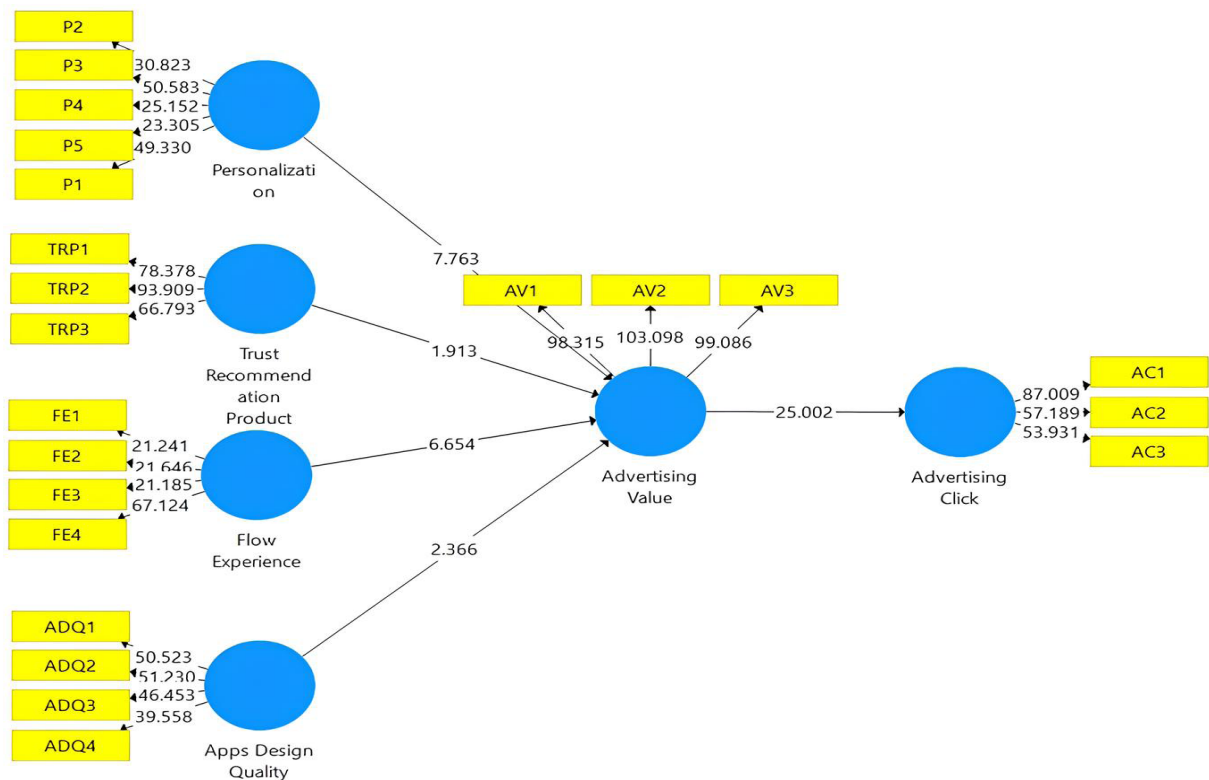


Figure 3. Path Analysis Results

Source: Processed Data (2026)

Table 9. Summary of Hypothesis Result Test

Hypothesis	Path	Path Co-efficient	Direction	T values	P values	Decision
H1	Personalization → Advertising Value	0.342	Positive	7.763	0.000	Supported
H2	Trust in Recommendation Product → Advertising Value	0.097	Positive	1.913	0.057	Unsupported
H3	Flow Experience → Advertising Value	0.372	Positive	6.654	0.000	Supported
H4	Application Design Quality → Advertising Value	0.103	Positive	2.366	0.019	Supported
H5	Advertising Value → Advertising Click	0.719	Positive	25.002	0.000	Supported

Source: Processed Data (2026)

Discussion

Based on the results of hypothesis testing in this study, advertising personalization has a significant positive effect on advertising value. This finding supports research conducted by Lee et al. (2017) and Aydin (2018), which states that advertising personalization has a positive influence on advertising value. This proves that customized advertising information tailored to customer preferences and needs is well received by customers because it is considered valuable advertising information. From the HSM perspective, the positive influence of personalization on advertising value indicates that consumers engage in systematic information processing by evaluating the alignment of the advertisement with their needs and preferences. The more personalized advertising information refers to customer preferences, the more valuable or meaningful the advertising information is perceived as because it has been useful in assisting customer activities in processing advertising information in the online marketplace.

Based on the findings of this study, trust in product recommendations did not significantly influence advertising value. This finding contradicts research con-

ducted by Chen et al. (2019), which found that trust in product recommendations increased impulsive buying, meaning that consumers considered recommendations valuable and thus encouraged purchases. This unique finding is supported by the statement from Karthik & Ganapathy (2021) that user interests change over time, so that recommendation systems are potentially unable to find items that are relevant to customers. Furthermore, trust in product recommendations has no effect on advertising value, indicating that product recommendations in information processing action more as a heuristic cue, rather than being the basis for a systematic evaluation of the value of information in advertising. In HSM, heuristic cues help consumers form judgments with relatively low cognitive effort, whereas advertising value may demand a more systematic evaluation or require high cognitive effort for valuable advertisement.

According to the findings of the hypothesis testing, flow experience has a positive effect on advertising value. This finding aligns with research by Barta et al. (2021) and Xu et al. (2021), which found that flow experience brings a series of positive consequences. Flow experience

indicates a positive response from customers while browsing online marketplaces. From the perspective of HSM, the flow experience guides customers through the information-seeking process with greater ease, thereby reducing the cognitive effort required of them. However, this condition does not mean that consumers ignore the value of information or weaken their cognitive efforts because flow can arise when the available information is perceived as relevant and valuable. Therefore, consumers are encouraged to continue engaging in search activities so that customers' cognitive efforts increase. The more customers feel comfortable and enjoy the flow while surfing the online marketplace, the more customers will feel that the information presented in the online marketplace is valuable.

The findings derived from the hypothesis testing state that the quality of application design has a positive effect on advertising value. This finding supports previous research conducted by Amin et al. (2021) and Qalati et al. (2021). When a quality application facilitates customer browsing in the online marketplace, it creates the perception that all information they receive is valuable. Good application quality can increase platform credibility, thereby strengthening the effectiveness of marketing communications, including advertising delivery. This occurs because easy application operation can increase user appeal and trust in the advertising information displayed. From the HSM perspective, the positive influence of application design quality on advertising value shows that an attractive and convenient app design can be a heuristic cue for consumers. This is because the ease of navigation resulting from the design helps consumers form judgments about the advertisement without requiring deep cognitive processing.

The findings of this research provide evidence that advertising value has a positive effect on advertising clicks. This

finding is in line with previous research by Zhang & Mao (2016), Sharma et al. (2022), and Chen et al. (2023). Advertising information that is considered meaningful and useful for customers has proven to motivate customers to explore it further, even to the point of making purchasing decisions. The more useful the advertising information is for customers, the higher the customer's motivation to click on the advertisement to explore the information in more depth.

CONCLUSION AND RECOMMENDATION

This study aims to examine the interactions between constructs using path coefficient analysis. Based on the data analysis and discussion, it is concluded that both heuristic and systematic cues play a role in the information processing associated with the constructs investigated in this study. Personalization is closely linked to systematic cues, as it requires significant cognitive effort from customers during information processing. Conversely, trust in product recommendations, application design quality, and flow experience are associated with heuristic cues in the customer's information processing. Personalization reflects the alignment of customized information with customer preferences, which can shape the perception of an advertisement as valuable. However, an interesting finding emerged that recommendation systems in online marketplaces do not influence the perceived value of the advertisements. This may be because the recommendation systems implemented by online marketplace applications do not always accurately interpret customer interests. Additionally, flow experience reflects a state where customers enjoy the advertisement, perceiving it as valuable. The application design quality also plays an important role, such as the ease of navigation in the online market application, which also determines how

valuable the advertisement is to customers. Valuable advertisements are proven effective at encouraging customers to click through to explore more information and make purchasing decisions in the online marketplace.

This research theoretically examines the antecedents that influence customers' information adoption in the e-marketplace context. In addition, this study expands the application of HSM as a theoretical foundation for explaining the characteristics of information customers receive when evaluating it to determine customer attitudes toward marketing information, especially advertisements. This study expands the application of HSM by integrating personalization variables as information that increases the relevance of marketing messages to customer conditions, so that information relevance is an important factor in the digital information adoption process. The antecedents of the information adoption process are not only focused on information quality, but this study also proves that the quality of application design provides comfort and ease for users to process and evaluate information in the form of advertisements. This study also shows that the acceptance of information in the form of advertisements on e-marketplaces is not only determined by the customer's cognitive state in evaluating information, but also by affective factors when customers interact with digital platforms, which in this study is represented by the variable flow experience. Therefore, this study contributes comprehensively to the development of consumer behavior literature, especially in the context of e-marketplaces, in explaining the formation of value in advertisements and determining customer behavior in clicking on advertisements through an HSM perspective.

This research provides practical implications for business actors, especially in the field of digital marketing and advertisers referring to existing research results to increase the effectiveness of applicati-

on-based advertising by increasing customer value perceptions. First, personalized advertisements are considered valuable to customers, enabling application managers to optimize customer behavior data, search history, and application usage activity to present advertisements that align with customer preferences and circumstances, thereby allowing customers to perceive advertisements as useful rather than disruptive. Second, trust in product recommendations is insufficient to enhance positive customer perceptions of advertisements, necessitating the inclusion of other factors to ensure they are truly beneficial. Third, users who engage with applications and enjoy interacting with them are more receptive to the advertisements they see, and business actors need to optimize the user experience by providing interactive features that support persuasive advertising messages. Fourth, application design requires careful attention to detail by businesses to maintain consistent appearance and ease of navigation, minimizing disruption and discomfort when interacting with the application. Fifth, business actors should consider the meaning and benefits of advertisements displayed in e-marketplace to persuade customers to explore further. Overall, the results of this study indicate that advertising strategies need to focus on increasing value as a key factor integrated with information relevant to customer preferences and optimizing the quality of application design that can create an interesting interaction experience when customers process information, especially digital advertising on e-marketplaces.

This study certainly has limitations in testing and discussion, including the lack of mediation or moderation, which is expected to be a novelty in future research. The scope of this study only examines customer behavior phenomena in the context of online marketplaces in Indonesia, making it possible to conduct comparative research comparing customer behavior in

two or more countries. This research only focuses on the systematic information processing mode by considering the personalization of advertising messages, recommendations, and flow experiences as factors that influence customer cognition. Future research still strongly suggests examining heuristic information processing modes, with factors that tend to require less customer effort in considering information.

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