

Scarcity and Live Commerce Effects on Impulse Buying: Competitive Arousal in Kupang E-Commerce

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ABSTRAK

The objective of this study is to investigate the impact of scarcity messages, live commerce, and competitive arousal on impulse buying behavior. Unlike previous research that focused on consumer attitudes in traditional retail environments, this study explores the role of e-commerce applications in shaping consumer spending patterns under conditions of limited product availability and time constraints. Furthermore, it examines consumer interactions with sellers during live commerce sessions. This research employs a quantitative methodology, specifically utilizing hypothesis testing. The target population comprises residents of Kupang City who have engaged in purchases through e-commerce applications that feature live commerce sessions with restrictions on product availability and time (commonly referred to as flash sales). The sample size for this study consists of 450 respondents, selected through purposive sampling techniques. Data collection methods include both primary and secondary sources. Primary data is gathered through the distribution of questionnaires via Google Forms, while secondary data is obtained through literature reviews of relevant books and research studies. Additionally, observational data is collected from e-commerce platforms that conduct sales events. The data analysis is conducted using quantitative techniques, specifically employing the SEM-PLS analysis tool. The findings indicate that both scarcity messages and live commerce significantly influence impulse buying through competitive arousal; however, the effect of each variable is relatively modest. These results offer valuable insights for e-commerce messages and live streaming sessions on consumer impulsive behavior, businesses can

develop more effective marketing strategies, such as leveraging flash sales or highlighting limitations in product availability and time.

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1. INTRODUCTION

Promotional strategies are crucial in capturing consumer interest and influencing purchasing decisions. One particularly effective approach for instilling a sense of urgency and fostering competition among consumers is the implementation of scarcity messages (Aggarwal et al., 2011). Scarcity, a fundamental principle in economics, posits that a decrease in the availability of a product enhances its perceived value among consumers (Lee et al., 2015). In this context, scarcity messages can elicit impulsive purchasing behavior, particularly when consumers perceive a need to compete for the product. This phenomenon is increasingly pertinent in the realm of e-commerce, especially within live streaming commerce, where direct interactions between sellers and consumers cultivate a highly competitive environment. This study aims to elucidate the effects of scarcity messages, live streaming, and competitive passion on consumer impulsive buying behavior, with a specific focus on developing regions such as Kupang City, where the adoption of e-commerce platforms is on the rise.

One of the factors that influences impulsive buying behavior is the scarcity message. This is due to the fact that scarcity messages can foster competition among customers in acquiring the product. (Goetha, 2020). Scarcity is a fundamental concept in economics that stems from the simple fact that products are considered more attractive and valuable when their availability is limited or reduced (Sun et al., 2022). Scarcity messages with time and quantity limits will lead to more urgent motivation for consumers to spontaneously compete to buy products (Gupta & Gentry, 2019). Competition plays an important role in the persuasion process of scarcity messages because consumers tend to be irrational under competition, rely on heuristics, and ultimately form an impulsive attitude when purchasing products (Song et al., 2021). Scarcity messages are a strategy that is very often used in the marketing world. Scarcity messages are based on the principle that when a product is in short supply, people respond by placing a higher psychological value on the product that is considered scarce; this makes them engage in a sense of urgency to purchase the product (Ha, 2021). There are two types of scarcity messages that are often used, namely limited time scarcity and limited quantity scarcity. In LTS, the product offer is valid until a specified

time limit, after which it is no longer available, whereas in LQS, the product offer is limited in quantity (Lee et al., 2015). Based on the marketing stimuli provided during limited sales programs, messages of scarcity and discount prices can trigger excitement in potential consumers; this urges them to buy impulsively and even makes them willing to compete with consumers to get the desired product (Goetha, 2020). Products with limited quantities, according to this concept, are usually more expensive. This assumption makes rare products appear more valuable than they actually are, so people are willing to buy them (Ocak, 2022). Products employing a scarcity messaging strategy are increasingly being made available through a variety of platforms, including websites, applications, and social media.

The rapid expansion of social media platforms facilitates the expression of individual opinions regarding product scarcity and enables the dissemination of strategies for acquiring such products. (Ha, 2021). The social media site that is familiar to consumers is live streaming. Live streaming commerce is a part of e-commerce that is embedded with real-time social interactions (including real-time video and text-based chat) (Wongkitrungrueng et al., 2020). In live streaming, the seller's expressions and interactions with a product can be transmitted to customers in real time, even though they are separated from each other. Live streaming can solve the problem of perceived distance between sellers and consumers by sending live promotional activities to users (Hunter, 2019). Marketing via social media, in this case, live commerce, is able to motivate customers to compete with other customers to buy immediately. Live streaming shows the value of goods to consumers clearly and interacts with customers. Interaction occurs not only between streamers and subscribers but also between subscribers. Research has shown that live commerce has an influence on customer purchasing decisions (X. Zhang et al., 2019).

Kupang is a region with emerging market potential, where the adoption of digital technology, including e-commerce platforms, is starting to show an increase. Given that live streaming commerce is a relatively new phenomenon in the region, this research will make a significant contribution to understanding the dynamics of consumer behavior in a market that is not yet saturated and still growing.

Based on data from the Central Statistics Agency, internet usage in Kupang City increased by 0.33% in 2023, reaching 97.88%, and further rose to 98.21% in 2024 (Badan Pusat Statistik, Survei Sosial Ekonomi Nasional, 2024). This increase signifies enhanced accessibility and penetration of the internet within the region, which has the potential to influence various aspects of individuals' lives, including shopping behaviors. The growing number of internet users correlates strongly with the adoption of e-commerce. As more individuals gain internet access, their propensity to engage in online transactions also rises (Hun et al., 2023). This phenomenon can be attributed to the fact that e-commerce relies on internet connectivity, thereby providing e-commerce platforms with greater opportunities to reach a larger consumer base (Fallo & Goetha, 2022).

Kupang, as the capital city of East Nusa Tenggara Province, has experienced significant socio-economic changes in recent years. Infrastructure growth and increased purchasing power have opened up new opportunities for business actors, including in the e-commerce sector. Based on data from the Statistics Center, the average per capita expenditure in a month for residents of Kupang City in 2022 was IDR 1,378,657.00. Of this amount, 58.82 percent or IDR 810,977.00 was spent on non-food items. This shows that the consumption patterns of residents of Kupang City have begun to show a level of development in living standards and are better than the consumption patterns of residents of NTT Province as a whole (Badan Pusat Statistik Kota Kupang, 2023). In this context, research that highlights how Scarcity Messages and live streaming commerce influence impulsive buying behavior can provide important insights into consumer adaptation in developing areas.

To gain insights into consumer behavior regarding shopping on e-commerce platforms, researchers conducted semi-structured interviews with 30 respondents (28 consumers and 2 sellers) in Kupang City, complemented by direct observation of live commerce sessions. The selection of consumers was carried out through purposive sampling, targeting individuals who actively shop via e-commerce applications such as Facebook, Shopee, and Tokopedia, with the criterion that they had participated in at least three live streaming sessions within the past three months. The interviews aimed to explore various dimensions of the consumer shopping experience, including interactions with sellers, responses to scarcity messages, and challenges encountered during live commerce sessions. The interview questions were designed to elicit information regarding consumer experiences, such as whether their inquiries were addressed by the seller, whether the products received matched those advertised, and whether the scarcity message strategy influenced their purchasing decisions. Preliminary findings from interviews with consumers in Kupang City revealed that not all customer inquiries were answered by sellers during live commerce sessions. This was attributed to the high volume of viewers and the transient nature of the text displayed in the live session, which often resulted in sellers being unable to read all messages before they disappeared. Furthermore, instances were reported where the products received did not align with those ordered during the live streaming session. Additionally, the scarcity messages presented were deemed inappropriate, as products were advertised as available for a limited time, yet the following day, sellers reiterated the same scarcity claims for the same products.

Direct observation was conducted during several live commerce sessions to examine the methods employed by sellers in product presentation, the communication of scarcity messages, and real-time interactions

with consumers. Researchers identified various challenges that frequently arise, such as the positioning of products either too close to or too far from the camera, which hinders consumers' ability to discern product details. Furthermore, the researchers observed how sellers address consumer inquiries and the subsequent impact on consumer engagement in the competitive purchasing process. The findings from these observations offer valuable insights into the challenges and effectiveness of marketing strategies employed during live commerce sessions on e-commerce platforms. The primary objective of this study was to investigate the effects of scarcity messages, live commerce, and competitive arousal on impulsive buying behavior. This research builds upon previous studies that explored the indicators of scarcity messages, competitive consumer behavior, and impulsive buying in traditional retail settings. Unlike earlier research that focused on consumer attitudes in physical retail environments, this study provides an analysis of consumer shopping patterns within e-commerce applications, particularly under conditions of limited product availability and time constraints. Additionally, this study examines consumer interactions with sellers during live commerce sessions, thereby facilitating a more direct investigation of the processes involved in scarcity and live commerce promotions. This research is informed by prior studies that have addressed the indicators of scarcity messages, competitive consumers, and impulsive buying in retail contexts.

While numerous studies have underscored the significance of scarcity messages, competitive arousal, and impulsive buying within the contemporary retail sector, there remains a paucity of research examining the impact of these factors in the realm of e-commerce, particularly on live commerce platforms. This is especially pertinent in Indonesia, where the phenomenon of live streaming commerce has experienced rapid growth. However, comprehensive investigations into how scarcity messages and direct interactions between sellers and consumers influence impulsive buying behavior have not been extensively undertaken.

In Kupang City, e-commerce platforms such as Shopee, Lazada, and Tokopedia have begun to witness substantial growth in user engagement. However, there is a paucity of knowledge regarding the reception of Scarcity Messages and live commerce among consumers in this region. Current research predominantly concentrates on physical retail or traditional online shopping, neglecting the impact of direct interaction via live streaming on consumer behavior, including phenomena such as competitive arousal and impulsive purchasing. Furthermore, studies that emphasize local dynamics, particularly in Kupang City—which exhibits distinct consumer characteristics compared to larger urban centers in Indonesia—are infrequently conducted.

Literature Review And Hypotheses Formulation

Scarcity Messages Concept

Scarcity messages are one of the promotions created by retailers by framing promotional messages not based on what consumers can get or gain but on what they can lose when they do not act according to the agreement (Banerjee & Pal, 2020). This perception of scarcity is related to the belief that, at a certain moment in time and in a certain place, certain goods are scarce, and this scarcity has been deliberately created by marketers (Gupta & Gentry, 2019). There are two types of scarcity messages that are often used, namely limited time and limited quantity. In limited-time scarcity messages, the promotional offer is valid for a predetermined period of time, after which it is no longer available. In limited quantity scarcity messages, promotional offers apply to a predetermined number of products (Lee et al., 2015).

Live Commerce Concept

Live commerce is a part of e-commerce that is carried out in real time. In *live commerce*, the interaction between a seller and a product can be transmitted to customers in *real time* even though they are separated from each other. When *e-commerce sellers* use goods in *live streaming sessions*, they will clearly show the value of the goods to consumers and interact with customers (Goetha & Manafe, 2022). This makes customers feel like they are communicating with the seller directly. Customers can respond via written communication, which allows sellers to communicate with many customers at the same time (Wongkitrungrueng et al., 2020). (Shang et al., 2023) state *Live Commerce* has a mode of human interaction with social media that essentially creates a virtual shopping environment to make consumers feel truly present.

Competitive Arousal Concept

Competitive arousal is defined as “the active process of striving against others to obtain consumption objects of common interest (Song et al., 2021). This condition arises when someone feels compelled to compete in a particular situation. In the context of marketing, especially live commerce, competitive arousal occurs when consumers feel pressured to compete with others to obtain the desired product, for example because of limited stock or a short promotion time (Pradana, 2012). This feeling of competition can trigger impulsive urges, where consumers make purchasing decisions more quickly without considering it carefully, because they do not want to miss out or lose the opportunity (Broeder & Wentink, 2022).

Apart from that, according to (Jain et al., 2021) *competitive arousal* is the feeling and thought regarding the competitive nature of a purchasing situation and the belief that a person needs to compete with other buyers to achieve purchasing goals in a particular situation. The competitive arousal model explains how various factors (e.g., perceived competition and time pressure) trigger arousal, which then impacts individual decision-making (Wu et al., 2021). Competitive arousal is often reinforced by factors such as scarcity messages, exclusive discounts, or limited-time offers that make consumers feel the need to act quickly (Kim & Jang, 2021).

Impulsive Buying Concept

Impulsive buying is a purchase that is not planned in advance with a sudden desire for certain goods and services (Ocak, 2022). (X. Zhang et al., 2019) states that impulsive actions are purchases made without any previous problems or no purchase intention formed before entering the shop. Meanwhile, (Goetha, 2020) in his research that *impulse buying* can be interpreted as an unplanned and spontaneous buying behavior that is carried out directly on the spot, followed by a strong desire and feelings of enjoyment and pleasure.

Framework

Based on the theoretical studies that have been outlined, the researcher presents the research framework as follows:

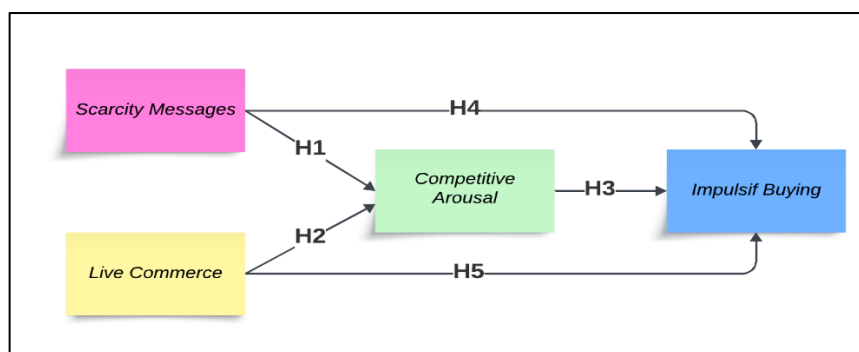


Figure 1. Framework of Thought
Source: Author (2024)

From this research framework, the following hypothesis is produced

- H1: Scarcity Message influences Competitive Arousal
- H2: Live Commerce has an effect on Competitive Arousal
- H3: Competitive Arousal influences impulsive buying
- H4: Scarcity Message influences impulsive buying
- H5: Live Commerce has an effect on impulsive buying
- H6: Competitive Arousal is able to mediate the Scarcity Message against impulse buying
- H7: Competitive Arousal is able to mediate Scarcity Messa Live Commerce ge against impulse buying

State of The Art

This research was adapted from previous research that looked at the *scarcity message indicator*, *competitive consumers*, and *impulse buying* in retail. Based on the results of previous research, scarcity can stimulate consumers' enthusiasm for impulsive buying at modern retailers. This is mediated by competitive passion, which explains various factors, for example, perceived competition and limited time pressure (limited *time scarcity*), thereby triggering competition that has an impact on individual decision-making. Several other studies show that scarcity messages have no impact on a person's purchasing decisions. Consumers feel that promotions of scarcity, either time or product, will be carried out periodically, so this will prevent them from making impulsive shopping decisions, especially since the products being sold are *high-involvement products* or require high involvement in product selection. For this reason, researchers are interested in conducting further research on *scarcity messages*, *competitive consumers*, and *impulse buying*. This is different from previous research, which examined consumer attitudes toward shopping directly at modern retailers. This research offers a study of the use of media (*e-commerce applications*) to see consumer shopping patterns when products and time are limited. Apart from that, this research also looks at and examines consumer interactions with sellers during *live commerce sessions*. This can certainly make it easier for researchers to discuss *the scarcity and live commerce promotion processes* directly. So that, in the end, it can offer practical promotional suggestions through *e-commerce* for companies to become better at using scarcity tactics.

2. METHOD

This research employs a quantitative hypothesis-testing methodology, aimed at evaluating a hypothesis formulated based on established theories. Quantitative research emphasizes the systematic collection and analysis of numerical data to discern patterns, relationships, and statistical significance among the variables under investigation (Ko et al., 2015). This methodological approach offers a robust framework for measuring variables pertinent to consumer behavior, particularly concerning the effects of Scarcity Messages, Live Commerce, and Competitive Arousal on Impulsive Buying.

The study's population encompasses six sub-districts: Oebobo, Maulafa, Kota Raja, Kota Lama, Alak, and Kelapa Lima. The sample for this research consisted of 450 respondents. The sample size was determined with careful consideration to ensure adequate representativeness and to provide sufficient statistical power for the analysis (Huang et al., 2020a). This measure also considers the potential for low response rates and the necessity for a comprehensive analysis of variables, including Scarcity Messages, Live Commerce, Competitive Arousal, and Impulsive Buying.

The data collection methods employed in this study include both primary and secondary data collection techniques. Primary data collection was conducted through the distribution of questionnaires via Google Forms. Additionally, the researchers engaged in observational studies of various e-commerce platforms, such as TikTok, Facebook, Instagram, Shopee, Bli-Bli, Buka Lapak, and Tokopedia, which frequently utilize live streaming sales and promotional events characterized by product and time limitations (flash sales). Furthermore, interviews were conducted with consumers who had made purchases on these e-commerce sites, whether through live streaming or alternative methods. Interviews were also held with sellers who actively promote their products via live streaming, aiming to assess the effectiveness of information dissemination during live commerce sessions. In conjunction with the observational studies, questionnaires were distributed through Google Forms, which were shared via WhatsApp, Facebook, and Instagram. Prior to addressing the variables under investigation, respondents were required to complete screener questions to ascertain their eligibility and enhance the quality of the data collected. The questionnaire items were developed based on the indicators associated with each variable, namely Scarcity Message, Live Commerce, Competitive Arousal, and Impulsive Buying. The selected indicators were adapted from existing research (Qu et al., 2023a), (Wongkitrungrung et al., 2020), and (Song et al., 2021a). The selected indicators were chosen for their ability to represent two primary dimensions of scarcity messages frequently employed in marketing practices, as well as to directly reflect the impact of live commerce and competition on purchasing decisions. A Likert scale, ranging from 1 to 5, was utilized, with response options spanning from the choice of the Likert scale is predicated on its effectiveness in quantitatively measuring respondents' attitudes, opinions, and perceptions. By providing five levels of response, participants can articulate the degree of their agreement or disagreement with the presented statements. Secondary data collection involved a review of literature from books and prior studies that explored the same domain, specifically focusing on scarcity messages, live commerce, competitive arousal, and impulsive buying. This literature review aimed to identify findings that either support or contradict the research hypothesis. The analytical tool employed for this study is Structural Equation Modeling - Partial Least Squares (SEM-PLS). Following the collection of responses, validity and reliability testing will be conducted to assess the quality and consistency of the data results (Fornell & Larcker, 1981). Subsequently, the analysis will progress to the examination of the relationships between the variables.

3. RESULT AND DISCUSSION

Results

Demographic profiles

Following is respondent data based on type of gender, age, material status, occupation, education level, and income.

Table 1. Demographic Profiles

Categories	Frequency	Percentage
N: 450		
Gender		
Man	130	28.9
Woman	320	71.1
Age		
<20	192	42.7
21 - 30	222	49.3

Categories	Frequency	Percentage
31 - 40	22	4.9
41 - 50	9	2
>50	5	1.1
Material Status		
Already Marry	418	92.9
married yet	32	7.1
Work		
Civil servants	128	28.4
Employee Private	223	49.6
self-employed	21	4.7
Student	48	10.6
other	30	6.7
Level of education		
high school equivalent	53	11.8
D3	36	8
S1	359	79.8
S2	1	0.2
S3	1	0.2
Income		
< Rp. 1,000,000	48	10.6
Rp. 1,000,000 - Rp. 3,000,000	115	25.6
Rp. 3,000,000 - Rp. 5,000,000	238	52.9
> Rp. 5,000,000	49	10.9

Source: Data processed (2024)

The data on the recapitulation of respondents' answers showed that the largest number of respondents were female with a percentage value of 71.1%. which means that perceptions and behaviors related to impulse buying in the context of this study are more represented by women. This is relevant because several studies mention that women tend to be more responsive to marketing strategies that prioritize scarcity and promotion in live commerce. Based on age, the most respondents were in the range of 21 – 30 years old with a percentage of 49.3%. This is the age group that is often more involved in e-commerce and live commerce and is more susceptible to digital marketing strategies and impulse purchases. A total of 92.9% of respondents are married and most of them work as private employees with a percentage value of 49.9%. Married consumers may have different shopping priorities than unmarried consumers and based on respondents' professions can affect their purchasing power and tendency to make impulse purchases.

The highest number of respondents based on education level was S1 with a total of 359 respondents or 79.8%. This indicates that respondents are quite educated and may be more critical of the information presented but could also be a potential target market for more sophisticated marketing strategies, including live commerce. Most of the respondents have an income of Rp. 3,000,000 - Rp. 5,000,000. This revenue is sufficient to enable participation in online shopping activities, including live commerce, but remains vulnerable to impulsive purchases driven by scarcity promotions.

Measurement Model Fit Test (Outer Model)

The following table is model fit test results (outer model)

Table 2. Results Measurement Model Fit Test (Outer Model)

Construct	Items	Outer Loading	AVE	Cronbach's Alpha	Discriminant Validity
Scarcity Message	PK1	0.706	0.533	0.825	0.730
	PK2	0.710			
	PK3	0.725			
	PK4	0.755			
	PK5	0.707			
	PK6	0.774			
Live Commerce	LC1	0.841	0.727	0.906	0.853
	LC2	0.871			
	LC3	0.848			

<i>Competitive Arousal</i>	LC4	0.879	0.766	0.848	0.875
	LC5	0.822			
	CA1	0.767			
	CA2	0.827			
	CA3	0.844			
Impulsive Buying	PI1	0.861	0.661	0.744	0.813
	PI2	0.876			
	PI3	0.889			

Source: Data processed (2024)

The outer model measurement results show that the outer loading, AVE, and Cronbach's alpha values have an average of > 0.7, which indicates that all variables and indicators are considered valid and reliable (Shang et al., 2023). The discriminant validity value meets the requirements because the loading on other constructs is lower than the loading on the variable construct.

Structural Model Fit Test (Inner Model)

The following table shows the results of the path coefficient test to see the big influence of each variable, often called the structural model fit test.

Table 3. Path Coefficient

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Scarcity Message -> Competitive Arousal	0.392	0.395	0.055	7.122	0,000
Scarcity Message -> Impulsive Buying	0.284	0.287	0.063	4,523	0,000
Live Commerce -> Competitive Arousal	0.367	0.366	0.057	6,413	0,000
Live Commerce -> Impulsive Buying	0.224	0.227	0.066	3,411	0.001
Competitive Arousal -> Impulsive Buying	0.270	0.263	0.065	4,124	0,000

Source: Data processed (2024)

The structural model suitability test shows that the scarcity message variable and live commerce have a significant influence on competitive arousal and impulsive buying because they have the required significance value, namely <0.005 (M. Zhang et al., 2020). The results of this study support the hypothesis built by the researcher (H1, H2, H3, H4, H5) which states that the message of scarcity and Live Commerce has an effect on Competitive Arousal and Impulsive Buying. In other words, messages that emphasize scarcity and live commerce activity can increase competitive stimulus among consumers, ultimately encouraging impulsive buying behavior. This indicates that when consumers feel that a product or service is limited in availability, they are more likely to experience increased urgency or competition for it, which in turn increases their tendency to make purchases without prior planning (impulsive).

Table 4 . Indirect Effects

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Scarcity Message -> Impulsive Buying	0.106	0.104	0.029	3,644	0,000
Live Commerce -> Impulsive Buying	0.099	0.096	0.029	3,455	0.001

Source: Data processed (2024)

The indirect effects value shows that scarcity messages and live commerce influence impulse buying through competitive arousal because they have a significance value below 0.05 (Qu et al., 2023b). The results of

this study support the hypothesis built by the researcher (H6 and H7) which shows that Competitive Arousal is able to mediate the message of scarcity and Live Commerce against Impulse Buying. This indicates that scarcity messages and live commerce not only have a direct impact on impulse purchases, but also indirectly through increased competitive arousal. In other words, the message of scarcity and interaction in live commerce creates a sense of competition among consumers. This feeling then triggers an increase in impulse purchases, where consumers feel compelled to buy immediately so as not to lose or fall behind others who are also trying to get the product. This mediation phenomenon clarifies the psychological mechanisms involved, where competitive stimuli play a crucial role in influencing consumer purchasing decisions.

Value of the coefficient of determination

Table 5. F- Square

	<i>Original Sample (O)</i>	<i>Information</i>
Scarcity Message -> Competitive Arousal	0.150	Small Effect
Scarcity Message -> Impulsive Buying	0.065	Small Effect
Live Commerce -> Competitive Arousal	0.131	Small Effect
Live Commerce -> Impulsive Buying	0.042	Small Effect
Competitive Arousal -> Impulsive Buying	0.070	Small Effect

Source: Data processed (2024)

Based on the coefficient of determination value, although all independent variables have a significant effect on the dependent and intervening variables, they have a small effect. This can be seen from the F-square value, which is in the range of 0.02–0.15. These results show that scarcity messages and live commerce have little effect on competitive arousal and impulsive buying.

Discussion

Scarcity Message

The statistical analysis indicates that scarcity messages exert a positive and significant influence on competitive arousal and impulsive buying behavior, as evidenced by p-values of 0.000, which is less than the threshold of 0.005. However, the effect of scarcity messages on impulsive buying is relatively small, a phenomenon attributed to the level of consumer experience. Consumers with greater familiarity with e-commerce platforms or those who are accustomed to scarcity strategies may exhibit increased skepticism towards scarcity promotions. Such experienced consumers typically demonstrate a higher degree of rationality and exercise greater caution in their responses to scarcity messages, resulting in a diminished impact of these messages on impulsive buying.

Nonetheless, scarcity promotions do positively affect consumer purchasing decisions, as the perception of scarcity serves as a compelling factor that stimulates buyer enthusiasm (Chae et al., 2020a). Scarcity is an attraction that arouses buyer enthusiasm. due to time constraints as well as quantity limits placed on attractive offers (Cremer & Loebbecke, 2021). One of a person's impulsive buying tendencies appears to be driven by promotions of scarcity shown by product providers (Qu et al., 2023b). his type of marketing succeeds in attracting customers' attention with messages such as limited products or limited time on visually well-designed shopping sites. This can trigger impulse buying in consumers and can activate consumers to take purchasing action without thinking too much (Ocak, 2022). n addition, consumer preferences for rare products are mediated by consumer emotions. This mediation process tends to create purchasing urgency in the minds of consumers (Banerjee & Pal, 2020). The attraction of scarcity, which emphasizes competition, can give rise to impulsive behavior. This is caused by consumers not considering the potential risks of a decision because they are limited by time. Moreover, powerful consumers tend to react actively in competitive situations (Huang et al., 2020b). Furthermore, whether it is truly rare or not, consumers cannot directly observe product availability when shopping on online platforms. This happens with low-involvement products (Cremer & Loebbecke, 2021).

This research is in line with our research results, which show that scarcity messages influence impulse buying and are mediated by competitive arousal, or the competitive passion of consumers who do not want to lose the opportunity to get products that are currently in promotion. Consumers will feel satisfied if they win a competition or succeed in getting a product in a scarcity promotion. Products with limited promotions also make consumers feel exclusive because they are sold for a limited time.

Live Commerce

The statistical findings indicate that live commerce exerts a positive and significant influence on competitive arousal and impulsive buying behavior, as evidenced by p-values of 0.000 and 0.001. However, the effect of live commerce on these variables is relatively small, which can be attributed to limited consumer

interaction. Insufficiently intense interaction or inadequate real-time responses between sellers and consumers may result in a diminished level of competitive arousal. When consumers perceive a lack of engagement in the sales process or when there is an absence of strong urgency or competitive elements, the propensity for impulsive action is likely to decrease.

Live streaming e-commerce is in a period of rapid development, and many online platforms and e-commerce sellers are starting to use this format to maintain competitiveness in the global market era (Shang et al., 2023). The popularity of live commerce has started to increase via social media outlets, which have begun offering integration options (Herron, 2017). Research and surveys show that consumers are interested in shopping during live commerce because they think it saves time and costs compared to shopping in person (Wongkitrungrueng et al., 2020). This is felt because consumers with high mobility do not have free time to shop directly. So that the use of e-commerce can be further improved. In live commerce, the seller's expressions and interactions with a product can be transmitted to customers in real time, even though they are spatially separated from each other. The perceived uncertainty regarding online products can be reduced by obtaining more concrete product information through face-to-face and in-depth interactions by watching Live Commerce (X. Zhang et al., 2019). Conducting live commerce can also increase consumers' cognitive and affective responses during shopping, thereby encouraging them to make purchases (Shang et al., 2023). The research results of (Zheng et al., 2022) and (Goetha, 2020) show that psychological distance and perceived uncertainty are important factors that influence customer decision-making behavior in cyberspace.

This is in line with our research findings, which show how the frequency of live commerce influences impulse buying tendencies. The essence of the live streaming interaction mode is to create a virtual shopping environment for consumers to feel more present and in reality in the midst of high social mobility and no time to shop in person.

Competitive Arousal

Statistical analysis indicates that Competitive Arousal exerts a positive and statistically significant influence on impulsive buying behavior, as evidenced by a P-value of 0.000, which is less than the threshold of 0.005. Furthermore, Competitive Arousal serves as a mediator for the effects of scarcity messaging and Live Commerce on impulsive buying, with P-values for these variables recorded at 0.000 and 0.001, respectively. Nevertheless, it is important to note that Competitive Arousal has a relatively small effect on impulsive buying, particularly in the context of low-involvement products. The impact of Competitive Arousal is more pronounced for high-involvement products, such as premium items or those that are highly coveted. Conversely, when the promoted product is of low involvement—such as everyday necessities or items with minimal economic value—consumers may not feel a strong compulsion to make impulsive purchasing decisions, even in competitive scenarios. This limitation results in Competitive Arousal having a restricted effect on impulsive buying behavior.

Specifically, the mechanism underlying scarcity promotion in e-commerce for impulse buying is competitive arousal (consumer arousal). There are two main things that trigger consumer passion, namely perceptions of competition and time pressure (Wu et al., 2021). Competitive arousal plays an important role in the persuasion process of scarcity messages because consumers tend not to behave rationally in competition and also rely more on heuristics. An explanation of the role of competitive passion in the relationship between scarcity messages and impulse buying highlights the importance of psychological triggers underlying impulse buying behavior (Wu et al., 2021). According to the stimulus-organism-response (SOR) model, environmental stimuli can influence a person's internal affective and cognitive states, leading to certain behaviors (Chae et al., 2020). The current research contributes to the SOR model, as external stimuli (i.e., scarcity cues) do lead to affective responses (i.e., perceptions of competitive arousal), which ultimately lead to behavioral responses (i.e., impulsive buying). Impulsive buying tendencies are indirectly influenced by emotions that create competition with other buyers (Qu et al., 2023). This is due to fear if the product is no longer available or is provided in limited quantities. Consumers not only want more when a product is scarce, but they also want it more intensely when they compete for it (Song et al., 2021).

These results are in line with our research findings, which show competitive arousal has a significant influence on impulse buying and is able to mediate step messages and live commerce on impulse buying. Someone who wants to compete for a product doesn't think long about it. Usually, consumers will have difficulty distinguishing between needs and wants as long as they win the competition and don't waste time buying the product. This will give rise to impulsive buying. The existence of a step message makes consumers anticipate regret if they do not get the product; this condition supports the role of emotions in decision-making in conditions of scarcity (Gupta & Gentry, 2019). Results are the main part of scientific articles, containing: final results without data analysis process, hypothesis testing results. Results can be presented with tables or graphs, to clarify the results verbally. Discussion is the most important part of the entire contents of scientific articles. The objectives

of the discussion are answering research problems, interpreting findings, integrating findings from research into existing sets of knowledge and composing new theories or modifying existing theories.

4. CONCLUSION

This study adds the dimension of live commerce and scarcity messages in influencing impulsive buying, through the mechanism of competitive arousal. These results indicate that external stimuli (scarcity) trigger affective responses (competitive arousal) and ultimately drive impulsive behavior. In addition, this study confirms the important role of competitive arousal in mediating scarcity messages and live commerce. Although scarcity messages have a positive effect on competitive arousal and impulsive buying, their effect is smaller on experienced consumers. Therefore, scarcity strategies must be more creative, for example by offering limited time or limited stock to increase appeal. In addition, Live Commerce also plays an important role in increasing direct interaction between sellers and consumers, but its effect is small on competitive arousal if the interaction is less intense. Therefore, sellers are advised to be more active and responsive during live sessions, using exclusive discount features or direct promotions to increase engagement and impulse buying. Competitive Arousal More effective on high-involvement products but limited to low-involvement products. However, competitive arousal still mediates the relationship between scarcity messages and live commerce on impulsive buying, so promotions must create a competitive atmosphere to encourage purchases. Suggestions for future research to classify the response to scarcity messages and live commerce on impulsive buying based on age, occupation, and income, to see consumer tendencies based on these groups.

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