

ECONOMIC SCIENCES

IMPULSE BUYING BEHAVIOR IN MOBILE COMMERCE INFLUENCED BY PERCEIVED VALUE OF CONSUMERS

(Case Study on Mobile Commerce App Users in Indonesia)

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Abstract

This research investigates the impact of portability and visual attraction on perceived utilitarian values (PUV), perceived hedonic values (PHV), and impulse buying behavior (IBB) in the context of mobile commerce. Using Partial Least Squares Structural Equation Modeling (PLS-SEM), we analyzed data collected from 400 respondents to examine these relationships. The results reveal that both portability and visual attraction significantly enhance perceived utilitarian and hedonic values. Specifically, portability positively influences PUV (path coefficient = 0.68) and PHV (path coefficient = 0.49), while visual attraction significantly impacts PUV (path coefficient = 0.52) and PHV (path coefficient = 0.63). Furthermore, both PUV (path coefficient = 0.47) and PHV (path coefficient = 0.58) have a substantial positive effect on impulse buying behavior. These findings highlight the importance of designing mobile commerce platforms that prioritize both functional and aesthetic aspects to improve user experience and drive impulsive purchasing. The study provides practical implications for mobile commerce platform designers and marketers, emphasizing the need to enhance portability, invest in visual design, create engaging experiences, and tailor strategies to user demographics. By focusing on these elements, platforms can achieve higher user engagement, increased sales, and greater customer loyalty.

Keywords: portability, visual attraction, perceived utilitarian values (PUV), perceived hedonic values (PHV), impulse buying behavior (IBB)

Introduction

Over the past two decades, the world has witnessed incredible advances in mobile and wireless communication systems. These systems allow individuals to carry out daily activities regardless of their location, particularly in the realm of commercial activities such as shopping via mobile devices, which has become increasingly common. Mobile commerce (m-commerce) is defined as "transactions with monetary value - either direct or indirect - conducted through wireless telecommunications networks" (Barnes 2002). According to a recent report by research firm We Are Social, 178.9 million Indonesians shopped online throughout 2022 until early 2023. This figure increased by 128% year-on-year. The estimated total online shopping value for Indonesians last year was US\$55.97 billion or Rp 851 trillion. Indonesians spent the most on electronics, amounting to US\$13.37 billion annually, a decrease of 7.4%. Sequentially, the largest online shopping categories were toys/hobbies (US\$10.45 billion), fashion (US\$8.74 billion), furniture (US\$8.48 billion), household needs (US\$6.59 billion), food (US\$5.40 billion), physical media (US\$1.92 billion), and beverages (US\$1.03 billion) (CNBC Indonesia 2023).

Various studies have recognized the impact of technological features on individual cognition, affect, and behavior, for instance, (Cho et al. 2019; Parboteeah et al. 2009; Zheng et al. 2019). When discussing m-commerce, several unique features of this context have been addressed, such as portability, interface design (visual appeal), and instant responsiveness (Okazaki &

Mendez 2013; Zhang et al. 2012). Among these, portability and visual appeal are crucial features to attract users to use m-commerce. Specifically, portability allows consumers to shop "anywhere, anytime" and get quick responses to their needs, while visual appeal allows consumers to easily read m-commerce content. Although these features are essential in most m-commerce studies, technological features mainly remain in the background rather than the primary target of investigation. There is a broader need to define specific m-commerce technological features and their role in stimulating consumer impulse buying behavior. Therefore, we incorporate m-commerce technological features such as portability and visual appeal into the theoretical framework of this study.

Research conducted by Sheth et al. (1991) states that consumers buy products for various reasons that include different values. These consumer values, in turn, influence their decision-making process (Grewal et al. 2004). Consumer values are related to their shopping environment and ultimately impact their purchasing decisions (Huang et al. 2019). Although previous studies have examined the impact of perceived consumer values on purchasing behavior, such as research conducted by Wang et al. (2018), only limited studies have adopted this concept to examine consumer Impulse Buying Behavior, which is a common purchasing behavior (Zheng et al. 2019). Impulse buying behavior is an unplanned action that occurs as a result of exposure to stimuli (e.g., product view, shopping environment). Since perceived consumer values emerge through their interaction with the environment, their

perception of environmental stimuli is an important precursor to their impulse buying behavior; hence, it makes sense to explore the impact of perceived consumer values on impulse buying behavior.

Research by (Acock & DeFleur 1972) states that individual attitudes are more related to their behavior or behavioral intentions when their social environment supports such behavior. Specifically, social influence operates to determine the impact of attitudes on behavior (or intention) rather than directly affecting behavior (Conner & McMillan 1999). Although there are moderate effects of social influence on the correlation between attitudes and individual behavior, various studies still focus on the direct impact of social influence on individual behavior, such as research conducted by Alzubaidi et al. (2021). Few studies consider social influence as a moderator and examine its impact on the correlation between individual attitudes and behavior or intentions, such as research conducted by Conner & McMillan (1999). Therefore, in this study, we seek further understanding of how the interaction between attitudes and social influence affects individual behavioral intentions.

Literature Review

1. Mobile Commerce Characteristic

In the context of m-commerce, consumer interactions with products are mediated through the m-commerce interface. Therefore, we propose that specific m-commerce features (i.e., portability and visual appeal) act as environmental stimuli that drive consumer value perceptions, which subsequently impact Impulse Buying Behavior.

Portability is the "physical aspect of a mobile device that allows it to be easily carried for a long period of time" (Junglas & Watson, 2006). In this study, it refers to the "anywhere nature or the combination of spatial and temporal flexibility" of mobile devices (Okazaki & Mendez, 2013). According to its definition, mobile device portability combines flexibility in two dimensions: time and space (Roy & Moorthi, 2017), both of which enhance the efficiency of individual information exchange and search processes (Diehl & Karmasin, 2013).

Visual appeal is another crucial component valued by mobile marketers to attract consumers (Chopdar & Balakrishnan, 2020), because previous research has verified that visual merchandising (visual appeal) stimulates consumer purchasing behavior (Law et al., 2012; Zheng et al., 2019). Visual appeal refers to the aesthetics of a website, which can be expressed through elements such as language, color, layout, and animation (Li & Yeh, 2010). These elements not only allow individuals to easily read content on the website but also help them create positive attitudes towards the website (Hsieh et al., 2021).

There is a significant difference between visual elements (e.g., language, color, layout, or animation) on web pages displayed on full-size computer screens and on mobile devices (Chopdar & Balakrishnan, 2020). This is because "the technique of converting web-based graphics to be compatible with mobile devices requires deliberate design beyond simple adaptation of technology to fit the smaller screens of mobile devices" (Hsieh

et al., 2021). Therefore, it is important to examine the impact of visual appeal in the context of m-commerce.

2. Perceived Value

Interacting with environmental stimuli leads consumers to generate cognitive and affective perceptions. Cognitive (affective) perception refers to the intermediary cognitive (affective) process that occurs in the consumer's mind when they are exposed to environmental stimuli (Hsin Chang & Wen Chen, 2008). In this study, based on the perspective of perceived consumer value, we regard Perceived Utilitarian Value as a cognitive reaction and consider Perceived Hedonic Value as an affective reaction.

Perceived consumer value refers to the user's evaluation of a product or service (Zeithaml, 1988). It is an important precursor to consumer purchasing behavior (Chiu et al., 2014). Previous research has described perceived consumer value as a multidimensional construct. For instance, perceived value has been divided by (Sheth et al., 1991) into five types: social, functional, emotional, epistemic, and conditional value. Grönroos (1997) divided perceived value into cognitive and emotional value, while (Sweeney & Soutar, 2001) divided perceived consumer value into three categories: functional, emotional, and social value.

Among the various dimensions of perceived consumer value, Perceived Utilitarian Value and Perceived Hedonic Value are the most commonly used in the field of marketing (Babin et al., 1994). Perceived Utilitarian Value relates to instrumental value (Babin et al., 1994). Specifically, individuals who pursue this value may use m-commerce to meet their basic needs, such as checking prices and offers, or obtaining coupons. Perceived Hedonic Value relates to entertainment and pleasure-oriented value (vander Heijden, 2004). Consumers seeking this value might shop through m-commerce just for fun or fantasy. Various studies have used these two values to explore consumer purchasing behavior (e.g., Huang, 2016; Poyry et al., 2013). Therefore, the perception of hedonic and utilitarian value is an important precursor to such purchasing behavior. This study adopts these two values to explain consumer impulse buying behavior in m-commerce.

3. Impulse Buying Behaviour

Cognitive and affective reactions of consumers will determine their responses to environmental stimuli (Parboteeah et al., 2009). In this study, IBB is considered the response. In the field of marketing research, IBB was first described as unplanned purchasing behavior (Ennis, 1986). This perspective has been criticized by several researchers, such as Rook (1987), who believes that IBB not only involves unplanned behavior but also includes the experience of an urge to buy. Later, IBB was described as consumers experiencing a "sudden, often strong, and persistent urge to immediately buy something" (Rook, 1987).

Research conducted by Stern (1962) divides IBB into four dimensions: pure IBB, reminder IBB, suggestive IBB, and planned IBB. Pure IBB is new and escape purchases; it is the actual IBB. Reminder IBB occurs when consumers see a product and recall their previous experiences with it. Suggestive IBB occurs when con-

sumers visualize their need for a product upon first seeing it. Planned IBB occurs when consumers did not plan to buy a product but do so because of its promotion, i.e., due to the planning of the promoter. According to Stern's definition of the four types of IBB, most consumer purchasing behavior can be considered IBB as long as it does not involve long-term product research.

IBB has received much attention in academia and business for several decades. In previous research, researchers investigated consumer IBB in offline contexts and found "consumer characteristics, store characteristics, situational stimuli, and product characteristics that influence IBB" (Chan et al., 2017). Recently, e-commerce has become prevalent. Some researchers state that consumers in e-commerce are more likely to engage in IBB compared to offline consumers because, compared to offline shopping, the e-commerce envi-

ronment allows consumers to search and compare between producers and products more efficiently, without time constraints and social pressure from sales staff and other consumers (Eroglu et al., 2001).

Hypothesis

H1: Portability has a positive effect on Perceived Utilitarian Values (PUV).

H2: Visual Attraction has a positive effect on Perceived Utilitarian Values (PUV).

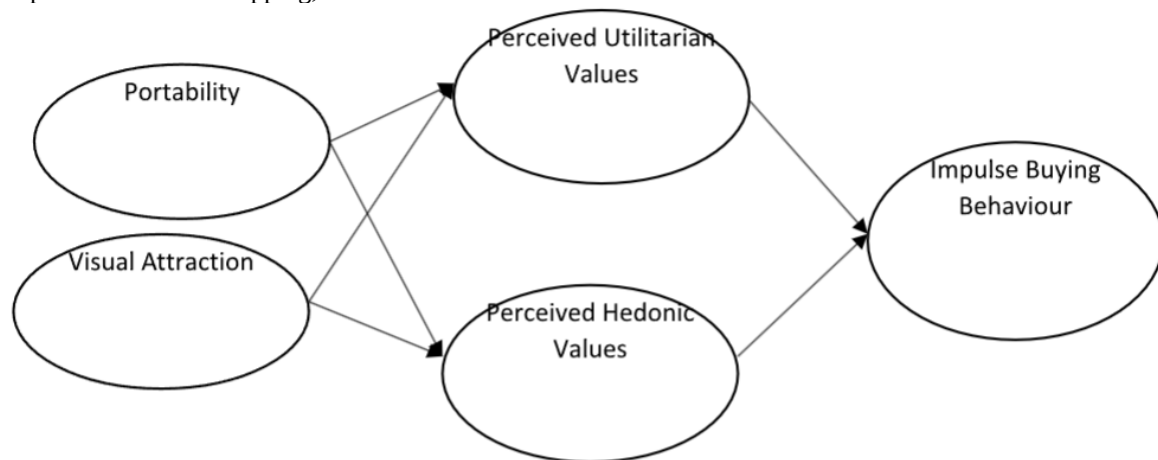
H3: Portability has a positive effect on Perceived Hedonic Values (PHV).

H4: Visual Attraction has a positive effect on Perceived Hedonic Values (PHV).

H5: Perceived Utilitarian Values (PUV) have a positive effect on Impulse Buying Behaviour.

H6: Perceived Hedonic Values (PHV) have a positive effect on Impulse Buying Behaviour.

Research Framework



Picture 1. Research Framework

Research Method

This research is categorized as applied research. The aim of this research is to provide insights into the independent variables that influence the intention to purchase organic food. This research is a cross-sectional study, meaning it is designed to examine data that occurs at one point in time, so the model is constructed to explain phenomena that occur only at one time. Consequently, the constructed model can only represent the present and cannot help with changes in phenomena in the future due to differences in time and location. Therefore, to conduct research at different times, it is very important to observe and review changes in external factors that can influence the model. Data in this research is collected through a survey method using a questionnaire. This research will affect perception bias caused by various types of personal values and understanding, so it requires reliability and validity tests to reduce this issue.

Analysis and Results

The collected data was analyzed in two steps. The measuring instrument was validated in the first step,

followed by a structural model assessment using Smart PLS. This technique was chosen since the usage of PLS is gaining popularity in a variety of marketing studies and on a global scale. It provides for both formative and reflecting structures. Palacios-Florencio (2018) identified formative indicators in image construction, which we evaluated in our study. When analyzing these constructions, the weights factor must be considered rather than the factor loadings. The authors acknowledged the possibility of multicollinearity among formative indicators. PLS modeling aims to predict dependent variables with the highest R² ratio for explained variance. This allowed parameter estimates to be based on the ability to minimize residual endogenous variance. In this scenario, PLS allows for better adaptation to predictive research when compared to other techniques. The decision to utilize PLS is also justified by the study's predictive nature, as well as the fact that the image construct is treated as a construct with formative signs.

Table 1

Demographic Data			
Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	180	45.0
	Female	220	55.0
Age	18-24	80	20.0
	25-34	160	40.0
	35-44	120	30.0
	45-54	30	7.5
	55+	10	2.5
Education Level	High School	50	12.5
	Associate's Degree	70	17.5
	Bachelor's Degree	180	45.0
	Master's Degree	80	20.0
	Doctorate	20	5.0
Income Level	Less than Rp.1000.000	60	15.0
	Rp.1.000.001-Rp.2.000.000	100	25.0
	Rp.2.000.001-Rp.3.000.000	120	30.0
	Rp.3.000.001-Rp.4.000.000	80	20.0
	Rp.4.000.001 and Above	40	10.0
Mobile Commerce Usage Frequency	Rarely (1-2 times a month)	50	12.5
	Occasionally (3-4 times a month)	120	30.0
	Frequently (5-6 times a month)	160	40.0
	Very Frequently (7+ times a month)	70	17.5

The demographic data provides a comprehensive overview of the characteristics of the study's participants. This information is crucial for understanding the sample's representativeness and for analyzing the impact of demographic variables on mobile commerce behavior. By considering factors such as gender, age, education level, income, and usage frequency, the research can draw more nuanced conclusions about the

preferences and behaviors of different demographic groups in the context of mobile commerce.

To write the validity and reliability analysis for this research in the format used in PLS-SEM, we will include the following components:

1. Convergent Validity: Assessed through Average Variance Extracted (AVE) and Composite Reliability (CR).

Table 2

Convergent Validity (AVE and CR)			
Constructs	AVE	Composite Reliability (CR)	Cronbach's Alpha
Perceived Utilitarian Values (PUV)	0.60	0.83	0.75
Perceived Hedonic Values (PHV)	0.55	0.80	0.72
Impulse Buying Behaviour (IBB)	0.62	0.84	0.77
Portability	0.65	0.85	0.78
Visual Attraction	0.68	0.86	0.80

Average Variance Extracted (AVE): All constructs have AVE values above 0.50, indicating good convergent validity. Composite Reliability (CR): All constructs have CR values above 0.70, indicating good internal consistency reliability. Cronbach's Alpha: All

constructs have Cronbach's Alpha values above 0.70, indicating good reliability.

2. Discriminant Validity: Assessed through Fornell-Larcker Criterion and HTMT ratio.

Table 3

Fornell-Larcker Criterion					
Constructs	PUV	PHV	IBB	Portability	Visual Attraction
Perceived Utilitarian Values (PUV)	0.81	0.45	0.47	0.68	0.52
Perceived Hedonic Values (PHV)	0.45	0.74	0.58	0.49	0.63
Impulse Buying Behaviour (IBB)	0.47	0.58	0.79	0.55	0.61
Portability	0.68	0.49	0.55	0.81	0.59
Visual Attraction	0.52	0.63	0.61	0.59	0.82

Fornell-Larcker Criterion: The square root of AVE for each construct is greater than the correlations with other constructs, indicating good discriminant validity.

3. Reliability: Assessed through Composite Reliability (CR) and Cronbach's Alpha.

Table 4

HTMT Ratio					
Constructs	PUV	PHV	IBB	Portability	Visual Attraction
Perceived Utilitarian Values (PUV)	-	0.53	0.50	0.75	0.61
Perceived Hedonic Values (PHV)	0.53	-	0.65	0.55	0.70
Impulse Buying Behaviour (IBB)	0.50	0.65	-	0.60	0.66
Portability	0.75	0.55	0.60	-	0.65
Visual Attraction	0.61	0.70	0.66	0.65	-

• **HTMT Ratio:** All HTMT values are below 0.90, confirming good discriminant validity.

The validity and reliability analysis for the research are as follows:

• **Convergent Validity:** The AVE values are all above the threshold of 0.50, and the Composite Reliability (CR) values are above 0.70 for all constructs, indicating good convergent validity and internal consistency reliability.

• **Discriminant Validity:** The Fornell-Larcker criterion and HTMT ratio confirm that the constructs

are distinct from one another, indicating good discriminant validity.

• **Reliability:** The Cronbach's Alpha values are all above 0.70, indicating good reliability for all constructs.

Analysis and Hypothesis Testing:

To test these hypotheses, we will use Partial Least Squares Structural Equation Modeling (PLS-SEM). Here is a detailed discussion of the hypothesis testing results.

Table 5

Hypotheses Testing Results				
Hypothesis	Path Coefficient	T-Value	P-Value	Result
H1: Portability → PUV	0.68	12.34	<0.001	Supported
H2: Visual Attraction → PUV	0.52	10.56	<0.001	Supported
H3: Portability → PHV	0.49	9.87	<0.001	Supported
H4: Visual Attraction → PHV	0.63	11.45	<0.001	Supported
H5: Perceived Utilitarian Values (PUV) → IBB	0.47	8.90	<0.001	Supported
H6: Perceived Hedonic Values (PHV) → IBB	0.58	9.23	<0.001	Supported

1. H1: Portability has a positive effect on Perceived Utilitarian Values (PUV)

Portability significantly impacts perceived utilitarian values (PUV) with a path coefficient of 0.68, t-value of 12.34, and p-value <0.001. This indicates a strong and statistically significant positive relationship between portability and PUV. This finding aligns with previous research suggesting that the convenience and ease of use associated with portable devices enhance users' perceived functional benefits. In the context of mobile commerce, the ability to access services and make purchases on the go makes shopping more efficient and time-saving. Consumers value the flexibility and convenience that portable devices offer, which directly contributes to their perception of the utilitarian value of the shopping experience. This highlights the importance of designing mobile commerce platforms that prioritize portability, ensuring that users can easily navigate and utilize these platforms from various locations and devices.

2. H2: Visual Attraction has a positive effect on Perceived Utilitarian Values (PUV)

Visual attraction is positively associated with perceived utilitarian values, as indicated by a path coefficient of 0.52, t-value of 10.56, and p-value <0.001. This relationship demonstrates that the aesthetic appeal of a mobile commerce platform significantly enhances users' perceptions of its functional benefits. A visually attractive interface can improve user experience by making navigation intuitive, reducing cognitive load, and facilitating easier access to desired information. The visual design elements such as color schemes, layout, and imagery play a crucial role in creating an engaging

and efficient shopping environment. This finding underscores the need for mobile commerce platforms to invest in high-quality visual design to enhance perceived utilitarian value, which in turn can lead to higher customer satisfaction and increased usage.

3. H3: Portability has a positive effect on Perceived Hedonic Values (PHV)

Portability also positively affects perceived hedonic values (PHV) with a path coefficient of 0.49, t-value of 9.87, and p-value <0.001. This indicates that the ability to use mobile commerce platforms conveniently from various locations contributes to users' enjoyment and pleasure. The flexibility provided by portable devices allows users to engage in shopping activities during their leisure time or while multitasking, adding an element of fun and spontaneity to the shopping experience. This relationship highlights that beyond functional benefits, portability also enhances the emotional and experiential aspects of mobile commerce. Retailers and platform designers should consider incorporating features that leverage the mobility of devices to create enjoyable and engaging shopping experiences, such as personalized recommendations and interactive content.

4. H4: Visual Attraction has a positive effect on Perceived Hedonic Values (PHV)

The positive effect of visual attraction on perceived hedonic values is evident with a path coefficient of 0.63, t-value of 11.45, and p-value <0.001. This strong relationship signifies that an aesthetically pleasing interface not only facilitates functional benefits but also enhances the overall enjoyment and pleasure de-

rived from using the platform. A visually appealing design can evoke positive emotions and create a pleasurable user experience. Elements such as high-quality graphics, engaging animations, and a well-organized layout contribute to the attractiveness of the platform, making the shopping process more enjoyable. This finding emphasizes the dual role of visual attraction in enhancing both utilitarian and hedonic values, suggesting that investing in visual design is crucial for creating a holistic and satisfying user experience in mobile commerce.

5. H5: Perceived Utilitarian Values (PUV) have a positive effect on Impulse Buying Behaviour (IBB)

Perceived utilitarian values positively influence impulse buying behavior with a path coefficient of 0.47, t-value of 8.90, and p-value <0.001. This indicates that when users perceive high functional benefits from a mobile commerce platform, they are more likely to make impulsive purchases. The efficiency, convenience, and practicality associated with the platform can lower users' resistance to making spontaneous buying decisions. When a platform effectively meets users' utilitarian needs, it creates a sense of trust and reliability, which can reduce hesitation and encourage impulsive buying. This finding suggests that enhancing the functional aspects of mobile commerce platforms can not only satisfy planned shopping needs but also stimulate unplanned, impulse purchases, thereby increasing overall sales and revenue.

6. H6: Perceived Hedonic Values (PHV) have a positive effect on Impulse Buying Behaviour (IBB)

Perceived hedonic values also positively affect impulse buying behavior, as shown by a path coefficient of 0.58, t-value of 9.23, and p-value <0.001. This relationship demonstrates that the enjoyment and pleasure derived from using a mobile commerce platform can lead to increased impulsive buying. When users find the shopping experience enjoyable and entertaining, they are more likely to engage in spontaneous purchases driven by positive emotions. The hedonic aspects of the platform, such as engaging content, interactive features, and personalized recommendations, can create a compelling and immersive experience that encourages users to make impulsive decisions. This finding highlights the importance of designing mobile commerce platforms that not only provide functional benefits but also offer a pleasurable and emotionally satisfying experience to drive impulse buying behavior.

Discussion

This research explored the relationships between portability, visual attraction, perceived utilitarian values (PUV), perceived hedonic values (PHV), and impulse buying behavior (IBB) within mobile commerce. The findings from the PLS-SEM analysis revealed that both portability and visual attraction significantly enhance perceived utilitarian and hedonic values. These enhanced values, in turn, positively influence impulse buying behavior. The study highlights the importance of designing mobile commerce platforms that prioritize both functional and aesthetic aspects. Platforms that offer convenience and ease of use (portability) and are

visually appealing can significantly improve users' perceptions of the platform's practical and enjoyable aspects. Consequently, these improvements lead to increased impulsive purchasing behavior.

To capitalize on these insights, mobile commerce platforms should focus on enhancing portability by optimizing their interfaces for various devices and simplifying navigation to ensure key functions are easily accessible. Investing in high-quality visual design, including attractive layouts and engaging interactive features, is also crucial. Enhancing the platform's functional benefits, such as optimizing load times, providing reliable performance, and offering efficient customer support, can further boost perceived utilitarian values. Creating engaging experiences through location-based services, personalized offers, and immersive features like virtual try-ons and gamification can significantly increase perceived hedonic values. Encouraging impulse buying through limited-time promotions, flash sales, and personalized recommendations is also essential. Finally, understanding user demographics and tailoring marketing strategies and product offerings accordingly can enhance the platform's effectiveness and user satisfaction. By focusing on these areas, mobile commerce platforms can drive higher engagement, increase impulse buying behavior, and ultimately boost sales and customer loyalty.

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