The Impact Of Purchase Factors In Live Shopping

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ABSTRACT

This study aims at investigating how scarcity, demand, convenience, interactivity, and playfulness affect impulsive purchasing on live streaming e-commerce. This article explores how limitation in quantity, limitation of time, convenience, and interactiveness affect perceptions about arousal, enjoyment, and impulsive buying. In order to achieve understanding in relation to how mental processes result in emotional outcomes leading to impulse purchase, this study adopts the S-O-R model theory of Mehrabian and Russell (1974). This is a quantitative research work that involves surveyed data collection and statistical analysis. With the assumption of indication regarding limited time scarcity, limited quantity scarcity, demand, convenience, interactivity, playfulness, perceived arousal, and perceived enjoyment are related to impulsive purchase behavior. This study aims to support the validity and enhancement of the S-O-R model such that its use in explaining e-consumer behavior can be justified. Therefore, these implications for business will help them build marketing and branding strategy, promotion campaigns, product launches, live shopping events, and create loyal customers with return purchases. This study concludes that it is necessary to understand how scarcity, convenience, and interactivity affect spontaneity buying process in live selling electronic platforms and more studies should be done into this field.

SARI PATI

Penelitian ini mengeksplorasi bagaimana kelangkaan, permintaan, kenyamanan, interaktivitas, dan kesenangan memengaruhi pembelian impulsif di live shopping e-commerce. Menggunakan model S-O-R yang diusung oleh Mehrabian and Russell (1974), studi ini menginvestigasi hubungan antara faktor-faktor tersebut dan perilaku pembelian. Dengan data survei dan analisis statistik, kami menemukan bahwa faktor-faktor tersebut berpengaruh signifikan terhadap pembelian impulsif. Oleh karena itu, implikasinya terhadap bisnis akan membantu mereka membangun strategi pemasaran dan branding, kampanye promosi, peluncuran produk, acara belanja langsung, dan menciptakan pelanggan setia dengan pembelian berulang. Studi ini menyoroti pentingnya memahami bagaimana kelangkaan, kenyamanan, dan interaktivitas mempengaruhi proses pembelian di platform e-commerce.

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INTRODUCTION

The Live shopping feature on e-commerce platforms is regarded as the latest trend of e-commerce and it has become a new channel, new experience, and new approach for consumers to shop for various goods (Geng et al., 2020; Hu & Chaudhry, 2020). Becoming an avenue of the e-commerce industry, live shopping has successfully facilitated interactions between buyers and sellers prior to making online transactions, proven by its total net worth of $60,000,000,000 in 2024, with a growth rate of 7.7% in 2020 (Zhong et al., 2022). Approximately 16% of global online shoppers purchase products directly via the live streaming feature, with the percentage rising to 30% in Asia (Peng et al., 2021).

Since the e-commerce industry is fast paced, businesses are continuously searching for new approaches to attract shoppers' attention and driving up the revenue on online shopping (Geng et al., 2020; Lu et al., 2020). E-commerce platforms have been adopting the live shopping feature in China since 2017 when Douyin, a version of TikTok Shop exclusive in China, that happened to be the forerunner of TikTok Shop under ByteDance, implemented video shopping, live streaming commerce, or live streaming shopping (Ma et al., 2018; Andersson, 2021). Ever since then, with a shift in platform, the growth of e-commerce platforms in Indonesia, which includes TikTok Shop, Shopee, Tokopedia, Facebook, Lazada, Bukalapak, and JD.ID, have been the fastest in the world amongst several other countries with 78% growth in 2018 based on the data released by Databoks through an author (Widowati, 2019). With a total population of 281,603,800, Indonesia is the fourth largest populated country in the world as of 2024 (UN Desa, 2022; Badan Pusat Statistik Indonesia, 2024). Discussing in the context of internet or digital users, the number of Indonesia's internet users amounts to 274,200,000 (Statista, 2023), positioning it as the fourth-largest digital population in the world as of January 2023 (DataReportal et al., 2023). In Indonesia, 27.5% of Indonesians utilized TikTok's Live Shopping feature, according to a survey from Statista among e-commerce sellers in Southeast Asia from 2022 (Ganbold, 2023). Moreover, the e-commerce market penetration rate in Indonesia is projected to grow annually, currently standing at 31,76% as of 2024 (Statista, 2024). Amongst other live shopping platforms in Indonesia, Shopee has the most amount of users with 83,4%, with TikTok ranking second after Shopee with 42,2%, followed by other live shopping platforms such as Instagram, Tokopedia, Facebook, Lazada, Bukalapak, and JD.ID based on data released by Databoks through an author in 2022 (Annur, 2022). According to a survey among live shopping platform users in the Asia-Pacific region in 2022, fashion and accessories as a leading category, amounts to 18% of the market, followed by 14% from the beauty and personal care category (Gonbold, 2022).

By its function, live shopping enables a two-way interaction with the customers in real-time, and it may be used more than teleshopping and it is compatible with various electronic devices which includes smartphones and PC's (Tong et al., 2022). This distinctive new model of retail allows buyers to connect with the hosts or influencers through the use of live video feeds as they view and purchase the products, unlike traditional e-commerce shopping model channels for e-commerce marketing (Hu & Chaudhry, 2020). Since it is shown that there is an increase in sellers' revenues when utilizing the live shopping feature, live shopping also correlates positively with the high amount of purchase (Tong et al., 2022). From here, the question is what captivates the audience and keeps them engaged in using live shopping?

Consumers themselves enjoyed live shopping more than traditional shopping because live shopping includes contact-free service with instant involvement, especially when it comes to high-risk retail shopping (Zhang et al., 2023). Moreover, live shopping captures

people’s interests by enabling them to enjoy a communicative and on-the-spot shopping experience. As a result, the annual Gross Merchandise Volume (GMV) of Indonesia's e-commerce market reached over $62,000,000,000 in 2023 and was forecasted to reach around $160,000,000,000 by 2030 (Statista, 2023)..

Knowing the fact that customers enjoyed live shopping, there are several psychological variables that influence viewers on why they prefer live shopping. According to research, demand, convenience, interactivity, playfulness, and scarcity (quantity or time) are some features that includes in live shopping, since when using live streaming for product shopping or e-commerce, these affect consumer’s psychological responses that leads to impulsive purchases during the process of the live streaming shopping (Wu et al., 2021; Lin et al., 2022).

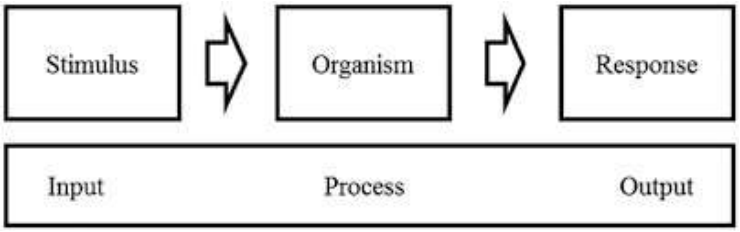
As impulse purchasing happened to be one of the most important purchase drivers in live shopping, the urgency of this topic is heightened since impulsive purchase has been known to affect customers' financial situation, proven by the fact that according to a survey conducted by Rakuten Insight, 39.97% of Indonesian social commerce users regularly purchase products right after viewing (more than 6 times in the last 12 months) and 31.7% purchase between 3-6 times in the last 12 months (Rakuten Insight,
2023). Regarding the context of impulsive buying intentions in social commerce, Indonesian consumers demonstrated a high level of willingness to share their purchases and endorse products on the chosen platform via blog posts, photo-messaging or tweeting (Zhu et al., 2020). Often times, viewers ended up buying things that are considered to be within their secondary or tertiary needs, which means that consumers tend to be inclined to make an impulsive purchase when they find certain products that fulfill their requirements and needs and is compatible with themself which is influenced by hedonic motivations and hedonic browsing (Nugraha et al., 2023). Hedonic motivation refers to the desire or drive to seek pleasure, enjoyment, and positive experiences in an excessive way or more than one needs to (Dorothee et al., 2017).

Aside from the hedonic motivation which stands as the most influential personality trait construct that directly shapes purchasing intention, peer communication and subjective norms coming from the construct of social experience also causes an effect of intention yet indirect, which may also extend implications that perceived enjoyment and perceived arousal in the context of experiences. This may be a supporting factor to drive impulse purchases (Anindito et al., 2021). This phenomenon of increased usage and increased hedonic behavior is very much worthy enough to validate the fact that e-commerce is a very dynamic and promising topic to be researched further especially in Indonesia. With the soaring data numbers of e-commerce growth and live shopping in Indonesia, this leads to the ultimate question: what stimulates individuals to purchase items after engaging in a live shopping experience?

This phenomenon surrounding live shopping could be explained and analyzed further using the S-O-R framework, since the said model from Mehrabian and Russell (1974) believes that stimuli will affect the consumers’ emotional responses. In correlation, the studies related to the framework of S-O-R model in live streaming commerce and impulse purchasing, as well as the theoretical bases on mental processes and emotional outcomes that have been offered in prior studies can be used to help understand how the mental processes and emotional outcomes lead to impulsive purchasing behavior in this study. The research framework relies on the stimulus-organism-response (SOR) model theory, proposed by Mehrabian and Russell (1974). Hence, several variables such as scarcity, convenience, and interactivity could influence e-commerce impulsive purchase. Therefore this study will examine how

limited time scarcity, limited quantity scarcity, demand, convenience, interactivity, and playfulness influence the impulse purchase in live shopping e-commerce.

Figure 1. Stimulus-Organism-Response (SOR) Model (Mehrabian & Russell, 1974)



The S-O-R framework was first developed to acknowledge the relationship between external stimuli, internal responses, and behavioral outcomes. This model holds particular relevance in the context of live streaming shopping, where stimuli from the live streaming environment influence consumers' psychological states, leading to specific responses like purchase intentions or impulse buying. Recent research has delved into the factors influencing consumer behavior in live streaming shopping using the S-O-R framework (Mehrabian & Russell, 1974).

One study focused on exploring factors that influence impulse buying in live shopping based on the S-O-R theory (Lin et al., 2022). The research identified stimulus factors in the live shopping throughout the live streaming environment that impact consumers' psychological states, ultimately affecting their impulse purchase intentions. Impulsive purchase intentions differ from long-term purchase intentions in a way that impulsive buying behavior is characterized by immediate, unplanned decisions driven by emotions, desires, or sudden urges, often without careful consideration or prior intention, while long-term purchase intentions are based on deliberate evaluation and consideration of various factors before making a purchase decision (Zhang & Shi, 2022). The study highlighted the importance of factors like demand, convenience, interactivity, and playfulness in stimulating consumers' perceived enjoyment, which drives impulsive purchases in a direct manner. The findings emphasized the significance of elements such as the selections of live streaming platform, interactive interface design, and shopping process design in shaping consumer behavior during live streaming shopping (Lin et al., 2022).

Wu, Xin, Li, Yu, & Guo (2021) conceptual model suggested that perceived arousal is one of the factors that drive impulse purchase (Wu et al., 2021). On the other hand, Lin, Tseng, Shirazi, Hajli, & Tsai (2022) research hypothesis suggested that perceived enjoyment is the significant factor that positively related impulse purchase (Lin et al., 2022). The integration of both conceptual models suggested by the two studies would be a solution to fill those research gaps, hence ensuring newness in our study. By combining insights from Wu et al. (2021) and Lin et al. (2022), this research bridges the gap between the physiological factors that influence impulse purchases in live streaming shopping and the effectiveness of scarcity promotion strategies in e-commerce. This integration fosters a deeper understanding of how the interaction between Indonesian consumers' behaviors and perceptions within the context of live streaming shopping.

Problem Formulation

Albeit the intensity of study involving live shopping, there are still some literature gaps related to the context of this research especially in Indonesia that this research

would like to solve. Hence, the following problem statement of this research are:

1. How do limited-quantity scarcity and limited-time scarcity relate to perceived enjoyment during Indonesian consumer's live shopping experiences?
2. How do demand, convenience, interactivity, and playfulness relate to perceived arousal when it comes to live shopping in Indonesia?
3. How do perceived arousal and perceived enjoyment relate to impulse purchase in the context of live shopping in Indonesia?

Research Objectives

From the problem statement above, there are a few objectives that this research would like to accomplish such as:

1. To observe the relation of limited-quantity scarcity and limited-time scarcity towards perceived enjoyment during Indonesian consumer's live shopping experiences.
2. To understand how demand, convenience, interactivity, and playfulness relate to perceived arousal when it comes to live shopping in Indonesia.
3. To see how perceived arousal and perceived enjoyment relate to impulse purchase in the context of live shopping in Indonesia.

S-O-R Model

The Stimulus-Organism-Response (SOR) model originates from the discipline of environmental psychology, which was initially developed by Mehrabian and Russell (1974), consisting of environmental stimulus (S) which results in emotional response (O), and therefore resulting in behavioral response (R) (Mehrabian & Russell, 1974). The principle used is stimulus-response based with the cognition and emotion of individuals serving as the intermediate step to produce individual approach-avoidance behavior (Mummalaneni, 2005). The SOR model implies that using environmental cues as stimuli affects individuals' emotional and cognitive responses, affecting consumer behavior (Mehrabian & Russell, 1974).

The S-O-R model could also be used to interpret the effects of four types of media such as Stimulus on brand attitude as Organism and sequentially on purchase intention as Response (Istijanto et al., 2023). Many researchers from different fields have expressed S-O-R model's vital role in retail settings such as the decision to buy, impulse buying, and service fairness (Namkung et al., 2010; Chang et al., 2013; Demangeot et al., 2016; Lucia-Palacios et al., 2016).

Limited-Quantity Scarcity

Limited quantity scarcity is a marketing strategy that emphasizes the limited availability of a product or a service in terms of quantity. This strategy is used to build a sense of urgency and encourage consumers to make a transaction or purchase promptly before the offer expires (Kristofferson et al., 2016). Limited-quantity scarcity message also helps in improving product's perception by giving more attractive value than its alternatives, since consumers would perceive the limited or temporary purchase opportunities as being more attractive and of greater value in comparison with the other alternatives that are abundant (Fromkin, 1970; Lynn, 1992). It can also be said that scarcity can be used as one of the messages with which a marketing strategy uses to play on peoples' preference for scarcity with a view to increasing the value placed on the particular offered products or opportunities hence creating a sense of urgency (Cialdini, 1985).

Wu, Xin, Li, Yu, & Guo (2021) and Cialdini (2008) defined and concluded that Limited-Quantity Scarcity (LQS) as a promotional offer that is made available for a predefined quantity of a product or the quantity of promotional discounts (Cialdini, 2008; Wu et al., 2021). Each time a customer purchases a unit, the remaining

number of available units for purchase decreases (Cialdini, 2008; Wu et al., 2021). The use of inventory availability information to highlight the scarcity effect and maximize the marketing effect by targeting consumers. A marketing technique that uses this strategy known as hunger marketing is to give a surprisingly attractive price with limited quantity (Zhao et al., 2022). Aggarwal et al. (2011) concluded that Limited-Quantity Scarcity (LQS) was more effective than Limited-Time Scarcity (LTS) in influencing consumers' purchase (Aggarwal et al., 2011).

Limited-Time Scarcity

Limited-Time-Scarcity (LTS) is a marketing strategy where a product or service is offered for a predefined period of time, after which it becomes unavailable (Cialdini, 2008). This strategy creates a sense of urgency and encourages consumers to make a purchase promptly before the offer expires. Examples of limited-time scarcity include "buy now before the pricing changes," flash sales, and implementing countdown timers (Broeder & Wentink, 2022).

LTS is different from LQS. In the case of LTS, a buyer simply has to meet the exact deadline set by the seller to take advantage of the promotional offer, rather than competing against other buyers (Wu et al., 2021). For instance when it comes to implementing LTS in live shopping, consumers can view timely updates regarding the decreasing availability of an existing product or product voucher because of its limited time availability, and hence experience pressure due to the countdown of the remaining shopping time (Gupta et al., 2004). In the online environment, there's an easy access to a wide array of products and relevant information is readily available (Gupta et al., 2004). This accessibility enhances the sense of urgency experienced by buyers. Scarcity, as evidenced by limited availability or time constraints, triggers a sense of urgency among buyers, leading to increased purchases, shorter decision-making processes, and greater satisfaction with products purchased (Aggarwal et al., 2011). However, the presence of a time limit on voucher usage may drive consumers to opt for clearer and safer e-commerce platforms (Febriandika et al., 2023).

Demand

Demand is the consumer's desire created by a certain preference, need, or a reaction towards deficiency (Bronfenbrenner et al., 1994). Simply said, demand drives purchases in a market economy due to production and consumption needs which are tightly connected to the market where they buy and sell goods (Zhang et al., 2021). With people's increasing focus on material possessions and their standards of living, consumer demand is becoming more diverse and complex (Sun et al., 2016). As a result, the consumption of content broadens, especially in the context of online shopping through live streams, where consumers are exposed to various products, detailed explanations, and demonstrations by online streamers (Purushothaman et al., 2016; Liu et al., 2020). This platform allows consumers to quickly find products that meet their needs through influencer promotions (Purushothaman et al., 2016; Liu et al., 2020). Once motivated by their needs, consumers begin searching for product information as part of their decision-making process (Blackwell et al., 2006). As consumers' needs are met, their emotions tend to stabilize (Harris et al, 2007).

In the context of live shopping demand, the live-streaming platform can effectively convey to consumers all the details about a wide range of products, thereby eliminating the need for them to go out and find this information on their own. This streamlining of the decision-making process for purchases makes it possible for consumers to buy products, regardless of their initial needs. In the process of purchase making, the main factor which customers are responding to is the one which they have already experienced, followed by the key factor which causes the behavior of impulsive buying (Liu et al., 2020). Also, by doing promotions, the

demand will be driven even greater (Fadhila et al., 2023).

Convenience

Search convenience is defined by Beauchamp and Ponder (2010) as the "speed and ease with which consumers identify and select products they wish to buy" (Beauchamp & Ponder, 2010). Quoted from Seiders et al. (2000) access convenience is "characterized as the speed and ease with which consumers can reach a retailer" (Seiders et al., 2000). Various studies have stated that internet convenience can stimulate consumers' desire to shop and influence impulsive buying behavior (Brown, 1989; Dai et al., 2008). The dimension of access convenience is one that ranks high as an aspect of retail convenience because if the consumer does not have access to the retailer, then the consumer will never be able to enjoy the service of the retailer. The accessibility convenience was less attractive in e-commerce compared to modern retail (Seiders et al., 2000).

In terms of the online shopping environment, where the store's location is irrelevant, since consumers may shop online from any location so long as there is an Internet connection (Rohm & Swaminathan, 2004). On the other hand, retailers can also use social media to spread the word and create awareness to help identify the appropriate channels (Kollmann et al., 2012). Moreover, social commerce offers convenience in browsing various types of products, reading online reviews, and even making selling and buying transactions online (Rani et al., 2023). The internet provides many instruments for supporting retailer's communication capabilities including individual information about potential clients via placing it into the website, as well as utilizing paid advertising to refer traffic to those websites.

Interactivity

Interactivity refers to a mutual responsiveness where something is considered interactive if and only if it is responsive, does not completely control, is not completely controlled, and does not react in a completely random manner (Smuts, 2009). Examples of interactivity in the context of video games include players that directly interact with the game's environment and characters, and websites that offer an exchange of information with users through features like hyperlinks, feedback, and multimedia displays (Smuts, 2009). In the other context, internet interactivity is one critical factor that influences consumers' online experience, perceived enjoyment, and their psychological situation (Akar & Topçu, 2011; Yang & Shen, 2018). Interactivity allows consumers to still experience the presence of purchasing something at physical stores while purchasing online at home, provides consumers with the enjoyment of bargaining with the streamer during live-streaming shopping, and also allows consumers to experience the emerging patterns of consumption (Xu et al., 2020). The interactivity and liveness from the website create the shopping presence for the website, that affects the consumers mood, and in turn, affects the impulse action from customers to buy online (Ha & James, 1998; Sedig et al., 2014). Other studies have also confirmed that perceptual interactivity affects consumers' purchase intentions positively (Kim & Park, 2013, Hwang & Oh, 2020).

For instance when it comes to the implementation of interactivity, the pleasure of interacting with and throughout the website, stimulated by the quality of website elements such as ease of use and visual appearance, enhances the satisfaction of online impulse buying. (Helmi et al., 2023). Therefore, interactivity can act as a critical factor that influences online shopping. Customer experience and enjoyment is an output that comes from online interactivity, and from interactivity can positively affect the consumer's impulse purchase.

Playfulness

Playfulness is defined as the tendency to enjoy playful activities and interactions. It has been found to significantly impact

consumers' purchasing decisions (Barnett, 1991; Kang et al., 2020). Playfulness greatly influences the pre-purchase behavior of leading consumers who are early adopters of new products (Barnett, 1991). In the context of live shopping, streamers need to engage consumers with compelling content and unique products, distinct from those in other stores, to maintain their playful engagement (Byun et al., 2017). Furthermore, playfulness can be understood as the active mindset users adopt during experiences or behaviors, and it also plays a role in users' willingness to engage with social media platforms, as they create enjoyable and interactive environments (Barnett, 2011; Chang et al., 2015).

Within the live shopping context, the perceived playfulness is the level of fun that the consumers feel while they are watching the live shopping video (Shen et al, 2022). One of the examples of playfulness in the context of live shopping is gamification, where the concept of gamification can be implied to stimulate consumers by collecting items to be exchanged by discount and shipping costs (Nugraha et al., 2023). Not to mention, the external factors can include perceptions of playfulness based on the interactive messages and fun tasks that progressively appear on the screen. Therefore, we could consider gamification to be one of the attributes of playfulness in live shopping.

Perceived Arousal

Perceived arousal is a neurophysiological basis that underlies all processes in the human organism, ranging to excitement from sleep (Russell & Mehrabian, 1997). In the context of online shopping, perceived arousal is defined as an excited emotional state that is stimulated by a scarcity as a promotion approach in online shopping (Wu et al., 2021). The stronger the consumers' arousal and pleasure emotion, the easier it is to make an impulsive purchase (Koo & Ju, 2010; Liu et al., 2018). Concentration is characterized by high arousal, while relaxation is characterized by low arousal (Yang et al., 2020). Moreover, arousal has a greater influence on consumer behavior than cognitive absorption (Paraman et al., 2022). In conclusion, perceived arousal is a basis that underlying all the processes in human organisms that can be stimulated by promotion in online shopping, and the arousal characterized by the level of concentration facilitates the process of impulse purchase.

Perceived Enjoyment

Perceived enjoyment is based on a subjective experience, which varies due to different personal feelings in the same environment (Shiau et al., 2013). Perceived enjoyment is defined as the degree to which an individual feels good, happy, or satisfied with a certain situation (Eroglu et al., 2001). The human brain can achieve the subjective sense of enjoyment from many internal and external factors such as needs, preferences, and learning (Westbrook et al., 2013). Perceived enjoyment can be emphasized and significantly associated with impulse buying behavior in a virtual store (Saad et al., 2015). The uses of virtual cues can relate to high and low tasks as an external stimuli that explore the impact of consumers' perceived enjoyment and perceived usefulness on impulsive online purchases (Parboteeah et al., 2009). Moreover, the enjoyment of searching for products in online stores that encourage impulse purchases is resulted from convenience and entertainment (Helmi et al., 2023). To conclude, perceived enjoyment is based on different feelings and emotions in the same area based on a certain situation, and that impulse buying behavior can be associated with perceived enjoyment. Virtual cues can affect the internal and external stimuli when it comes to the impact of perceived enjoyment in impulsive online purchase.

Impulse Purchase

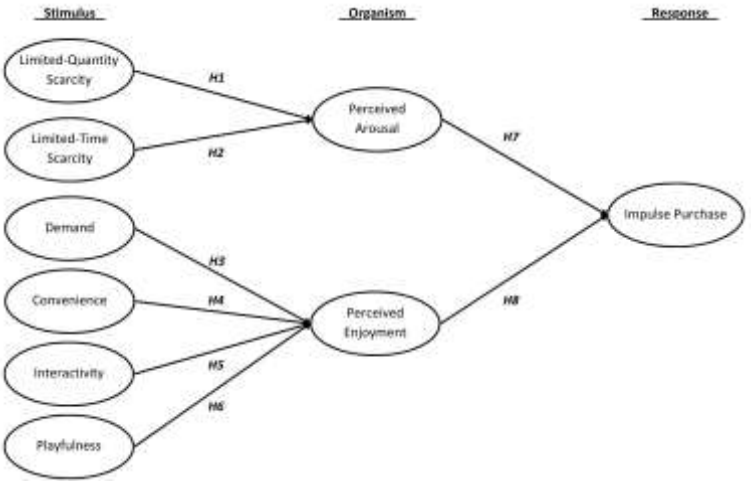
Impulse purchase in online shopping is defined as an immediate and unplanned transaction without prior intentions (Piron,

1991; Burton et al., 2018). This occurs when strong emotional desires arise suddenly, characterized by low cognitive control (Piron, 1991; Burton et al., 2018). The more positive the emotional state, such as enjoyment or pleasure, the greater the influence on consumers' impulse purchase (Saad et al., 2015). Research on online impulse purchases often examines the impact of website cues, with increased buying urges leading to more frequent impulsive buying behavior (Chan et al., 2017). Moreover, Indonesians have shown a tendency to make impulse purchases on social media or other online marketplaces (Helmi et al., 2023). Overall, impulse purchasing stems from reactive actions influenced by cues that create urges, particularly in the online shopping context.

Conceptual Model

Figure 2 depicts a conceptual model of the S-O-R model used as a basis framework, starting from the stimulus that include limited-quantity scarcity, limited-time scarcity, demand, convenience, interactivity, and playfulness as the starting variable, continuing to the organism that cover the perceived arousal and perceived enjoyment as mediating variables, and ended in the response that is impulse purchase as the final variable. Throughout this study, the validity variables would be tested to prove the hypothesis, hence the eligibility of the conceptual model. Also, the conceptual model will be utilized in this study to assist the discovery of new findings.

Figure 2. Conceptual Model



Hypothesis Development

In the context of scarcity, offering products in limited quantities can arouse and stimulate buyers because it requires them to compete with other buyers to acquire the products (Zheng et al., 2013; Guo et al., 2017). Also, it is proven from previous research that suggests limited quantity products offered in flash sales can positively impact the attitudes toward the flash sale (Vannisa et al., 2020). Moreover, the limited quantity of products can ignite the competition among buyers and trigger them to win the competition, which is achieved by successfully acquiring or purchasing the limited products (Wu et al., 2020). Therefore, this research proposes H1 to test and validate the positive impacts of limited-quantity scarcity and perceived arousal.

H1: Limited-quantity scarcity is positively related to perceived arousal.

Limited time duration in a flash sale can positively affect the attitudes toward that sale. (Vannisa et al., 2020). Also, limited time promotion has a unique appeal because it is only available for a specific duration and buyers tend to feel enthusiastic and excited towards the limited time promotions (Guo et al., 2017; Mou & Shin, 2018). In online shopping, buyers often feel the pressure of time as they should make up their minds quickly in order to avoid missing out on the desired products which are going to be out of stock (Wu et al., 2021). This psychological arousal level rises as the deadline approaches, which Wofford's research shows to be the case (Wofford, 2001) Therefore, this research would like to test out H2.

H2: Limited-time scarcity is positively related to perceived arousal.

In the context of mobile shopping platform characteristics, demand is proven to be acting as a significant stimulus that affects perceived enjoyment (Liu et al., 2020). In contrast, the demand of a product to be purchased by innovative consumers is positively increased by the perceived enjoyment of shopping (Byun et al., 2017). Also, the buyer's emotions will improve once their demands are satisfied (Harris & Shiptsova, 2007). Moreover, consumers feel the desire and have the demand for a specific product through external environmental stimuli, which they will be motivated, leading into eventual consumer behavior (Lin et al., 2022). Therefore, this research proposes H3.

H3: Demand is positively related to perceived enjoyment.

Research has demonstrated that by offering greater convenience, companies can effectively encourage consumers to purchase their products, thereby enhancing the overall shopping experience and satisfaction of consumers (Brown, 1989). Live shopping is the best solution to consumers' time and space limitations, which means that consumers can now have real convenience. Hence, the buyers may feel a sense of relaxation when they buy online, eventually making the whole shopping experience more enjoyable for them (Gao et al., 2023). Also, researchers have noted that convenience plays a significant role in influencing the frequency, volume, and monetary value of consumer purchases (Harris et al., 2007). According to a study, playfulness is a factor that affects early adopters' readiness to pre-order novel products (Byun et al., 2017). The presenter of live shopping focuses on the creation of compelling material and the introduction of new products that will increase the level of playfulness. A happy mood is essential for influencers to build, as consumer satisfaction is the main factor that determines their participation on the platform (Lin et al., 2022). Hypothesis H4 is suggested to test the validity of prior studies.

H4: Convenience is positively related to perceived enjoyment.

In the context of human interaction in a digital and social landscape, interactivity has proven to enable users to sense the social support through the interactions with others, which increases their enjoyment (Rogers, 2017). In the context of live shopping, interactivity enables consumers to replicate the in-store shopping experience from the comfort of their homes, affording them the pleasure of negotiating with the streamer during live-streaming shopping sessions, and facilitating engagement with evolving consumption trends. (Xu et al., 2020). However, certain scholars have discovered that interactivity in the realm of social interaction does not significantly impact customers' perceived enjoyment (So et al., 2021). In contrast, others contend that interactivity contributes to customers' positive emotional states (Shuqair et al., 2019; Lyu et al., 2018). As a result, the correlation was found to be questionable and additional empirical research is required to check whether it is valid in the context of live shopping and e-commerce impulse

purchases. Thus, considering prior studies, the below hypothesis is proposed.

H5: Interactivity is positively related to perceived enjoyment.

Perceived enjoyment, as related to a live shopping service system, refers to the degree of enjoyment that individuals experience when interacting with a system (Sun et al., 2008). In the context of live shopping, the streamer's focus is on how to attract the consumers with engaging content and to deliver something unique, which in turn will improve the customer's experience more enjoyable (Lin et al., 2022). Previous studies also found how important it is for users to enjoy their experience, making enjoyment to be the determining factor when considering how playful something feels, and have found similar results across different situations (Hung et al., 2016). Moreover, playfulness could impact users' willingness to engage in social media and enjoy an interactive atmosphere (Chang et al., 2015). The interactive and playful environment could make the buyer's reach the enjoyable emotional state. Therefore, this research proposes hypothesis H6.

H6: Playfulness is positively related to perceived enjoyment.

By conceptual definition, impulse purchase is "an unplanned purchase, difficult to control, and followed by an emotional response" (Verplanken & Sato, 2011). Discussing in the context of emotion and emotional response, according to Cognition Emotion Theory, emotion (such as emotional arousal) and cognition is linked to impulsive purchase because cognition influences emotions (Xia et al., 2022). Thus, arousal that is perceived by one could be linked with an unplanned purchase or impulse purchases. Researchers also discovered that positive effects such as arousal and pleasure have significant positive effects on the urge to impulse buying (Shen & Khalifa, 2012). In contrast, the sensation of being aroused or stimulated to buy products can also occur due to worries about not being able to acquire the same offer next time (T. Y. Chen et al., 2021). Moreover, Brand advertisements, micro-celebrities, and user generated contents are also proven to be perceived as inducing positive emotions such as pleasure arousal, resulting impulse purchases (Djafarova et al., 2021). Thus, arousal that is perceived by one could be linked with an unplanned purchase or impulse purchases. To test the impact of perceived arousal towards impulse purchase, the following hypothesis is made.

H7: Perceived arousal is positively related to impulse purchase.

Increased perceived enjoyment has effects on online impulse purchase (Parboteeah et al., 2009; Ayub and Zafar, 2018; Zhang et al., 2018; Handayani et al., 2018; Wu et al., 2020). Also, if the consumers are in an enjoyable emotional state, they are inclined to take immediate purchases (Parboteeah et al., 2009; Chan et al., 2017; Hassan et al., 2019). In contrast, consumers with greater enjoyment are more likely to create a positive brand impression, which is likely to result in online impulse purchase (Liang et al., 2021). Customer's enjoyment is one of the key factors to focus especially in live shopping because previous studies found that it could lead to impulse purchase. Therefore, this research proposes hypothesis H8.

H8: Perceived enjoyment is positively related to impulse purchase.

METHODS

Research Types and Designs

This research is conducted using a quantitative approach, where the researcher will utilize numerical data as an analytical tool. Research data is collected through questionnaires administered to respondents who meet the sample criteria. The most appropriate approach of research in terms of fit to this study is the correlation research. Correlation studies consider associations between variables. This is commonly used in

determining the nature and extent of associations between different elements. This study requires correlational research which will be done by investigating relationships between several stimuli variables such as limited-quantity scarcity, limited-time scarcity, demand, convenience, interactivity, and playfulness of social commerce, with several organism variables such as perceived arousal and enjoyment or perceived risk. This enables us to measure the magnitude and nature of such associations.

This study is enhanced through correlations by using a cross-sectional research design. In a cross-sectional design, essential information is collected from a group of people with reference to a unique moment and a survey-based study is conducted focusing on the experience, perceptions and actions of individuals while participating in the live shopping session. This structure is convenient to explore the relationships and correlations between variables within one snapshot in terms of live shopping.

Data Collection Method

Surveys and questionnaires will be used as the main data collection methods of this quantitative study. it constitutes as one of the popular tools for securing quantitative information while conducting social and behavioral studies (Malhotra, 2010). Thus, Researchers can use this method to get information on participant's perceptions, attitudes, and behaviors. The survey and questionnaire will be in a Likert scale format, which is a common survey tool appropriate for measuring degrees of agreement with a statement, answered with a scale (Allen & Seaman, 2007). For example, on a scale of 1-5 or 1-7, with 1 being strongly disagree and 7 being strongly agree (Allen & Seaman, 2007). The questionnaire in this study is used to collect data regarding the perceptions, experience, and behaviors from the respondents towards Live Shopping sessions. These surveys shall comprise of questions targeting different variables in this study.

Data collection methods involve selection depending on research purposes and availability. Surveys and questionnaires are appropriate methods to collect self-reports on respondents' perceptions, attitudes and behaviors which can test the above-mentioned hypotheses. Furthermore, secondary data analysis could be used alongside the survey based data as it helps to enrich the insights gained from the research questions.

To start, researchers collect data by analyzing the existing data from official statistical websites to find information and to enrich and support the information received. From there, collection of data can proceed by utilizing surveys and questionnaires. The last step would be to finalize the data collection method as well as cross-examining different insights from both data to maximize the output.

In conclusion, combined use of surveys and questionnaires, analytics from websites, and existing data sources would be best fit for the quantitative research study proposed in this paper. It provides a robust basis for testing hypotheticals regarding scarcity, demand, convenience, interactivity, playfulness, perceived arousal, perceived enjoyment, and impulse purchase.

Development of Research Instruments

The research instrument for this study would be utilizing surveys and questionnaire studies. Data collection will revolve around the participants' perception, experience and behaviors towards live shopping programs through these instruments. These surveys and questionnaires would contain various types of questions related to issues such as time limitation, quantity limitation, demand, convenience, interactivity, playfulness among others. The use of Likert scales and numeric responses allow participants to quantify their level of agreement to variables. Here is an in-depth explanation of the instruments used, including the steps involved in the research process:

Instrument: Surveys and Questionnaires
Purpose: Self-reported data are mostly collected through surveys and questionnaires. The tools are crucial in assessing consumers' views, opinions and actions pertaining to experiential buying on livetop and spontaneous buying online.

Steps in the Research Process:
instrument Development: A borrowed structured survey or questionnaire from Wu et al (2021) and Lin et al (2022) is used to process and initiate the research which generates information on different variables such as limited quantity scarcity, limited time scarcity, demand, convenience, interactivity, playfulness, perceived arousal, perceived enjoyment, and impulse purchase in consumers.

Pilot Testing: It is essential to conduct a pilot-test among a few respondents prior to implementing a survey on the targeted population. The aim of pilot testing is to assess the clarity, understandability, and efficiency of the survey questions. From there, any feedback received during the pilot test is used to carry out any revisions needed in the process or materials used to optimize the survey.

Participant Recruitment: Participants are selected at random within a chosen, represented population in order to create a representative sample. Research design involves a selection of sample size and demographic parameters.

Data Collection: The participants are given a survey. The choice of data collection method would determine the approach; this could range from online surveys, paper-based questionnaires or interviews. It is essential that the participants are required to answer the questions sincerely and truthfully.
Data Entry and Management: The collected data is then inserted into either a database or in statistical software where it is analyzed. Cleaning the dataset from any duplicates or anomalies and putting it together in an orderly manner leads to accurate data presentation and interpretation.

Statistical Analysis: In order to establish the validity of the research hypotheses, different statistical procedures such as correlation analysis, regression analysis, as well as structural equation modeling are implemented to analyze the data. The study investigates the correlations between the independent variables (i.e., limited-quantity scarcity, limited-time scarcity, demand, convenience, interactivity, playfulness) with the dependent variables (perceived arousal, perceived enjoyment, impulse buying).

Results Interpretation: This is how the results from the statistical analysis are used to establish whether the correlation is strong or weak, as well as in which direction. It seeks to confirm that limited-quantity scarcity, limited-time scarcity, demand, convenience, interactivity, and playfulness component do influence perceived arousal, perceived enjoyment, and impulsive purchase in support of the SOR Model.

By combining these instruments with the specific sets of the research steps, the researcher ends up with a dataset that is a product of both subjective and objective perspectives of consumers during live shopping. Adopting this comprehensive approach will ensure the study tests the hypotheses thoroughly and gives useful information about the scarcity, demand, convenience, interactivity, playfulness, perceived arousal, and perceived enjoyment of e-commerce impulse purchase using the S-O-R Model.

Sampling Procedure
Population and Sample
In this case, the sample population would be Indonesian e-commerce users within the Jabodetabek Area who are customers to live shopping. The live shopping feature entails using live video streaming, chat or any other feature of interaction between sellers and

customers is one of the forms of e-commerce that has become popular lately. The population would be subdivided into groups based on factors such as age, sex, or place.

A subgroup of a particular population that is subjected to study is referred to as a sample. For this reason, the sample would be composed of Indonesian live shopping customers within the Jabodetabek Area who can serve as representatives of all the members of the population being studied. However, it is important that the sample should be sufficiently representative and statistically sound in terms of size with respect to reliability as well as manageable with regards to time, availability of resources, and collection of data. To determine the right minimum sample size, this study uses the 10 to 20-times rule. The sample-to-construct or variable ratio indicates that there should be at least where a ratio of 10:1 or 20:1 is preferable (Hair et al., 2018). This means that while a minimum of five respondents per independent construct is necessary, having 10 to 20 observations per construct is strongly advised. In this study, we will use a 20:1 ratio to ensure higher data accuracy. The formula below would be used to determine the minimum sample size:

Sample Size (n) = 10 to 20 (Number of Construct)

Using the number of constructs in the model, the calculation for the minimum sample size of this study would be n=109 or n=209. Which means that the sample size should be at least 90 or 180 users from the population. Hence, this study set the sample size of 385 users from the population to achieve the desired level of precision and confidence level.

Table1.ResearchPopulation&Sample

Population	Sample
All users of live shopping platforms residing in the Indonesian Jabodetabek Area that made purchases on a social commerce platform through live shopping activities within one week prior.	385 users of live shopping platforms residing in the Indonesian Jabodetabek Area that made purchases on a social commerce platform through live shopping activities within three months prior.

Sampling Method

Sampling is the process of selecting a sufficient number of elements from a population so that the results of the analysis of that sample can depict the characteristics of the population in general (Malhotra, 2010). According to Malhotra (2010), sampling techniques can be categorized into probability sampling and non-probability sampling.

Regarding the sampling of live shoppers in Indonesia, a non-probability method may be used. Unlike probability sampling which uses a random selection, non-probability sampling does not involve the use of a random selection process and cannot offer assurance that each member of the population's chance to be chosen for inclusion in a sample would be even. Actually, it is the determination of the researcher. According to some non-probability sampling techniques, such as judgmental sampling, convenience sampling and quota sampling, the sample may be a stream of data from a computer, television or radio composed of waves in different directions. These techniques are usually chosen based on the nature of research and available resources, and representativeness if needed.

The live shopping for Indonesian customers is called customer means all of the viewers who participated in live streaming. However, that is not the case. The group chosen to be involved in the research would consist of a subsample taken from this population.

Convenience sampling is a non-probability sampling technique where researchers select participants based on their accessibility and availability, rather than using random or systematic methods to ensure representation of the target population. Distinguishing between probability and non-probability sampling, MacNealy (1999) defined a convenience sample as a sampling technique that requires the researchers to go to the public "locations and ask passersby to participate" (MacNealy, 1999).

The advantage of convenience sampling lies in its simplicity and speed. It allows researchers to quickly gather data from a readily available pool of respondents, which can be particularly useful in situations where time is of the essence or when the goal is to gain initial insights rather than to make generalizable conclusions. Here are the reasons why convenience sampling is appropriate for this research:

i. Time and cost efficiency: convenience sampling allows for rapid data collection, which is crucial when studying live shopping impulse purchases, where timely insights are essential to understand consumer behavior. This method saves time and resources, which can be significant when conducting research in a large and diverse market like Indonesia.
ii. Accessibility and availability: convenience sampling leverages the accessibility of participants who are readily available and willing to participate in the study. This is particularly relevant in Indonesia, where the use of live streaming for shopping is becoming increasingly popular, and many consumers are already engaged in this form of shopping. This method ensures that the researcher can easily reach and gather data from a pool of participants who are familiar with live shopping.
iii. Flexibility and adaptability: convenience sampling is flexible and adaptable, allowing researchers to adjust their sampling strategy according to the needs of the study. This is important in Indonesia, where the live shopping landscape is constantly evolving, and researchers need to be able to quickly respond to changes in consumer behavior and preferences.

Studies seeking to represent the diverse perspectives within a population need to understand that quota sampling is pragmatic (Neuman, 2014). Rationally selected participants, based on predefined quotas for gender and age, appropriately meet the study's goals, providing an excellent environment for doing research related to scarcity, convenience and interactivity in live shopping.

Statistical Test Procedures

1. Reliability Test

Reliability is the degree of consistency of an instrument. In other words, a reliable instrument is that which gives identical scores at all times (Kerlinger, F. N., 2000). Reliability test of a measurement scale would be done to confirm the consistency and stability of the instrument used. This may include examining the test-retest reliability, internal consistency reliability, and inter-rater reliability of the survey or questionnaire used in obtaining data from the respondents.

After collecting data, researchers checked the normality, reliability, and validity data of responses in order to determine whether such data was suitable for data analysis and results determination. The skewness and kurtosis values were in the limits. Factor analysis and Cronbach Alphas for content and construct validity were also performed to establish reliability.

As a form of evaluating the measurement model, Cronbach’s alpha would be assessed for content and construct validity, as well as the reliability. Cronbach's alpha,

as defined by Fornell and Larcker (2006), is a measure of internal consistency that assesses the degree to which a set of items measures the same underlying construct (Fornell & Larcker, 2006). A high Cronbach's alpha indicates that the items are consistent and reliable in measuring the same construct (Fornell & Larcker, 2006). The range of Cronbach's alpha values is typically interpreted as follows: 0.7 to 0.9 values are considered to be having a good reliability score. Meanwhile, 0.6 to 0.7 values are considered to be an acceptable reliability score. However, the value below 0.5 would be an unacceptable reliability value, hence not being considered (Nunnally, 1994).

Composite Reliability (CR) is intended to determine the consistency of the construct validity indicator. A composite reliability of 0.70 is a recommended amount (Hair, 1997). Meanwhile, Fornell and Larcker (1981) recommended a CR value of 0.60 or more as an acceptable value (Fornell & Larcker, 1981).

2. Validity Test

Validity is the measure of the accuracy of an instrument used in a certain study (Linn et al., 2000; Stewart et al., 2009). Validity testing is necessary for the proper measurement of the elements being measured by the survey and measurement items or tools. It is crucial to measure the validities of limited-quantity scarcity, limited-time scarcity, demand, convenience, interactivity, playfulness, perceived arousal, perceived enjoyment, and impulse purchase behavior in this study. Validity tests could be conducted on measurement tools or instruments used in the study to ensure that it accurately measured what it was intended for. This consists of checking for content validity, construct validity, and criterion validity of the survey or questionnaire that gathers information from the subjects (Linn et al., 2000; Stewart et al., 2009). This study uses KMO (Kaiser-Meyer-Olkin) measurement and AVE (Average Variance Extracted) for validity testing.

KMO (Kaiser-Meyer-Olkin) measurements are used for factor analysis to calculate the sampling adequacy of each variable in the model (Kaiser & Rice, 1974). The Kaiser-Meyer-Olkin (KMO) measure checks if the data is suitable for factor analysis. It tells if the variables share enough common variance to make factor analysis worthwhile. A higher KMO value means factor analysis is a good choice for your data. If the KMO value is between 0.5 and 0.6, it is considered as a mediocre yet an acceptable value. However when the value is below 0.5, it is considered to be unacceptable (Kaiser & Rice, 1974).

In constructs validity, four sizes have been used, i.e. Convergent Validity, Variance Extracted, Construct Validity, and Discriminant Validity (Hair et al., 1998; Ferdinand et al., 2002; Dimitrov et al., 2003; Hwang et al., 2004; Ghozali et al., 2004; Arbuckle et al, 2010; Hisyam, 2010; Idris, et al., 2010; Lawson et al., 2010). In this study variance extracted is measured and determined by the AVE (Average Variance Extracted), the recommended AVE score is greater than 0.5 (Fornell & Larcker, 1981). Average Variance Extracted (AVE) is used to check if a set of survey questions or items accurately measures the main idea or construct. It helps determine if the items are doing a good job of representing the concept without too much error. To test the construct validity and evaluate the theories through the validity of measurement instruments (indicators & constructs), this study utilized EFA (Exploratory Factor Analysis) (Mulaik, 1987). EFA is utilized when the number of factors and the associations between items and factors are unknown, whereas CFA is employed when there is a well-established theory regarding the factor structure (Mulaik, 1987). EFA

helps identify the hidden factors or themes that explain the patterns of the data, especially when it's not known how many factors there are or how they are structured. The numbers measured on EFA would be the factor loading. Hair et al. (1998) provided guidelines for interpreting factor loadings: ±0.30 as minimal, ±0.40 as important, and ±0.50 as practically significant. If no correlations exceed 0.30, the researcher should reconsider whether factor analysis is the suitable statistical method to use (Hair et al., 1998).

3. Goodness of Fit Test

To test the model using reliability and validity testing, measurement model fit is conducted. The definition of measurement model fit in structural equation modeling (SEM) is the degree to which the model-implied covariance matrix matches the sample covariance matrix and it determines how well the model reproduces the observed data and is a crucial aspect of model evaluation (Goretzko et al., 2023). Measurement model fit indices are separated into three measures: Absolute Fit Measure, Incremental Fit Measure, and Parsimonious Fit Measure (Hooper et al., 2008).

Absolute Fit Measures determine how well a model fits the sample data and demonstrates which proposed model has the most fit (McDonald & Ho, 2002). The Absolute Fit Measures used in this study would consist of CMIN/DF in the range of 2-1 or 3-1 are indicative of an acceptable fit between the sample data and the hypothetical model (Carmines & McIver, 1981). Also, Root Mean Square Error Approximation (RMSEA) with a level of acceptance < 0.08, and Goodness of Fit Index (GFI) with a level of acceptance > 0.90 (Bentler & Bonett, 1980).

Incremental Fit Measures are a group of indices that don't use the chi-square in its raw form except it compares the chi-square value to a baseline model (Hooper et al., 2008). In this study, the Incremental Fit Measures would consist of Adjusted Goodness of Fit (AGFI) with a level of acceptance of > 0.90, Comparative Fit Index (CFI) with a level of acceptance > 0.90, Tucker-Lewis Index (TLI) with a level of acceptance of > 0.90, and Normed Fit Index (NFI) with a level of acceptance of > 0.90 (Bentler & Bonett, 1980).

Parsimonious Fit Measures tend to be fit indices from other categories adjusted to favor parsimonious models than complex model (Stone, 2021). Parsimonious Fit Measures in this study would be utilizing Parsimonious Goodness of Fit Index (PGFI). The PGFI is based upon the GFI by adjusting for loss of degrees of freedom (Hooper et al., 2008). Parsimonious Goodness of Fit Index has a level of acceptance of > 0.50 (Bentler et al., 1980).

The Goodness-of-Fit (GOF) in a statistical model is used to describe how well the model fits into a set of observations (Olivares & Forero, 2010). GOF is commonly used in indexes, redundancy or communality, and refers separately to the reconstruction of the structural model and the measurement model (Tenenhaus et al., 2004).

Table2.GoodnessofFitIndicesForTheMeasurementModel

	Name of Index	Index Full Name	Level of Acceptance
Absolute Fit	CMIN/DF	Minimum Discrepancy Function by Degrees of Freedom divided	P > 0.05

	RMSEA	Root Mean Square Error Approximation	< 0.08
	GFI	Goodness of Fit Index	> 0.90
	AGFI	Adjusted Goodness of Fit	> 0.90
Incremental Fit	CFI	Comparative Fit Index	> 0.90
	TLI	Tucker-Lewis Index	> 0.90
	NFI	Normed Fit Index	> 0.90
Parsimonious Fit	PGFI	Parsimonious Goodness of Fit Index	> 0.50

As a form of evaluating the measurement model, Table 3 is used to further validate if the model suits the parameters and level of acceptance.

RESULTS AND DISCUSSION

Pilot Test Result

To test the validity of each indicator and ensure there is no misunderstanding of the meaning of each variable being tested, a quantitative pilot test is done with more than 10% number of samples through an initial survey (Connelly, 2008). The pilot test done in this study involved 150 informants residing in the Indonesian Jabodetabek Area who made purchases on a social commerce platform through live shopping activities within three months prior.

The survey process was conducted through giving the informants a chance to answer whether each indicator was clear and understood or not, and if not, giving them a chance to explain what needs to be improved. Informants from this pilot test were asked how they perceive the meaning of the 27 indicators. The indicators presented to the informants were translated into Bahasa Indonesia. This allows researchers to have a better understanding about how the respondents understand each indicator and whether the meaning of the indicators would align with the true meaning of each indicator.

In general, 3 out of 27 indicators were revised based on the results of the pilot test, as explained in Table 3. Pilot Test Survey Result.

Table 3. Pilot Test Survey Result

Variable	Code	Original Indicator (English)	Initial Indicator (Bahasa Indonesia)	Revised Indicator (Bahasa Indonesia)	Remarks
Limited-Quantity Scarcity	LQS2	I perceive that, currently, product availability on the platform is low.	*Saat berbelanja live shopping, saya mendapatkan persepsi bahwa saat ini ketersediaan produk di*	*Saya merasa bahwa saat ini, ketersediaan produk di platform live streaming sedikit.*	The words "live streaming" and "live shopping" were redundant and repetitive. To simplify the indicator, some of the words

			platform live streaming rendah.		are removed.
Demand	ND1	The process of watching the live stream makes me want to own the item.	*Proses menonton live stream membuat saya ingin memiliki barang tersebut.*	*Proses menonton live shopping membuat saya ingin memiliki barang tersebut.*	"Live stream" was not fully describing the whole process of shopping. Hence, "live shopping" was used to replace it.
Impulse Purchase	IP1	I will buy it quickly when I see something I like.	*Saya akan segera membelinya ketika saya melihat sesuatu yang saya suka.*	*Saya akan segera membeli di platform live shopping ketika saya melihat sesuatu yang saya suka.*	The word "*membelinya*" is too broad and open-ended to interpret. Hence, the word "*di platform live shopping*" is added.

Validity Test Analysis

The results of the research's KMO score and average variance extracted value are shown on Table IV-3. Referring to Kaiser and Rice (1974), If the KMO (Kaiser-Meyer-Olkin) value is between 0.5 and 0.6, it is considered as a mediocre yet an acceptable value. However when the value is below 0.5, it is considered to be unacceptable (Kaiser & Rice, 1974), the KMO score Referring to Fornell and Larcker (1981), the recommended AVE score is greater than 0.5 (Fornell & Larcker, 1981).

Table4.ValidityPilotTestResults

Variable	Code	Factor Loading	KMO Score	Average Variance Extracted (AVE)
Limited-Quantity Scarcity	LQS1	0.792	0.641	0.511
	LQS2	0.796		
	LQS3	0.521		
Limited-Time Scarcity	LTS1	0.593	0.663	0.388
	LTS2	0.674		
	LTS3	0.598		
Demand	ND1	0.607	0.681	0.467
	ND2	0.734		
	ND3	0.702		

Convenience	CV1	0.696	0.693	0.471
	CV2	0.719		
	CV3	0.642		
Interactivity	IT1	0.442	0.616	0.305
	IT2	0.594		
	IT3	0.605		
Playfulness	DL1	0.626	0.685	0.454
	DL2	0.718		
	DL3	0.674		
Perceived Arousal	PE1	0.760	0.715	0.560
	PE2	0.781		
	PE3	0.702		
Perceived Enjoyment	PA1	0.814	0.732	0.645
	PA2	0.759		
	PA3	0.834		
Impulse Purchase	IP1	0.744	0.705	0.611
	IP2	0.845		
	IP3	0.751		

Based on the data shown in Table IV-3, each variable has a KMO value above 0.5. Therefore, it can be concluded that all indicators to be used in the main test are valid and suitable for further testing.

On the other hand, the test also shows the average variance extracted (AVE), which results in limited-quantity scarcity, perceived enjoyment, perceived arousal, and impulse purchase having convergent validity because their AVE value is greater than 0.5. However, the AVE result in the pilot test also shows limited-time scarcity with a score of 0.388, demand with a score of 0.467, convenience with a score of 0.471, playfulness with a score of 0.454, and interactivity with a score of 0.305 indicates that these constructs do not have convergent validity.

To further test the validity of the pilot test data, according to Hair et al. (1998), ±0.30 factor loading score is categorized as minimal, ±0.40 as important, and ±0.50 as practically significant. Correlations need to exceed 0.30 to ensure that factor analysis is the suitable statistical method to use (Hair et al., 1998).

The factor loading results in Table IV-3 clearly show that most measured variables have strong and meaningful loadings, adhering to guidelines by Hair et al. (1998). These guidelines suggest that loadings of ±0.30 are minimal, ±0.40 are important, and ±0.50 are practically significant. In our dataset, all loadings exceed the ±0.50 mark, except for a few, indicating their practical significance and confirming that factor analysis is appropriate for this data.

For example, loadings for the Limited-Quantity Scarcity variables range from 0.521 to 0.796, while the Limited-Time Scarcity loadings range from 0.593 to 0.674. Demand variable loadings range from 0.607 to 0.734, and Convenience has loadings between 0.642 and 0.719. The Interactivity variable shows loadings between 0.442 and 0.605, and Playfulness ranges from 0.626 to 0.718. Other variables, such as Perceived Arousal, show loadings from 0.702 to 0.781, and Perceived Enjoyment stands out with the highest loadings, ranging from 0.759 to 0.834. Finally, the Impulse Purchase variable has loadings between 0.744 and 0.845. These results confirm factor analysis as a suitable method for this study, demonstrating the reliability and convergent validity of the constructs measured.

In general, three out of 27 indicators were revised based on the results of the pilot test, as detailed in Table IV-1. This table outlines the original indicators and their revised versions. For instance, the limited-quantity scarcity indicator (LQS2) was revised to eliminate redundant terms, while the demand indicator (ND1) was adjusted to more accurately reflect the shopping process. The impulse purchase indicator (IP1) was also modified for clarity.

In the pilot test, some indicators showed lower loadings, which necessitated revisions. These improvements ensure that the measured variables are reliably and accurately represented in the main test. The refined indicators not only boosted the factor loadings but also provided clearer and more precise measurements, enhancing the overall quality of the research instrument.

Reliability Test Analysis

In this study, a reliability test is done by calculating Cronbach's alpha values and composite reliability (CR) score. The range of Cronbach's alpha values and their corresponding levels of reliability are as follows:

- 0.7 to 0.9 values are considered to be having a good reliability score.
- 0.6 to 0.7 values are considered to be an acceptable reliability score.
- Value below 0.5 would be an unacceptable reliability value, hence not being considered (Nunnally, 1994).

On the other hand, A composite reliability of 0.70 is a recommended amount (Hair, 1997). Meanwhile, Fornell and Larcker (1981) recommended a CR value of 0.60 or more as an acceptable value (Fornell & Larcker, 1981). If other reliability measures show good acceptable results the value of 0.5 for composite reliability is acceptable (Ghozali & Latan, 2015).

Table5.ReliabilityPilotTestResults

Variable	Total Indicator(s)	Cronbach's Alpha	Composite Reliability
Limited-Quantity Scarcity	3	0.787	0.752
Limited-Time Scarcity	3	0.681	0.654
Demand	3	0.758	0.723
Convenience	3	0.767	0.727
Interactivity	3	0.584	0.564
Playfulness	3	0.756	0.713
Perceived Arousal	3	0.831	0.792

Perceived Enjoyment	3	0.876	0.845
Impulse Purchase	3	0.851	0.824

In this study, reliability was assessed using Cronbach's alpha and composite reliability (CR) scores. The Cronbach's alpha values for the variables range from 0.584 to 0.876. Limited-Time Scarcity, with a Cronbach's alpha of 0.681, falls within the acceptable reliability range (0.6 to 0.7). The following variables; Limited-Quantity Scarcity, Demand, Convenience, Playfulness, Perceived Enjoyment, Perceived Arousal, and Impulse Purchase all have Cronbach's alpha values exceeding 0.7, indicating good reliability. On the other hand, the Interactivity variable has a Cronbach's alpha of 0.584, which is considered acceptable but on the lower end of the spectrum. According to Nunnally (1994), values below 0.5 are unacceptable, but none of the variables in this study fall into that category.

The composite reliability (CR) scores for the variables also indicate good reliability, with all scores above the recommended threshold of 0.70 (Hair, 1997) and the acceptable threshold of 0.60 (Fornell & Larcker, 1981). The CR scores range from 0.564 for Interactivity to 0.845 for Perceived Enjoyment. While Interactivity has the lowest CR score at 0.564, it is still within the acceptable range if other reliability measures show good results (Ghozali & Latan, 2015). All other variables have CR scores well above 0.70, indicating strong internal consistency and reliability. This comprehensive reliability assessment ensures that the measurement instruments used in the study are consistent and stable.

Main Test Result

The questionnaire used for this research begins with a brief introduction to the proposed survey. This is followed by filtering questions related to the purchasing activity with live shopping criteria for the sample, which is whether the respondents bought something through live shopping within three months prior, answered with the response options of yes or no. Following on the question, respondents were asked regarding one specific platform that they are used to do live shopping during, the response options being Shopee, TikTok Shop, Lazada, Tokopedia, and others. The last filtering question is the domicile of the respondent with the response option of "JABODETABEK" (Jakarta, Bogor, Depok, Tangerang, and Bekasi) or "*luar* JABODETABEK" (outside of the JABODETABEK area).

The main section is divided into several other sections of the questionnaire consisting of questions about stimulus factors such as limited-quantity scarcity in section 2, limited-time scarcity in section 3, demand in section 4, convenience in section 5, interactivity in section 6, playfulness in section 7, perceived arousal in section 8, perceived enjoyment in section 9, and impulse purchase in section 10. These three main sections used a 5-point Likert scale, ranging from strongly agree (5) to strongly disagree (1) (Likert, 1932).

The final section of the questionnaire includes questions for profiling respondents, such as gender, age, occupation, last education level, expenditure, frequency, and category chosen during live shopping. These are crucial data points to assess whether the sample collected can adequately represent the target population for generalization.

The researchers used SPSS/AMOS to analyze the main test results after data cleaning. Briefly, the researchers measure the indices for confirmatory factor analysis. The goodness of fit test was deemed acceptable to continue hypothesis testing. Five of eight hypotheses were accepted.

General Description of Respondents

In this study, the total amount of valid answers from respondents that match the criteria is 385. An overview of the demographic data of the valid respondents is presented in Table IV-5, which shows the frequency and percentage of each demographic item. For the gender dimension, this study obtained samples of 24.7% male and 75.3% female respondents. However, for age, most of the sample consists of respondents in the 15 to 14-year age range.

The range of expenditure for monthly live shopping with 24.2% respondents answers 700,000 to 1,000,000 rupiahs, and 38.7% respondents with the live shopping frequency of 1 product purchased each month. Most of the valid respondents in this study have completed their education at the high school or undergraduate level. The occupation of our respondents mainly are employed as workers. The last variable to describe the respondent is the category of product that is frequently bought in live shopping, which is fashion.

Table6.RespondentDemographicTable

Dimension	Item	Frequencies	Percentage
Gender	Male	95	24.7%
	Female	290	75.3%
Age	15-24	192	49.9%
	25-34	157	40.8%
	35-44	30	7.8%
	45-55	6	1.6%
Occupation	Students	14	3.6%
	Undergraduate	130	33.8%
	Employee	187	48.6%
	Business owner	54	14.0%
Recent Education	Elementary	1	0.3%
	Junior High	10	2.6%
	High School	162	42.1%
	Bachelor’s degree	197	51.2%
	Master Degree	15	3.9%
Expenditure	> 3,000,000 rupiah	27	7.0%
	2,000,000 - 3,000,000 rupiahs	35	9.1%
	1,500,000 - 2,000,000 rupiahs	40	10.4%
	1,000,000 - 1,500,000 rupiahs	47	12.2%
	700,000 - 1,000,000 rupiahs	93	24.2%

	500,000 - 700,000 rupiahs	88	22.9%
	< 500,000 rupiah once	55	14.3%
Frequency	every 1 to 3 days once	47	12.2%
	a week	121	31.4%
	once a month	149	38.7%
	> once a month	68	17.7%
Product Category	Fashion Beauty	97	25.2%
	Home care	99	25.7%
	Lifestyle	37	9.6%
	Toys & video games	77	20.0%
	Food & Beverage	26	6.8%
	Others	48	12.5%
		1	0.3%

Researchers also conducted a descriptive analysis of each question indicator, which includes the average responses and the standard deviation averages using SPSS. Table 8 presents the overall averages and standard deviations for 27 indicators that test 9 latent variables

Table7.DescriptiveStatisticTestResults

Variable	Code	Minimum	Maximum	Mean	Standard Deviation
Limited-Quantity Scarcity	LQS1	5	1	4.17	1.004
	LQS2	5	1	4.13	1.107
	LQS3	5	1	4.30	0.806
Limited-Time Scarcity	LTS1	5	1	4.36	0.830
	LTS2	5	1	4.27	0.778
	LTS3	5	1	4.14	0.973
Demand	ND1	5	1	4.42	0.763
	ND2	5	1	4.35	0.800
	ND3	5	1	4.36	0.723
Convenience	CV1	5	1	4.41	0.731
	CV2	5	1	4.34	0.855
	CV3	5	1	4.36	0.711

	IT1	5	1	4.36	0.769
Interactivity	IT2	5	1	4.22	0.877
	IT3	5	1	4.38	0.752
	DL1	5	1	4.36	0.833
Playfulness	DL2	5	1	4.32	0.826
	DL3	5	1	4.28	0.774
	PA1	5	1	4.31	0.818
Perceived Arousal	PA2	5	1	4.23	0.858
	PA3	5	1	4.34	0.832
	PE1	5	1	4.36	0.827
Perceived Enjoyment	PE2	5	1	4.35	0.776
	PE3	5	1	4.34	0.761
	IP1	5	1	4.35	0.856
Impulse Purchase	IP2	5	1	4.32	0.926
	IP3	5	1	4.12	1.021

The descriptive analysis of the indicators shows a consistent trend in the responses, with most mean values indicating strong agreement among respondents. For Limited-Quantity Scarcity, the means are 4.17 (LQS1), 4.13 (LQS2), and 4.30 (LQS3), suggesting that respondents generally perceive a scarcity of products on the platform. The standard deviations for these indicators range from 0.806 to 1.107, indicating a moderate level of agreement among respondents. Limited-Time Scarcity indicators also reflect a strong sense of urgency with mean values of 4.36 (LTS1), 4.27 (LTS2), and 4.14 (LTS3), and standard deviations from 0.778 to 0.973, showing some variability but generally strong agreement.

The Demand indicators highlight a strong influence of live stream viewing on respondents' desire to own products, with mean values of 4.42 (ND1), 4.35 (ND2), and 4.36 (ND3). The standard deviations, ranging from 0.723 to 0.800, indicate high consistency in responses. Similarly, Convenience indicators with means of 4.41 (CV1), 4.34 (CV2), and 4.36 (CV3), and standard deviations between 0.711 and 0.855, suggest that respondents find live stream shopping very convenient and time-saving. Interactivity and Playfulness indicators also show high mean values, with Interactivity means at 4.36 (IT1), 4.22 (IT2), and 4.38 (IT3), and Playfulness means at 4.36 (DL1), 4.32 (DL2), and 4.28 (DL3). The slightly higher standard deviations for these indicators, ranging from 0.752 to 0.877, reflect a bit more variability in perceptions of engagement and enjoyment.

Perceived Arousal and Perceived Enjoyment indicators both exhibit high mean values, indicating that respondents feel enthusiastic and happy while participating in live stream shopping. The means for Perceived Arousal are 4.31 (PA1), 4.23 (PA2), and 4.34 (PA3), with standard deviations from 0.818 to 0.858. For Perceived Enjoyment, the means are 4.36 (PE1), 4.35 (PE2), and 4.34 (PE3), with

standard deviations between 0.761 and 0.827. Lastly, the Impulse Purchase indicators show means of 4.35 (IP1), 4.32 (IP2), and 4.12 (IP3), with standard deviations ranging from 0.856 to 1.021, indicating a strong inclination among respondents to make spontaneous purchases during live streams.

Validity Test Analysis

In this study, a validity test is used to measure the accuracy of an instrument used. KMO (Kaiser-Meyer-Olkin) measurement is used to calculate the sampling adequacy of each variable in the model, Average Variance Extracted (AVE) is used to check if the set of survey questions or items accurately measures the main idea or construct. In the interpretation of discriminant validity, if √AVE is greater than the factor loading, it indicates that the item is more strongly related to the construct it is supposed to measure than to other constructs. This suggests that the construct is well-defined and discriminates well from other constructs (Hubley, 2014).

Table8.ValidityMainTestResults

Variable	Code	Factor Loading	KMO Score	Average Variance Extracted (AVE)	Discriminant Validity (√AVE > Factor Loading)
Limited-Quantity Scarcity	LQS1	0.716	0.601	0.411	0.614
	LQS2	0.726			
	LQS3	0.441			
Limited-Time Scarcity	LTS1	0.412	0.603	0.257	0.507
	LTS2	0.484			
	LTS3	0.607			
Demand	ND1	0.504	0.585	0.188	0.434
	ND2	0.393			
	ND3	0.395			
Convenience	CV1	0.495	0.604	0.251	0.501
	CV2	0.571			
	CV3	0.427			
Interactivity	IT1	0.334	0.541	0.166	0.407
	IT2	0.503			
	IT3	0.364			
Playfulness	DL1	0.475	0.609	0.265	0.515
	DL2	0.553			
	DL3	0.514			
Perceived Arousal	PA1	0.655	0.643	0.378	0.615

	PA2	0.656			
	PA3	0.667			
Perceived Enjoyment	PE1	0.602	0.647	0.435	0.660
	PE2	0.562			
	PE3	0.666			
Impulse Purchase	IP1	0.640	0.668	0.428	0.654
	IP2	0.642			
	IP3	0.679			

The results of the KMO score from each and every variable tested showed an acceptable and adequate score. This validates and supports the fact that factor analysis is a good choice for this data set. It also showed that the variables tested shared enough common variance to make factor analysis worthwhile.

However, in comparing the validity results between the pilot and main tests, significant differences emerge across the variables in this study. Limited-quantity scarcity, which initially exhibited a KMO score of 0.625 and an AVE of 0.464 in the pilot test, showed a decrease in both KMO score of 0.601 and AVE of 0.411 values in the main test. Despite this decrease, the KMO score remains above the acceptable threshold of 0.5, indicating moderate adequacy, while the AVE falls below the recommended level of 0.5, suggesting challenges in convergent validity for this construct.

Similarly, limited-time scarcity, demand, convenience, interactivity, playfulness, perceived enjoyment, perceived arousal, and impulse purchase all experienced declines in both KMO and AVE scores from the pilot to the main test. Notably, variables such as Limited-Time Scarcity, Demand, and Interactivity demonstrated KMO scores below 0.6 in the main test, indicating potential issues with factorability of the variables. AVE scores also decreased notably for these variables, further indicating diminished convergent validity compared to the pilot results.

Some of the declining AVE numbers between the pilot test results and the main test results suggest that the data collected after the pilot test might include some extreme values. This is supported by the fact that several indicators, such as LQS2 (Limited-Time Scarcity), ND1 (Demand), and IP1 (Impulse Purchase), were revised and adjusted during the pilot test survey, resulting in increased AVE scores. On the other hand, some variables that were not adjusted because their scores were adequate during the pilot test showed a decline in AVE scores in the main test.

The decreases in KMO and AVE scores for most variables suggest challenges in maintaining the adequacy and convergence of measurement instruments across different phases of testing. Variables like limited-time scarcity, demand, and interactivity, which exhibited significant declines in both KMO and AVE, may require careful reconsideration and refinement of measurement items to better capture the underlying constructs effectively.

In contrast, variables like Perceived Enjoyment and Impulse Purchase, while showing decreases in validity scores from the pilot, still maintained relatively higher levels of KMO and AVE, indicating more robust convergent validity. This stability suggests that these constructs may be more resilient to changes in measurement conditions or

sample characteristics between testing phases.

Following the guidelines of Hair et al. (1998), factor loading scores were interpreted as minimally significant at ±0.30, important at ±0.40, and practically significant at ±0.50. The decision to utilize factor analysis was based on the presence of correlations exceeding 0.30, a threshold recommended by Hair et al. (1998) to ensure the suitability of this statistical method.

The main test for the factor loading results reveal a mixed picture when compared to the pilot test. While some indicators show improvement, others fall short of the expected standards set by Hair et al. (1998). In the main test, the factor loadings for Limited-Quantity Scarcity (LQS) variables range from 0.441 to 0.726, showing a notable improvement for LQS1 and LQS2 compared to the pilot test. However, LQS3's loading decreased to 0.441, which is below the practically significant threshold of ±0.50.

The limited-time scarcity variables also exhibit a decline in factor loadings, with values ranging from 0.412 to 0.607. This is a significant drop from the pilot test, where the loadings were between 0.700 and 0.823. Similarly, the demand variables show a concerning decrease, with loadings between 0.393 and 0.504, compared to the pilot test range of 0.734 to 0.836. This suggests that the revisions made to these indicators did not enhance their reliability or validity as intended.

On a more positive note, the convenience variables show a slight improvement, with loadings ranging from 0.427 to 0.571, compared to the pilot test range of 0.715 to 0.824. The interactivity variables, however, still struggle with lower loadings, ranging from 0.334 to 0.503. This indicates that further refinement is needed for these indicators to achieve practical significance. Playfulness variables show moderate improvement with loadings between 0.475 and 0.553, compared to the pilot test range of 0.761 to 0.820.

Perceived arousal and perceived enjoyment variables maintain relatively strong loadings in the main test, with perceived arousal ranging from 0.562 to 0.666 and perceived enjoyment from 0.655 to 0.667. These results are consistent with the pilot test, suggesting that these constructs are reliably measured. The impulse purchase variables also show consistent loadings, ranging from 0.640 to 0.679, which, although lower than the pilot test range of 0.795 to 0.905, still indicate practical significance.

The analysis of the provided data reveals mixed results regarding discriminant validity. For Limited-Quantity Scarcity (LQS), the AVE (0.411) is greater than the factor loadings (0.716, 0.726, and 0.441), indicating good discriminant validity. Conversely, Limited-Time Scarcity (LTS) shows an AVE (0.257) that is less than its factor loadings (0.412, 0.484, and 0.607), suggesting potential issues with discriminant validity. Demand (ND) and Convenience (CV) also exhibit AVE values (0.188 and 0.251) that are lower than their respective factor loadings, indicating cross-loading and potential discriminant validity issues. Interactivity (IT) and Playfulness (DL) have AVE values (0.166 and 0.265) that are significantly lower than their factor loadings, indicating significant cross-loading and poor discriminant validity. Perceived Arousal (PA) and Perceived Enjoyment (PE) have AVE values (0.378 and 0.435) that are greater than their factor loadings, indicating good discriminant validity. Lastly, Impulse Purchase (IP) shows an AVE (0.428) that is greater than its factor loadings, indicating good discriminant validity. Overall, while some constructs demonstrate strong discriminant validity, others show signs of cross-loading and potential issues with discriminant validity, necessitating further refinement and validation.

In conclusion, the main test results for factor loading in the analysis present a mixed outcome. While some indicators show improvement, others fall short of the desired standards. The revisions made to the indicators did not uniformly enhance their reliability and validity. Further refinement is necessary for certain variables to achieve practical significance. Overall, the main test results underscore the importance of continuous improvement and validation in research instrument development to ensure accurate and reliable measurements.

Messick, S. (1984) discusses the concept of construct-irrelevant variance (CIV) and its impact on test validity, which aligns with the Construct Irrelevance Theory (Messick, 1984). Specifically, Messick (1984) highlights that CIV can lead to systematic errors in test scores, which can threaten the validity of the test, even if the test has good reliability measures like composite reliability and Cronbach's alpha scores (Messick, 1984). A test can have a low Average Validity Evidence (AVE) score due to various reasons such as methodological limitations or construct issues, but still maintain good composite reliability and Cronbach's alpha scores if the items are highly correlated with each other (Messick, 1984). While reliability is important for ensuring consistent measurement, it does not directly impact the validity of test scores. A test can have good composite reliability and Cronbach's alpha scores if the items are highly correlated, but still suffer from low Average Validity Evidence (AVE) scores due to CIV (Messick, 1989; Kane, 1992).

Reliability Test Analysis

The reliability test is also done in the main test by calculating Cronbach's alpha values and composite reliability (CR) score.

Table9.ReliabilityMainTestResults

Variable	Total Indicator(s)	KMO Score	Average Variance Extracted (AVE)
Limited-Quantity Scarcity	3	0.652	0.668
Limited-Time Scarcity	3	0.489	0.504
Demand	3	0.421	0.407
Convenience	3	0.497	0.498
Interactivity	3	0.362	0.366
Playfulness	3	0.528	0.519
Perceived Arousal	3	0.661	0.641
Perceived Enjoyment	3	0.688	0.698
Impulse Purchase	3	0.686	0.691

The reliability results for the main test indicated varied levels of reliability across the variables compared to the pilot test. Limited-quantity scarcity shows acceptable reliability with a Cronbach's alpha of 0.652 and CR of 0.668, slightly decreased from the pilot test but remaining within acceptable ranges. In contrast, variables such as limited-time scarcity, demand, and interactivity exhibited notable decreases in reliability, with Cronbach's alpha values falling below the acceptable range from 0.362 to 0.489 and CR scores also decreased.

Among all the variables, perceived enjoyment and impulse purchase maintained

relatively higher reliability, even though Cronbach's alpha and CR scores are lower than the pilot test. On the other hand, perceived enjoyment showed a Cronbach's alpha of 0.688 and CR of 0.698, indicating acceptable but reduced internal consistency from the pilot test.

The decrease in reliability scores for limited-Time Scarcity, demand, convenience, and interactivity between the pilot and main test phases indicates potential challenges in maintaining the consistency and stability of these measurements over time or under different conditions. This variability underscores the importance of continuous validation and refinement of measurement instruments to ensure robustness in research findings.

For variables like limited-quantity scarcity, despite a slight decrease in reliability scores, they still maintain acceptable levels of internal consistency, suggesting that these constructs are relatively stable across different phases of testing. Overall, while some variables demonstrated strong reliability throughout both pilot and main tests, others showed variability that could impact the validity of conclusions drawn from their measurements.

Goodness of Fit Analysis

To test the measurement of model fit in this study and ensure that the model corresponds with the data, absolute, incremental, and parsimonious fit indices are examined simultaneously. Based on the indices proposed by Hooper (2008), the criteria for a good fit from the goodness of fit test are absolute fit, incremental fit, and parsimonious fit (Hooper et al., 2008). Table IV-7 explains the good criteria and the actual results of the goodness-of-fit test obtained from the AMOS output

Table10.GoodnessofFitTestResults

Goodness of Fit Index		Good Value	Actual Value
Absolute Fit	CMIN/DF	≤ 3	2.243
	RMSEA	< 0.08	0.057
	GFI	> 0.90	0.879
Incremental Fit	AGFI	> 0.90	0.850
	CFI	> 0.90	0.887
	TLI	> 0.90	0.869
	NFI	> 0.90	0.815
Parsimonious Fit	PGFI	> 0.50	0.707

Absolute fit indices are the most basic metrics to show how well a research model aligns with the sample data obtained. The indices for absolute fit would consist of CMIN/DF, RMSEA, and GFI (Bentler & Bonett, 1980). CMIN/DF score of 2.243 indicates that the model is a good fit because it achieved less than 3. RMSEA score of 0.057 is acceptable because less than 0.08 indicates a good fit is caused by sample size being sufficient. However, GFI score is 0.879 which indicates a marginal fit because more than 0.80.

Incremental fit indices that consist of AGFI, CFI, TLI, and NFI are also analyzed in this study. These indices are used to consider the complexity of a model when assessing its fit.

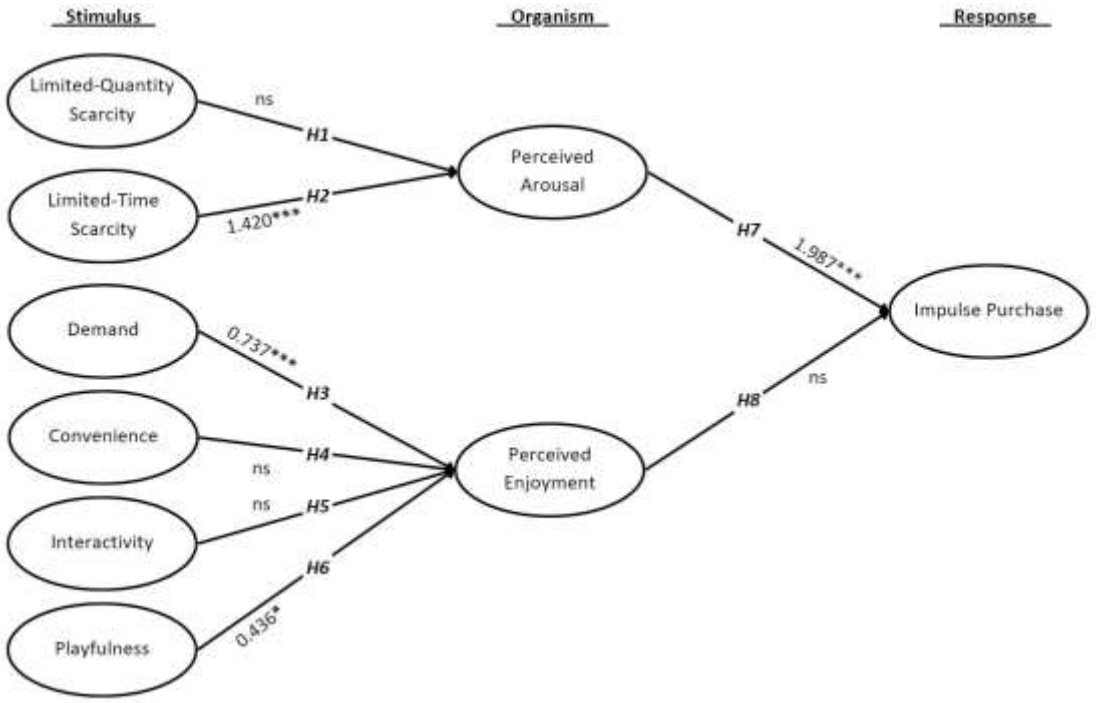
The AGFI score of 0.850, CFI score of 0.887, TLI score of 0.869, and lastly NFI score of 0.815 indicates a marginal fit for the model used in this study.

Parsimonious fit indices is the last metric that is used in this study to analyze the PGFI from the model. The PGFI score of 0.707 indicates that the model in this study is a good fit because it is more than 0.50. Overall, The model in this study demonstrates a good fit with a CMIN/DF of 2.243, RMSEA of 0.057, and PGFI of 0.707, while marginally fitting with GFI at 0.879, AGFI at 0.850, CFI at 0.887, TLI at 0.869, and NFI at 0.815.

Hypothesis Test Analysis

Hypothesis testing can demonstrate statistical significance through a p-value below 0.05 and whether the hypothesis is accepted or rejected. In addition, the beta (β) value, which is the regression coefficient or slope, for each significant influence between constructs can also be examined to determine the magnitude of the effect of an independent variable on a dependent variable. The p-value and beta values from this study can be seen in Table IV-9. The structural model that accounts for p-value and beta can also be seen in Figure 3.

Figure 3. Structural Model Test Results



Note(s): *p < 0.05, **p < 0.01, *** p < 0.001, ns = not significant

Table11.HypothesisTestResults

Hypothesis	Effect	P-Value	Beta	Accept/Reject H1
H1	LQS→PA	0.079	-0.485	Reject
H2	LTS→PA	***	1.420	Accept
H3	ND→PE	***	0.737	Accept
H4	CV→PE	0.099	-0.245	Reject
H5	IT→PE	0.877	0.026	Reject

H6	DL→PE	0.011	0.436	Accept
H7	PA→IP	***	1.987	Accept
H8	PE→IP	0.001	-1.106	Reject

Overall, the p-value result for H1 is not significant with the beta value of -0.485. Therefore this study accepts the null hypothesis and rejects the alternate hypothesis, indicating that there is a negative effect of limited-quantity scarcity on perceived arousal. Each one-point increase in limited-quantity scarcity is associated with a -0.485-point decrease in perceived arousal.

The p-value for H2 is less than 0.05 with a positive beta value of 1.420 that shows a substantial positive impact. This also indicates that this study rejects the null hypothesis which means that the alternate hypothesis (H2) is accepted, this also shows that limited-time scarcity has a significant positive affects perceived arousal.

Similarly, H3 also shows a significant result with the p-value less than 0.05 with a positive beta value 0.737. This indicates that this study rejects the null hypothesis and accepts the alternate hypothesis (H3), which could also show that demand has a strong positive effect on perceived enjoyment.

On the other hand, H4 shows a not significant result for the p-value is more than 0.05 with the beta value of -0.245. This indicates that this study accepts the null hypothesis and rejects the alternative hypothesis. This shows that convenience does not affect perceived enjoyment.

H5 shows a not significant result for the p-value with the beta value of 0.026. This indicates that this study accepts the null hypothesis and rejects the alternative hypothesis. This shows interactivity does not affect perceived enjoyment.

For H6, with a p-value of 0.011 and a positive beta of 0.436 indicates that this study rejects the null hypothesis and accepts the alternate hypothesis (H6). This also shows that playfulness has a significant positive effect on perceived enjoyment.

H7 shows a significant p-value score and a positive beta value of 1.1987 that indicates this study rejects the null hypothesis and accepts the alternate hypothesis (H7). This also indicates that perceived enjoyment has a strong positive effect on impulse purchase.

Finally, H8 with the p-value of 0.001 and beta of -1.106, this indicates that this study rejects the alternative hypothesis (H8). This result also shows that higher perceived enjoyment might actually decrease the likelihood of impulse purchase, or perceived enjoyment have a negative effect on impulse purchase.

Discussion

1. **Limited-Quantity Scarcity and Limited-Time Scarcity are stimulus factors that affects Perceived Arousal**

   The initial hypotheses proposed that limited-quantity scarcity and limited-time scarcity both have a positive influence on perceived arousal (H1: Limited-quantity scarcity is positively related to perceived arousal; H2: Limited-time scarcity is positively related to perceived arousal). These hypotheses were formulated based on previous research indicating that scarcity, whether in terms of quantity or time, could stimulate buyers and heighten their arousal levels, thereby influencing their purchasing behavior (Wu et al., 2021).

   However, the results of hypothesis testing revealed significant differences. Limited-quantity scarcity did not yield statistical significance ($p > 0.05$),

suggesting a counterintuitive effect where an increase in limited-quantity scarcity led to a decrease in perceived arousal. Conversely, limited-time scarcity showed a significant positive effect ($p < 0.05$) with a beta value of 1.420, indicating that as the duration of scarcity increased, so did perceived arousal.

The development of the initial hypothesis stemmed from existing research suggesting that limited-quantity scarcity, particularly in flash sales, positively impacts consumer attitudes towards sales (Wu et al., 2021). Similarly, limited-time scarcity, characteristic of flash sales' time-bound nature, was anticipated to evoke enthusiasm and excitement (Wu et al., 2021). In addition, previous research had suggested that limited-quantity scarcity might incite competition among buyers and stimulate arousal, consequently fostering a positive attitude towards sales (Zheng et al., 2013; Guo et al., 2017).

However, the empirical findings deviated from the initial hypothesis development, particularly concerning limited-quantity scarcity. While it was anticipated that limited-quantity scarcity would positively influence perceived arousal, the analysis revealed a negative relationship. This disparity underscores the complexity of consumer behavior and emphasizes the importance of considering empirical evidence alongside theoretical constructs with the need for context-specific analysis. Despite the unexpected results, limited-time scarcity demonstrated a significant positive impact on perceived arousal, consistent with prior expectations.

In the context of beauty (25.2%) and fashion (25.7%) products, which constituted the majority of purchases in this study (contributed to 50.9% of the whole responses), the findings offer additional insights. Beauty products, while not typically considered functional or utilitarian, are also not perceived as hedonic by the respondents. This perception is influenced by their habitual purchasing behavior, where consumers frequently buy these products, leading them to believe that the stock will always be available either from the desired brand or alternative brands (Bettiga et al., 2020). This habitual purchasing behavior reduces the perceived urgency and arousal associated with limited-quantity scarcity, as consumers assume that they can easily find the same type of products elsewhere if they are out of stock at one retailer.

Moreover, beauty and fashion products are widely available across various platforms, potentially diminishing the urgency to purchase immediately due to limited stock. The availability of these products in multiple platforms or channels means that consumers do not feel a strong push to act quickly, as they are confident that they can find the products elsewhere. This widespread availability further explains why limited-quantity scarcity did not significantly affect perceived arousal in this sample. Consumers do not perceive a real threat of stock depletion, especially for non-limited edition items, which aligns with the findings of Bettiga et al. (2020) on consumer emotional responses to functional and hedonic products (Bettiga et al., 2020).

In conclusion, while limited-time scarcity emerged as a significant stimulus factor positively affecting perceived arousal, limited-quantity scarcity yielded unexpected results. These findings suggest a complex understanding of how different scarcity stimuli influence consumer perceptions and behaviors. Specifically, the habitual purchasing patterns and widespread availability of beauty and fashion products mitigate the impact of limited-quantity scarcity on

perceived arousal. Further research could explore the underlying mechanisms and boundary conditions shaping the effects of scarcity on consumer arousal and purchasing decisions, particularly in markets with similar consumer behaviors and product availability.

2. **Demand, convenience, interactivity, and playfulness are stimulus factors that affects Perceived Enjoyment**

The initial hypothesis suggested that demand, convenience, interactivity, and playfulness positively influence perceived enjoyment. Those hypotheses were based from existing literature indicating that these factors contribute to enhanced consumer experiences and enjoyment across various contexts (Liu et al., 2020; Brown, 1989; Rogers, 2017; Chang et al., 2015). Therefore, it was hypothesized that these stimuli factors would lead to increased perceived enjoyment within the context of live shopping platforms.However, different hypotheses were accepted and some were rejected.

Comparing the hypothesis test analysis results with the initial hypothesis development reveals some disparities. While demand and playfulness were both supported by the data, convenience and interactivity did not exhibit significant effects on perceived enjoyment contrary to the initial expectations. This suggests that while demand and playfulness are indeed influential factors in shaping perceived enjoyment in live shopping environments, convenience and interactivity may not play as significant roles as initially hypothesized.

According to H3, demand is positively related to perceived enjoyment. This hypothesis is accepted. The analysis yielded a significant positive relationship between demand and perceived enjoyment, supported by a p-value below 0.05 and a strong positive beta value (0.737). This indicates a substantial positive effect, aligning with existing literature that suggests demand enhances consumer experiences and enjoyment (Liu et al., 2020; Brown, 1989). These results show that as the demand for a product increases, so does the perceived enjoyment in live shopping environments.

Similarly, H6 is also accepted (playfulness is positively related to perceived enjoyment). The analysis showed a significant positive relationship between playfulness and perceived enjoyment, with a p-value of 0.011 and a positive beta value of 0.436. This indicates a meaningful impact, consistent with existing literature that highlights the role of playfulness in enhancing consumer experiences and enjoyment (Chang et al., 2015). These results show that as the level of playfulness in e-commerce increases, so does the perceived enjoyment.

On the other hand, H4 is rejected. Initially, H4 proposed that convenience is positively related to perceived enjoyment. This hypothesis is rejected. The analysis showed no significant effect of convenience on perceived enjoyment. This finding contrasts with initial expectations and suggests that while convenience is important, it may not contribute strongly to perceived enjoyment in the context of live shopping. This aligns with Joo & Yang (2023), who noted that the experiential aspects of live shopping overshadow the practical benefits of convenience. Additionally, as consumers become accustomed to the convenience of live shopping platforms, the ease of access may no longer elicit an arousal response, leading to a diminished impact on perceived enjoyment (Li et al., 2022).

The utilitarian aspect of convenience, while important, may not contribute as strongly to perceived enjoyment in this context. Convenience refers to the ease

and efficiency of the shopping process, such as quick access to products, streamlined purchasing processes, and hassle-free navigation. However, in the context of live shopping, users are more focused on the experiential aspects of the live stream rather than the functional benefits. The entertainment value, the thrill of live interactions, and the enjoyment derived from the overall experience overshadow the practical benefits of convenience (Joo & Yang, 2023).

Additionally, as consumers become accustomed to the convenience of live shopping platforms, the ease of access may no longer elicit an arousal response. Initially, the novelty of being able to shop live and interact with hosts in real-time can be exciting and engaging. However, as this convenience becomes a standard expectation over time, it may lose its ability to generate the same level of excitement and emotional response. What was once novel and exciting can become a routine, leading to a diminished impact on perceived enjoyment (Li et al., 2022). This habituation effect suggests that while convenience is a valuable feature, its impact on perceived enjoyment may diminish as consumers become more familiar with the platform. Therefore, to maintain high levels of consumer enjoyment, it is essential for live shopping platforms to continuously innovate and enhance the hedonic aspects of their offerings, ensuring that the experience remains engaging and emotionally stimulating.

Another hypothesis that turned out to be rejected in this study is H5, where initially H5 proposed that interactivity is positively related to perceived enjoyment. This hypothesis is rejected. The analysis revealed no significant effect of interactivity on perceived enjoyment. This finding is contrary to previous research that emphasized the importance of interactivity in online environments (Stewart & Pavlou, 2002; Yadav & Varadarajan, 2005). The results suggest a potential habituation effect, where the novelty and excitement of interactivity diminish as consumers become more familiar with the platform and develop trust based on past interactions (Merrilees, 2003; Lee, 2005). This underscores the importance of optimizing initial interactions to build trust, as the need for interactivity may be more critical during the early stages of the consumer-vendor relationship.

The role of interactivity in perceived enjoyment did not align with its widely recognized importance in online environments. While interactivity is often seen as a defining feature of the Internet, distinguishing it from other communication and commerce channels, it did not emerge as a significant factor in this study (Stewart & Pavlou, 2002; Yadav & Varadarajan, 2005). Previous research has shown that perceived interactivity can influence online trust, particularly during initial interactions with an e-vendor (Merrilees, 2003; Lee, 2005). Initial online trust, which forms quickly and is often fragile, can be crucial for lesser-known vendors looking to establish a foothold with new customers (McKnight et al., 1998). However, our findings suggest that once this initial trust is established, the ongoing need for high interactivity diminishes. This could be because respondents in this study had prior positive experiences with the vendors, reducing the necessity for continuous interactive engagement during subsequent live shopping sessions.

This shift in the importance of interactivity highlights a potential habituation effect. As consumers become more familiar with live shopping platforms and develop trust based on past interactions, the novelty and excitement of interactivity may fade away. Instead,

consumers might prioritize other factors such as demand and playfulness, which continue to enhance their enjoyment. Our sample consisted of respondents who had made purchases from live shopping 3 months prior. The interaction could have happened prior to the "past 3 months" of the respondents' shopping experience with the vendor (based on the filtering question from the survey), indicating that interactivity is primarily needed during the initial contact with the vendor or host, but after the initial contact, the need of interactivity starts to fade away since the consumers already know what to expect from the products. This underscores the importance of optimizing initial interactions to build trust, as the need for interactivity may be more critical during the early stages of the consumer-vendor relationship. Future research should explore how these dynamics evolve over time and the specific conditions under which interactivity remains a vital component of the online shopping experience (Wu et al., 2010).

In conclusion, the study provides empirical evidence supporting the influence of demand and playfulness on perceived enjoyment in live shopping platforms. However, the roles of convenience and interactivity may be less pronounced than initially anticipated. These findings underscore the complexity of consumer experiences and behaviors in online shopping contexts and highlight the importance of considering multiple stimulus factors in designing and optimizing live shopping experiences. Further research could delve deeper into understanding the nuanced effects of these factors and their implications for consumer behavior in e-commerce settings, contributing to both academic knowledge and practical insights for businesses operating in the online retail space.

3. **Perceived Arousal and Perceived Enjoyment are organism factors that affects Impulse Purchase**

The initial hypotheses posited that perceived arousal (H7) and perceived enjoyment (H8) positively influence impulse purchase behaviors. This aligns with prior research indicating significant impacts of emotional states on impulsive buying decisions (Xia et al., 2022). Specifically, it was expected that perceived arousal would heighten emotional responses, thereby increasing the likelihood of impulse purchases. Conversely, perceived enjoyment was hypothesized to positively impact impulse purchases by fostering positive emotions during shopping experiences (Shen & Khalifa, 2012; Wu et al., 2021).

This study implemented a structural equation model to test these hypotheses and the results revealed a statistically significant positive relationship between perceived arousal and impulse purchases ($p < 0.05$, $\beta = 1.1987$), confirming H7. This suggests that heightened perceived arousal indeed leads consumers to engage in impulse purchases more frequently. In contrast, perceived enjoyment showed a significant negative relationship with impulse purchases ($p < 0.001$, $\beta = -1.106$), contradicting H8. This unexpected finding implies that higher levels of perceived enjoyment may reduce the propensity for impulse purchases, possibly due to more deliberate decision-making processes or decreased urgency in purchase decisions (Lin et al., 2022).

The distinct novelty of our study lies in the unexpected and divergent findings regarding the influence of perceived arousal (H7) and perceived enjoyment (H8) on impulse purchase behaviors. While prior research has consistently suggested positive relationships between emotional states and impulsive buying decisions, our study's empirical validation

presents a unique contribution to the literature. Specifically, the significant positive relationship between perceived arousal and impulse purchases confirms the anticipated impact of heightened arousal levels on impulsive buying tendencies. However, the significant negative relationship between perceived enjoyment and impulse purchases challenges conventional assumptions, indicating a novel understanding of how positive emotions may affect consumer decision-making processes.

The novelty of this study suggests a connection towards the theory by Blumer and Katz (1974) on Uses and Gratifications in the context of impulse purchases during e-commerce live shopping (Blumer & Katz, 1974). This theory states that individuals actively seek out and consume media content to fulfill specific needs or gratifications, such as arousal, enjoyment, or information-seeking (Blumer & Katz, 1974). The findings reveal that perceived arousal positively influences impulse purchases, aligning with the theory's premise that individuals actively seek out media experiences to fulfill specific gratifications, such as stimulation or excitement. However, the negative relationship between perceived enjoyment and impulse purchases challenges conventional assumptions, potentially indicating that excessive enjoyment during live shopping may lead to more deliberate and controlled decision-making processes in contrast to the impulsive nature of such purchases. This novel insight contributes to a nuanced understanding of how different emotional states and gratifications sought from media experiences can shape consumer behavior in the emerging e-commerce live shopping context.

The initial hypotheses were grounded in established theories on emotional arousal and enjoyment in consumer behavior. These theories postulate that emotional states play pivotal roles in triggering impulsive purchases, particularly in dynamic shopping environments such as live streaming platforms (Mehrabian & Russell, 1974; Lin et al., 2022). This theoretical framework guided the formulation of H7 and H8, anticipating clear positive effects of emotional arousal and enjoyment on impulse purchase behavior.

Comparing the outcomes with the initial hypotheses, H7 was validated as anticipated, confirming that perceived arousal significantly contributes to impulse purchases. However, H8 was not supported, indicating a need for further exploration into why heightened perceived enjoyment might mitigate rather than enhance impulsive buying tendencies. This disparity underscores the intricate nature of emotional influences on consumer decision-making and highlights the nuanced effects that different emotional states can exert in diverse contexts (Wu et al., 2021).

The findings resonate closely with those of Lin et al. (2022), who also observed significant impacts of perceived enjoyment ($\beta = 0.683$) on impulse purchase intentions in live streaming shopping contexts. Despite our study diverging in the direction of perceived enjoyment's influence, both studies underscore the critical role of emotional states in driving impulsive buying behaviors. This correlation strengthens the applicability of emotional arousal and enjoyment theories across varied consumer environments, underscoring their relevance in comprehending consumer behavior in digital shopping platforms.

In conclusion, this study offers valuable insights into the nuanced effects of perceived arousal and perceived

enjoyment on impulse purchases within live streaming shopping environments. While perceived arousal robustly promotes impulse purchases as hypothesized, the unexpected negative relationship between perceived enjoyment and impulse purchases necessitates further investigation. Future research could explore moderating factors or contextual elements that might elucidate these divergent effects more comprehensively. Overall, these findings contribute significantly to the theoretical understanding of emotional influences on consumer behavior and provide practical implications for marketers seeking to optimize strategies in dynamic e-commerce settings.

CONCLUSION AND RECOMMENDATION

Conclusion

This study addresses critical gaps when it comes to understanding live shopping experiences among Indonesian consumers, focusing on the interplay between scarcity, perceived enjoyment, perceived arousal, and impulse purchasing behavior. Through utilizing the Stimulus-Organism-Response (S-O-R) framework, it investigates how limited-quantity scarcity and limited-time scarcity affect perceived enjoyment and how factors like demand, convenience, interactivity, and playfulness impact perceived arousal. Moreover, the study examines how these emotional responses drive impulse purchases in live shopping contexts.

The research significantly extends the S-O-R model by integrating scarcity (both quantity and time), demand, convenience, interactivity, and playfulness as pivotal stimulus factors shaping consumer behavior in live shopping scenarios. It contributes to the literature by providing empirical insights into the factors that uniquely influence Indonesian consumers during live shopping, an area previously underexplored. The nuanced understanding of how perceived arousal and perceived enjoyment lead to impulse purchases within live shopping contexts offers a valuable extension to existing consumer behavior theories, particularly within rapidly growing e-commerce markets like Indonesia.

A notable discovery would be the differing impacts of limited-quantity scarcity and limited-time scarcity on perceived arousal. Contrary to initial expectations, limited-quantity scarcity negatively impacts perceived arousal, suggesting that heightened scarcity might induce stress or disinterest rather than excitement. Conversely, limited-time scarcity significantly enhances perceived arousal, aligning with the notion that time-limited offers generate a sense of urgency and excitement. These findings imply that time-based promotions may be more effective than quantity-based scarcity in engaging consumers and stimulating arousal in live shopping settings.

Regarding perceived enjoyment, this study reveals that demand and playfulness significantly boost perceived enjoyment, while convenience and interactivity do not have the anticipated impact. This deviation from initial hypotheses underscores the complexity of consumer experiences in live shopping and suggests that while practical factors like convenience might be taken for granted, elements that make up the shopping experience enjoyable and engaging play a more crucial role in driving enjoyment. These insights can guide e-commerce platforms in designing more engaging and enjoyable live shopping experiences by emphasizing playfulness and effectively meeting consumer demand.

This study's strengths lie in its empirical approach and the application of the S-O-R framework to a novel context—Indonesian live shopping. It provides actionable insights for e-commerce platforms to enhance user engagement and boost sales by focusing on scarcity tactics and enriching the shopping

experience. The integration of multiple stimulus factors and their respective impacts on perceived arousal and enjoyment offers a comprehensive view of the dynamics influencing impulse purchases.

However, this study also has its limitations. The use of convenience sampling and the focus on the Jabodetabek region may limit the generalizability of the findings. The study's design makes some of the variables to exhibit positive effects, meaning observed correlations do not necessarily imply direct cause-and-effect relationships. Additionally, the exclusive focus on live shopping via TikTok Shop might overlook variations in consumer behavior across different platforms or offline settings. Future research could benefit from a broader geographic scope, a longitudinal design, and inclusion of various e-commerce platforms to enhance the robustness and applicability of the findings.

From a practical perspective, the study suggests that e-commerce platforms could leverage time-limited promotions and enhance the playfulness of the shopping experience to drive consumer engagement and impulse purchases. Understanding the distinct effects of different types of scarcity on consumer behavior can help marketers tailor their strategies more effectively.

It is suggested that future research could delve into the psychological mechanisms underlying the unexpected negative relationship between limited-quantity scarcity and perceived arousal. Additionally, investigating the role of other potential factors, such as cultural influences or technological advancements, could provide a deeper understanding of consumer responses in various e-commerce contexts. Expanding the scope to include comparative analyses between different regions and shopping platforms could also offer valuable insights into the global applicability of the study's findings.

In conclusion, this study advances the understanding of live shopping dynamics by elucidating the complex relationships between scarcity, perceived enjoyment, perceived arousal, and impulse purchasing behavior among Indonesian consumers. By integrating these factors within the S-O-R framework, the research offers both theoretical and practical contributions to the fields of consumer behavior and e-commerce, paving the way for more targeted and effective marketing strategies in the rapidly evolving landscape of live shopping.

Recommendation

1. **Recommendations for Future Research**
   Future research in the realm of live shopping and consumer behavior could benefit from addressing several identified limitations. Firstly, researchers should consider employing more diverse sampling techniques beyond quota sampling to enhance the generalizability of findings across broader demographic groups and geographic regions within Indonesia. By including a more representative sample, future studies can provide insights into how different consumer segments respond to scarcity and other stimuli in live shopping environments. Additionally, future research could ask respondents about the specific brands of products they purchased during live shopping sessions. This information could provide valuable context and help identify brand-specific influences on consumer behavior.

   Secondly, adopting a longitudinal research design could enable researchers to establish causal relationships between variables. Longitudinal studies would allow for tracking changes in consumer perceptions and behaviors over time, providing deeper insights into the long-term effects of scarcity and other factors on impulse purchasing in live shopping contexts. This approach would enhance the robustness of findings and contribute to a more comprehensive

understanding of consumer decision-making dynamics. Furthermore, to better understand the role of interactivity between hosts and viewers/buyers during live streaming, future research should consider extending the shopping period to more than three months prior. This would provide a more comprehensive view of how interactivity influences consumer behavior over time.

Furthermore, future research could explore additional contextual factors that may influence consumer behavior in live shopping, such as cultural differences across regions in Indonesia or variations in consumer preferences on different e-commerce platforms. By broadening the scope of investigation, researchers can uncover nuanced insights that contribute to more tailored marketing strategies and user experiences in live shopping. Understanding these contextual factors can help marketers design more effective campaigns that resonate with diverse consumer groups and optimize the live shopping experience.

2. Recommendations for Stakeholders

Based on the findings of this study, several actionable recommendations can be recommended to stakeholders in the e-commerce industry, particularly those involved in live shopping platforms:

i. Leverage Time-Limited Scarcity: E-commerce platforms should prioritize implementing time-limited scarcity tactics rather than solely focusing on quantity-based scarcity. Time-limited promotions have shown to significantly enhance perceived arousal among consumers, driving engagement and potentially increasing impulse purchases. Stakeholders can capitalize on this by strategically designing and promoting limited-time offers that create a sense of urgency and excitement.

ii. Enhance Playfulness and Engagement: Emphasizing elements of playfulness and interactivity in live shopping experiences can enhance perceived enjoyment and ultimately drive consumer satisfaction and loyalty. Stakeholders should invest in creating interactive features, gamification elements, and personalized experiences that make the shopping process not only convenient but also enjoyable and engaging for users.

iii. Considering Regional and Platform-Specific Strategies: Recognizing the diversity of consumer preferences and behaviors across different regions in Indonesia and various e-commerce platforms is crucial. Stakeholders should conduct localized studies to understand regional variations and tailor their marketing strategies accordingly. Additionally, they should continuously monitor and adapt their approaches based on platform-specific insights to optimize user engagement and conversion rates.

To conclude, implementing these recommendations can help or assist stakeholders to enhance their understanding of consumer behavior in live shopping environments and optimize their strategies to effectively meet consumer expectations and drive business growth. Hence, future research along with stakeholder actions aligned with these recommendations can contribute to advancing knowledge and practice in the dynamic field of e-commerce and consumer behavior in Indonesia.

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SURAT PERNYATAAN

Yang bertanda tangan dibawah ini,

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Dengan ini kami menyatakan bahwa karya ilmiah kami adalah benar hasil penelitian yang kami lakukan dan belum pernah diterbitkan dipublikasi manapun.

Dan Bersedia untuk mempublikasikan hasil Tugas Akhir kami di Jurnal Internal S1 Branding.

Demikian surat pernyataan ini kami buat dengan sesungguhnya.

Tangerang, 12 Juli 2024

(TTD Mahasiswa 1)
Adriel Simeon

(TTD Mahasiswa 2)
Michael Santoso

Mengetahui,