

FROM SCARCITY TO IMPULSIVE BUYING BEHAVIOR: THE IMPORTANCE OF PERCEIVED SELLOUT RISK IN THE CONTEXT OF TIKTOK LIVE SHOPPING

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Abstract: In live streaming e-commerce, independent sellers who conduct live broadcasts commonly employ scarcity messages. The impact of these messages prompts consumers to process information with relatively low cognitive effort, leading them to implicitly conclude that the product is rare, difficult to obtain, and therefore perceived as valuable and appealing. This perception generates an urgency that drives consumers to make purchases before the offer ends, thus accelerating their decision-making process. This study examines how the fear of missing out on limited-time offers and limited quantities influences purchasing decisions during live streaming, particularly how concerns about items selling out lead to impulsive online buying. A quantitative research approach was employed, utilizing a structured questionnaire survey distributed to TikTok Shop users as the primary data collection tool. Data were collected from 210 respondents who had previously made purchases via TikTok live streaming. Data analysis was conducted using WarpPLS 8.0 software to assess validity and reliability and to test the hypotheses. The results of this study indicate that limited time scarcity and perceived sellout risk are able to increase significantly. Limited-time scarcity has a positive and significant effect on online impulsive buying, while limited-quantity scarcity has a positive and insignificant effect on online impulsive buying. Other results indicate that perceived sellout risk is able to increase online impulsive buying significantly.



INTRODUCTION

In recent years, new consumption patterns have emerged due to the development of the Internet, networks, and information system technologies (Corcoran & Andrae, 2014). According to Wearesocial (2024), approximately 213 million Indonesians, or 77% of the total population, are Internet users. Furthermore, with 167 million active social media users, the potential for e-commerce and live-streaming activities is considerable. These shifts have significantly transformed individual consumption concepts and behaviours. As we go into Web 3.0, e-commerce has hit a plateau (Wu et al., 2020), where customers no longer just look at pictures, read text, or watch videos; they also interact with businesses directly. The rise of Live Streaming E-Commerce (LSE) has changed how products and brands are promoted online, sparking a new wave of transformation in digital commerce. The emergence and rapid growth of LSE, particularly in China, has been extensively documented (Li et al., 2024). By 2024, live-streaming e-commerce transactions in China are projected to exceed USD 818.6 billion (Koutsou-Wehling, 2024). One

major driver of this trend is the high rate of impulse buying—44.1% of respondents consider their live-streaming purchases as impulsive and significant (Hao & Huang, 2023).

Streamers in live-streaming e-commerce often utilize scarcity messages as a promotional strategy (Suwito & Susilowati, 2025; Zhou, 2024). Such messages reduce cognitive processing and cause consumers to perceive products as rare, valuable, and challenging to obtain (Aggarwal et al., 2011; Barton et al., 2022). These scarcity promotions enhance purchase intention by creating an impression of limited availability. When consumers perceive limited stock, their competitive instincts emerge, prompting quicker decision-making (Song et al., 2021).

Live streaming hosts frequently employ two types of scarcity promotions: limited-time promotions and limited-quantity promotions, to convey the scarcity of products (Zhou, 2024). Limited-time promotions stimulate consumers to buy by setting a fast, urgent deadline, such as a few hours, which live hosts usually use a countdown mechanism. Of course, this has an impact on the sense of urgency that encourages consumers to buy before the offer ends (Cengiz & Şenel, 2023), and the countdown also affects the time pressure that accelerates purchasing decisions (He & Jin, 2022). Limited quantity scarcity increases due to changes in demand or supply, while limited time scarcity is mainly controlled from the supply side (Gierl et al., 2008).

However, although there are studies examining the impact of scarcity promotion in e-commerce live streaming on purchasing decisions, studies directly linking scarcity marketing to perceived sellout risk in the context of TikTok Shop or similar platforms are still scarce. The perception of the risk of running out of products has the potential to be a significant trigger for unplanned purchasing behaviour. Therefore, this study provides a theoretical contribution to fill this gap by introducing the role of perceived sellout risk as a new mediator in the relationship between scarcity messages and online impulsive buying. With this mediator, our study will expand our understanding of how consumers process scarcity messages, not only as a heuristic cue but also as a cause of the perception of fear of missing out, which ultimately drives unplanned purchasing decisions.

From a practical perspective, this study offers an in-depth insight into the importance of managing scarcity messages for MSMEs, business actors, and social commerce actors, specifically in the form of time restrictions (limited time) or quantity restrictions (limited quantity). Thus, this study is expected to provide a better understanding of the influence of time constraints and product quantity limitations on impulsive buying behaviour.

LITERATURE REVIEW

Limited Time Scarcity

Limited-time scarcity is a promotional method that provides a specific amount of time during which the offered product is available for sale (Wu et al., 2020). Live-streaming shopping, which is typically conducted on social media platforms and e-commerce sites, usually lasts only about 2-3 hours; this indicates that consumers have limited shopping time (Wang et al., 2022). Limited-time notifications have a positive impact on consumer enthusiasm and can reduce the likelihood of consumers seeking better deals (Aggarwal et al., 2011). This is because time restrictions are unambiguous and are not influenced by other promotional focuses, such as about the product or its price (Jha et al., 2019). *The limited time available for shopping online encourages consumers to hope that the offer is profitable, which tends to prompt them to act quickly* (Givi & Olivola, 2020). Limiting the number of products creates a perception of scarcity that strengthens

the urge to buy, as the need to obtain the product immediately before stock and time run out (Biraglia et al., 2021). Scarcity makes the product appear more desirable and attractive. Deadlines are considered beneficial because they increase the value of scarce products, and if they are disappointing, the financial loss is not substantial (Wu et al., 2011).

Limited time scarcity is perceived as time pressure that customers must consider. Limited time scarcity influences consumer behaviour by creating psychological urgency, thus encouraging quick decision-making without in-depth rational consideration (Zhu et al., 2023). The more consumers experience time pressure, the more competitive arousal they tend to make impulsive purchases (Sun et al., 2023). This urgency creates emotional pressure that lowers resistance to impulse purchases, especially on platforms like TikTok Shop, which are fast-paced and visually appealing.

H1: Limited time scarcity has a positive and significant effect on online impulsive buying.

Scarcity tactics are an important tool in marketing (Barton et al., 2022). Limited-time scarcity (LTS) creates time pressure, making consumers feel they must act immediately (Song et al., 2021), as delays can result in lost purchasing opportunities. This situation increases perceived sellout risk, which is the perception that the product will soon run out if not purchased immediately. According to Aggarwal et al. (2011), Time urgency in promotions can create a feeling of imminent and real loss, fostering the perception that the product will sell out.

H2: *Limited time scarcity has a positive and significant effect on perceived sellout risk.*

Limited time scarcity (LTS) has been identified by Song et al. (2021) as not only creating a perception of time pressure, but also creating an urgency to act immediately lest they forgo purchasing opportunities. This phenomena heightens perceived sellout risk or, the belief that a product will deplete available units if not bought immediately. Based on Aggarwal et al. (2011), the perception of time limits to complete an activity during a promotional exercise creates urgency resulting in a heightened fuelled sense of loss which in turn elicits thoughts of the product selling out.

H2: *Limited time scarcity has a positive and significant effect on perceived sellout.*

Limited Quantity Scarcity

Limited quantity scarcity occurs when there is a constraint placed by business sellers on the number of products or services one individual may purchase. The Limited Quantity Scarcity message warns customers about the unavailability of products or services, which can be classified into two types: supply-side and demand-side (Gierl et al., 2008; Wu & Lee, 2016). Limited quantity scarcity occurs whenever consumers decide to buy a product, and the available quantity decreases (Aggarwal et al., 2011; Wu et al., 2020). The scarce quantity of products affects consumer perceptions of product availability (Roy & Sharma, 2015). This is what leads many business actors in the e-commerce live-streaming trade to often offer a limited number of products in stock, thereby influencing how consumer purchases are affected (Chen & Zhang, 2023). In e-commerce, live streaming, Host Live, through interactive interface design, provides information on the product stock level in real-time and continuously causes high demand for the product, such as the number of consumers who want it, the number of consumers who have made payments and

the number of products that have been sold out. Information like this stimulates and increases consumer awareness of product scarcity (Chen & Zhang, 2023).

Limited quantity scarcity refers to the limitation of the amount of a product available, directly creating an expectation of running out (Song et al., 2021). This leads consumers to perceive that the risk of losing the product permanently is very high. This phenomenon is referred to as the availability heuristic, where limited stock is considered an indicator of high demand, thus reinforcing the perception that the product will soon run out (Barton et al., 2022).

H3: Limited quantity scarcity has a positive and significant effect on perceived sellout risk.

Limited quantity scarcity can reinforce the perception of scarcity as a signal of value, prompting rapid purchases to avoid depletion (Jang et al., 2015). On platforms like TikTok Shop, “almost out of stock” or “3 left” notifications act as psychological triggers that accelerate decisions without rational consideration, consistent with the characteristics of impulsive buying. Streamers who promote their limited-edition products often prompt consumers to buy without prior planning (Wu et al., 2021).

H4: Limited quantity scarcity has a positive and significant effect on online impulsive buying.

Perceived Sellout Risk

Perceived risk highlights the consumers’ evaluation of potential loss or uncertainty linked with online purchase transactions. In the case of Song and Liu’s work, the risks consumers perceive stems from product information reliability within livestream commerce, as well as lacking direct engagement with the seller (Song & Liu, 2021). Furthermore, it was established that perceived risk does impact purchase intention negatively, notably when people do not feel confident about the safety and trustworthiness of the e-commerce platform. We propose in this work that perceived risk stems from sellout as a relevant characteristic of the context of sales in live streaming sessions. Perceived sellout risk is defined as concerns held by consumers with the prospect that a certain product will soon be out of stock (Song et al., 2019). Scarcity of stock can heighten sense of urgency in consumers leading to either rush of or fear of missing out on making a purchase as a response to emotional feelings triggered by such famines (Chen & Zhang, 2023; Hamilton et al., 2018). Thus, perceived sellout risk is a feeling of concern that a product will sell out before it is successfully acquired. This feeling arises from the perception of product scarcity, which encourages consumers to buy immediately because they consider the product to be valuable and limited.

Online Impulsive Buying

Compared to premeditated purchases, impulse purchases are considered more irrational as they require little to no prior intention or knowledge about the item in question (Chung et al., 2017; Wu et al., 2016). Within the framework of Live Streaming Ecommerce, two factors stimulate impulsive buying: guide information and interaction with the streamer (Wang et al., 2022). The act of buying without prior consideration is subject to great influence from both external stimuli and internal psychological conditions (Ahn et al., 2019). The live host in e-commerce streaming is responsible for conveying product information and selling the products during the streams through real interaction with the audience, visual access to the products, and interaction with the host. A live host must explain hundreds of products in a limited time and use good marketing

communication skills to persuade consumers to make purchases (Lo et al., 2022). Therefore, anchors can create a sense of urgency to influence consumers' assessment of scarcity messages by emphasizing the scarcity of time remaining in the live broadcast (Hao & Huang, 2025). The dynamic interaction between the live host and the consumer, coupled with detailed product presentation with scarcity pressure, triggers a tendency for impulsive buying as both parties on the screen push each other to make a purchase (Wongkitrungrueng & Assarut, 2020). Not only that, live Stream Commerce has the advantages of instant transactions and easy payment methods, namely biometric fingerprint scanning on smart mobile devices, as well as free shipping and unconditional return policies (Khan et al., 2015).

Perceived sellout risk can create psychological pressure to act quickly before the product runs out, which ultimately drives impulsive behaviour. In the context of online shopping, the potential loss of a product (loss aversion) can reduce self-control and increase the tendency to buy impulsively (Verhagen & van Dolen, 2011). Sellout risk triggers emotions such as anticipatory regret, which can lead to spontaneous purchases.

H5: Perceived sellout risk has a positive and significant effect on online impulsive buying.

METHODS

Profile of Respondent

Data were obtained by distributing online questionnaires to respondents who had experience making online purchases on TikTok Live Shopping. Respondents must also have experienced feeling the desire for time and quantity limitations when making online purchases. Respondents who filled out the online questionnaire were 182 respondents. This is based on the sample standards outlined by Hair et al. (2022). Hair et al. (2022) explained that in determining a sample, several aspects are needed, such as a Common Power Level of 80%, a significance level of 0.05, and Minimum Path Coefficients of 0.2. So, the minimum number of respondents is 155.

Based on the data obtained, the majority of respondents were women (84.07%) with a dominant Gen Z age group (88.46%), most of whom were students (76.37%). The largest domicile area came from South Sulawesi (79.12%), and almost half of the respondents had an income of less than IDR 3,000,000 per month (49.45%), and even 20.33% had no income. This indicates that the majority of TikTok Shop users in this survey are young individuals still in education and not yet financially independent. In terms of shopping behaviour, most respondents open TikTok Shop less than 4 times a day (60.99%) and watch live commerce 1-3 times a day (43.41%). The types of products most often purchased are fashion products (59.89%), followed by beauty products (31.32%). Meanwhile, the frequency of purchases in one month generally occurs 1-3 times (86.26%). This data indicates that TikTok Shop has become a platform that is actively visited by young people, particularly for their fashion and beauty needs, despite their limited purchasing power.

Table 1. Profile of Respondent

Profile of Respondent	Frekuensi	Persentase
Jenis Kelamin		
Male	29	15.93%

Profile of Respondent	Frekuensi	Persentase
Female	153	84.07%
Ages		
Gen Z (15 - 23 years old)	161	88.46%
Gen Y (24 - 39 years old)	13	7.14%
Gen X (40 - 55 years old)	8	4.40%
Occupation		
Housewife	1	0.55%
Private Employee	18	9.89%
College Student	139	76.37%
Civil Servant	2	1.10%
High School Student	3	1.65%
Junior High School Student	9	4.95%
Self-Employed	10	5.49%
Domicile Area		
Central Sulawesi	9	4.95%
South Sulawesi	144	79.12%
Southeast Sulawesi	5	2.75%
North Sulawesi	13	7.14%
West Sulawesi	8	4.40%
Gorontalo	3	1.65%
Income per month		
< Rp3.000.000	90	49.45%
Rp3.000.000 - Rp7.000.000	39	21.43%
Rp7.000.000 - Rp10.000.000	10	5.49%
> Rp10.000.000	6	3.30%
No Income	37	20.33%
Frequency of Opening the TikTok Shop Platform in 1 Day		
< 4 times	111	60.99%
4 - 7 times	51	28.02%
7 - 10 times	10	5.49%
> 10 times	10	5.49%
Frequency of Watching Live Commerce on TikTok		
1 - 3 Times a Day	79	43.41%
1 - 3 Times a Week	50	27.47%
1 - 3 Times a Month	40	21.98%
Never	13	7.14%
Most Frequently Purchased Product Types		
Fashion (Clothes, Bags, Shoes, etc.)	109	59.89%
Beauty products (Make-Up, Skincare)	57	31.32%
Accessories	16	8.79%
Frequency of Making Purchases in 1 Month		
1 - 3 Times	157	86.26%

Profile of Respondent	Frekuensi	Persentase
4 - 6 Times	23	12.64%
More than 6 Times	2	1.10%

Measurement and Data Analysis

In this study, four variables are examined: limited time scarcity, limited quantity scarcity, perceived sellout risk, and online impulsive buying. Each variable is measured using indicators or items according to the existing literature. Each item is measured using a Likert scale (5 scales), where a scale of 5 indicates strongly agree, and a scale of 1 indicates strongly disagree. The following are the items developed in this study.

Table 2. Variable and Items

Variable		Items
Limited Time Scarcity		1. Streamers on Tiktok live streaming often give limited time to their viewers (LTS1) 2. Streamer sales duration on Tiktok is often short (LTS2) 3. I focus more on time counts than reading product descriptions (LTS3)
Limited Quantity Scarcity		1. Products that are sold out very quickly (LQS1) 2. I feel that the stock of the product I want is limited (LQS2) 3. Products with good brands are only sold once and run out quickly (LQS3) 4. I am more interested in products that are rarely in stock because they feel more exclusive (LQS4)
Perceived Sellout Risk		1. I feel like this product is likely to run out soon (PSR1) 2. I am worried that this product will not be available if I wait (PSR2) 3. I believe that this product is very limited in stock (PSR3) 4. I feel like this product is in high demand and will sell out quickly (PSR4) 5. I feel pressure to buy right away so I don't run out of product (PSR5) 6. I have regretted not buying earlier because the product ran out in the middle of a live (PSR6)
Online Buying	Impulsive	1. I experienced some sudden shopping urges while watching TikTok Shop live streaming (OIB1) 2. When shopping on live streaming, I often have the mindset of "buy now, think later" (OIB2) 3. When watching live streaming, I tend to buy things outside of my shopping purpose (OIB3) 4. When shopping on live streaming, I often buy things according to what I feel at that time (OIB4) 5. When shopping on live streaming, I often buy things without

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- thinking (OIB5)
6. In live streaming, I spend more money than I originally planned (OIB6)
 7. I find it difficult to resist buying when I see a lot of promos on live streaming (OIB7)
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In this study, researchers used the WarpPLS version 8.0 application to help analyze data using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. In this study, researchers used the WarpPLS version 8.0 application to help analyze data using the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. There are 2 approaches, namely measurement models and structural models. Measurement models are tests conducted to test the validity and reliability of items in an instrument. Structural models are tests conducted to test hypotheses.

RESULT

Measurement Model

Validity testing is used to assess each item in the instrument to determine whether it accurately represents its intended construct. Validity is divided into two, namely convergent validity and discriminant validity. According to Bagozzi (1981), convergent validity is the internal consistency of indicators that measure the same construct. Convergent validity is divided into two, namely, loading factor and average variance extracted (AVE). Hair et al. (2022) explain that the minimum loading factor value is 0.700 while the minimum AVE value is 0.5. Table 3 explains that all loading factors and AVE values are above the specified standard so that each item proposed in the instrument can be declared valid.

The second validity is discriminant. Discriminant validity indicates the extent to which a construct (latent variable) is genuinely different from other constructs in the model. This means that the construct measures a unique concept and is not mixed with other constructs. This study uses discriminant validity based on the Fornell-Larcker Criterion approach (Fornell & Larcker, 1981). Discriminant validity is met if the square root value of AVE (Average Variance Extracted) of a construct is greater than its correlation with other constructs (Hair et al., 2022; Hair et al., 2019). Table 4 shows that the proposed instrument can be declared valid.

Reliability means the consistency of measurement, meaning that researchers who complete the instrument intended to measure motivation should have more or less the same answers every time the test is conducted. Reliability is divided into two, namely Cronbach's Alpha and Composite Reliability. The ideal value for Cronbach's Alpha and composite reliability is 0.70 (Hair et al., 2022; Hair et al., 2019). Table 3 shows that all items of the proposed instrument are reliable.

Table 3. Results of Convergent Validity and Reliability Testing

Variabel dan Indikator	Loading factor	AVE	Cronbach Alpha	Composite Reliability
Limited Time Scarcity		0.630	0.704	0.836
LTS 1	0.766			

Variabel dan Indikator	Loading factor	AVE	Cronbach Alpha	Composite Reliability
LTS 2	0.866			
LTS 5	0.745			
Limited Quantity Scarcity		0.73	0.815	0.89
LQS 2	0.838			
LQS 3	0.887			
LQS 4	0.837			
LQS 5				
Perceived Sellout Risk		0.595	0.863	0.898
PSR 1	0.730			
PSR 2	0.773			
PSR 3	0.778			
PSR 4	0.753			
PSR 5	0.813			
PSR 6	0.777			
Online Impulsive Buying		0.642	0.888	0.915
OIB 1	0.718			
OIB 2	0.786			
OIB 3	0.834			
OIB 4				
OIB 5	0.829			
OIB 6	0.855			
OIB 7	0.778			

Table 4. Determinat Validity

	LTS	LQS	PSR	OIB
Limited Time Scarcity (LTS)	(0.794)	0.441	0.312	0.359
Limited Quantity Scarcity (LQS)	0.441	(0.854)	0.490	0.312
Perceived Sellout Risk (PSR)	0.312	0.490	(0.771)	0.606
Online Impulsive Buying (OIB)	0.359	0.312	0.606	(0.801)

Structural Model

The first hypothesis states that Limited Time Scarcity has a positive and significant effect on Online Impulsive Buying. The results of the study show that Limited Time Scarcity has a positive and significant effect on Online Impulsive Buying, so H1 is proven (accepted). The second hypothesis suggests that Limited Time Scarcity positively affects perceived sellout risk. The outcome of the study indicates that Limited Time Scarcity does have a positive effect on perceived sellout risk, thus H2 is proven (accepted). The third hypothesis suggests that Limited Quantity

Scarcity positively impacts perceived sellout risk. The outcome of the study indicates that Limited Quantity Scarcity positively affects perceived sellout risk, thus H3 is proven (accepted). The fourth hypothesis suggests Limited Quantity Scarcity positively and significantly impacts perceived sellout risk. The outcome of the study indicates Limited Quantity Scarcity has an insignificant and negative impact on perceived sellout risk; hence, H4 is not supported (rejected). The fifth hypothesis states that perceived sellout risk positively and significantly influences online impulsive buying. The outcome of the study indicates that perceived sellout risk has a significant positive effect on online impulsive buying, so H5 is proven (accepted).

Table 5. Hypothesis Testing

Hypothesis	Result	Conclusion
H1 : Limited Time Scarcity → Online Impulsive Buying	$\beta = 0.174; p = 0.008$	H1 is accepted
H2 : Limited Time Scarcity → Perceived Sellout Risk	$\beta = 0.162; p = 0.013$	H2 is accepted
H3 : Limited Quantity Scarcity → Perceived Sellout Risk	$\beta = 0.471; p < 0.001$	H3 is accepted
H4 : Limited Quantity Scarcity → Online Impulsive Buying	$\beta = -0.069; p = 0.173$	H4 is rejected
H5 : Perceived Sellout Risk → Online Impulsive Buying	$\beta = 0.510; p < 0.001$	H5 is accepted

DISCUSSION

From this analysis, limited time scarcity gives a positive and meaningful influence on Online Impulsive Buying. This finding agrees with previous studies that time restrictions in product availability create a powerful psychological impact which forces quick and unplanned buying decisions (Aggarwal et al., 2011). In regard to TikTok Live Shopping, consumers are also subjected to more countdown timers, live hosts telling them that the offer time is about to end, and the aforementioned “flash sale” or “tonight only” ethos. These strategies activate the time pressure mechanism which has been shown to reduce the thinking time in the decision-making process, thus igniting impulsive behaviour. Rational thinking goes out the window with consumers who do not want to lose out on getting the product at a restrictive price, considering factors such as actual need versus price are often overlooked. Along with the effect the emotion has during the live streaming session, high interactivity has also proven to enforce the effect time pressure has on impulsivity. This effect is more pronounced for younger consumers who are already predisposed to FOMO (Fear of Missing Out), a psychological phenomenon not uncommon in a digital setting.

The findings here indicate that Limited Time Scarcity positively and significantly impacts Perceived Sellout Risk. This suggests that scarcity in terms of selling time leads consumers to perceive a product as having a greater chance of being out of stock. In TikTok Live Shopping contexts, marketing strategies like “Available for 5 minutes” or host triggers such as “Almost gone!” actively contribute to this perception. It will be shown within this research that consumers psychologically regard time limits or deadlines as signals indicating that a product is in high demand or may be out of stock very soon. This aligns with the notion of perceived urgency, a situation in which a limited amount of time is perceived to function as social sign and means of great demand for a particular product (Sharma et al., 2010). The more the time is perceived to be

in short supply, the greater the risk perceived of losing an opportunity to purchase a sought after product and therefore, there is a need to respond very quickly. These concepts arise in the context of scarcity marketing theory which suggests that constraining access to something by time increases its perceived value and risk of losing it and therefore, elicits demand. Thus, this study confirms that time restrictions not only serve as a sales strategy but also form psychological risk perceptions that can influence subsequent consumer behaviour (Sharma et al., 2010). As time becomes tighter, the perceived risk of missing out on a purchase opportunity increases, and consumers feel compelled to act quickly. This phenomenon is often explained within the framework of scarcity marketing theory, which posits that perceived scarcity, particularly that caused by time constraints, can increase the perceived value and risk of losing a product. Thus, this study confirms that time restrictions not only serve as a sales strategy but also shape psychological risk perceptions that can influence subsequent consumer behaviour.

The results of this study show that Limited Quantity Scarcity has a positive and significant effect on perceived sellout risk. This finding aligns with the scarcity marketing theory, which posits that information about limited quantities can create the perception that the product is in high demand by the market and has a great potential to sell out soon (Aggarwal et al., 2011). In the context of TikTok Live Shopping, strategies such as including information "3 pcs left" or "stock almost out" can create the perception that other consumers are competing to get the same product. Consumers then experience psychological pressure in the form of perceived urgency and perceived competition, which encourages them to judge that not buying immediately will risk losing the opportunity. This study also reinforces the argument that the perception of risk is not only based on objective facts but also on how scarcity of information is effectively conveyed on digital platforms. Even without verifying the actual amount, the message of quantity scarcity can significantly increase concerns about losing the opportunity to own the product. This situation often leads to the emergence of a "panic buying" effect on a micro scale, especially on interactive platforms like TikTok, which encourages quick and responsive decisions. Therefore, these results demonstrate that quantity scarcity is an effective psychological stimulus in shaping consumers' perception of the risk of running out.

One of the key reasons why Limited Quantity Scarcity has a strong, positive, and significant direct effect on Online Impulsive Buying is the Protection Motivation Theory, which explains how individuals respond to the appeal of fear and how people cope with it. PMT is divided into two, namely threat assessment and coping ability assessment. In the context of live streaming commerce, information about the scarcity of limited products can be considered a threat of losing an opportunity because the desired product will soon run out, which ultimately triggers the perception of the risk of running out of products and as an effort to protect against this threat, consumers make impulsive purchases.

The results of this study show that Limited Quantity Scarcity has a negative and insignificant effect on Online Impulsive Buying. This finding rejects the initial hypothesis that stated that quantity scarcity would directly encourage impulsive buying behaviour. Theoretically, quantity scarcity should create a higher perception of value and urgency in decision-making, as explained by scarcity theory (Cialdini, 2013). However, in the context of TikTok Live Shopping, this effect does not work directly. This could be due to the way limited stock information is conveyed, which may be perceived as less persuasive or less credible by the audience. Unlike time scarcity, which appears more visual and dynamic (such as a countdown timer), quantity scarcity

messages often only appear as static numbers that do not trigger emotions directly. In addition, the younger generation, as the dominant TikTok users, may be accustomed to or even sceptical of claims such as "3 pcs left" because it is considered a manipulative marketing strategy. As a result, information about limited quantities does not necessarily encourage consumers to purchase immediately, thus failing to stimulate impulsive behaviour as previously hypothesized.

The fifth hypothesis states that Perceived sellout risk has a positive and significant effect on online impulsive buying. The results of this study are also in line with the findings of Cengiz and Şenel (2023), which show that the perception of product scarcity or limitedness (perceived scarcity) has a positive effect on the tendency to buy impulsively. In this study, the effect of perceived scarcity is mediated by the Fear of Missing Out (FoMO), where consumers are driven to buy immediately out of fear of missing an opportunity. This strengthens the results of this study, indicating that Perceived Sellout Risk, as a form of perceived scarcity displayed in an online context, can significantly drive consumer impulsive buying behaviour.

CONCLUSION

This study aims to analyze the effects of time scarcity and quantity scarcity on online impulsive buying, with perceived sellout risk serving as a mediating variable in the context of TikTok Live Shopping. The results showed that limited time scarcity and perceived sellout risk have a positive and significant effect on online impulsive buying. In contrast, limited quantity scarcity does not have a significant effect on direct impulsive buying. However, limited quantity scarcity has a positive and significant effect on perceived sellout risk, which ultimately affects impulsive buying behaviour. These findings suggest that the perception of the risk of running out of products (perceived sellout risk) is a crucial psychological mechanism that mediates the impact of scarcity messages on purchasing decisions. When consumers feel that the products offered in live streaming will soon run out, they tend to be encouraged to buy impulsively to avoid missing out on opportunities. Therefore, marketing strategies that use scarcity messages, especially in the form of limited time, have proven effective in shaping risk perceptions, which in turn trigger spontaneous consumer behaviour. This study expands the theoretical understanding of the psychological mechanisms underlying impulsive purchasing in live-streaming e-commerce and provides practical implications for business actors to design effective communication strategies that encourage sales conversions by leveraging scarcity appeal and managing the perception of product risk.

These findings have important implications for marketers and micro and small enterprises (MSMEs) who utilize TikTok as a channel for product distribution. Marketing strategies that incorporate elements of time constraints should not only be conveyed visually (such as a timer) but also reinforced through verbal narratives from hosts that create a perception of urgency and exclusivity. Consistency in framing products as "limited-time offers" can intensify scarcity perceptions in consumers' minds. However, this strategy must be carried out ethically and not excessively so as not to cause disappointment or distrust in the future. Marketers need to understand that the effect of time scarcity works most effectively when combined with a fun live experience and high streamer credibility. Therefore, this study emphasizes that limited time scarcity is not only a promotional tool but also a psychological element that plays a role in forming spontaneous buying impulses in the digital commerce era. This study also contributes to broadening the understanding of the application of scarcity and urgency theories in the context of

live streaming platforms, as well as enriching the study of determinants of impulsive buying in interactive social markets.

These findings have important implications for digital marketers, especially on live commerce platforms like TikTok. The practice of limiting time in promotions should not only be intended to create an impression of exclusivity but also to strategically build perceived sellout risk so that consumers feel that delaying a decision can lead to missing an opportunity. However, this perception is only effective if it is built consistently and credibly; that is, the time displayed truly reflects product availability and is not just a gimmick. If it is done excessively or does not match reality, the risk of losing consumer trust also increases. Therefore, companies and MSMEs on TikTok Live Shopping should carefully design a time strategy that takes into account consumer psychology. In addition, verbal narratives from streamers that reinforce the demand for products and suggest they are "almost out of stock" will strengthen the effect of time scarcity on the perception of risk. This study expands our understanding of how the time element in digital marketing can influence consumers' risk expectations and underlie impulsive decisions. These results also contribute to the existing literature on the relationship between urgency-based cues and perceived risk in interactive shopping environments.

In practical terms, these findings provide important contributions for business actors and content creators on the TikTok platform who rely on live streaming-based promotional strategies. Inserting information about limited product quantities in live broadcasts can increase the perception of scarcity and prompt urgent decision-making. However, the effectiveness of this strategy is highly dependent on the credibility of the message deliverer, as well as the clarity and consistency of the narrative built during the sales process. Information such as "real-time stock" or "100 people have sold out the product in 10 minutes" can be concrete forms of limited quantity cues that increase perceived sellout risk. Additionally, this strategy can be combined with visual elements, such as high viewership graphs or "low stock" indicators, to enhance the impression of competition and urgency. For MSME actors and digital marketers, it is essential to understand that the scarcity of quantity not only attracts consumers' attention but also plays a crucial role in activating risk perceptions that lead to quick purchasing decisions. This study extends the literature on the psychological effects of scarcity cues and highlights that perceived sellout risk serves as an important bridge between perceived scarcity and impulsive consumer behaviour. Therefore, managing quantitative scarcity becomes a key message in a strategic communication strategy for shaping perceptions of value and risk in the context of live-based e-commerce.

The implications of these findings are highly relevant for businesses and marketers on the TikTok platform. They must understand that the perception of being out of stock has a more profound psychological impact than mere scarcity of information. Strategies such as displaying real-time stock updates, providing testimonials that hundreds of users have purchased the product, or having the host state, "This could run out in minutes," will increase the effectiveness of PSR as a trigger for impulse buying. However, the success of this strategy also depends heavily on the credibility of the delivery and consistency of the message. If consumers believe that the threat of running out is merely a marketing ploy, then the effect will decrease and may even lead to distrust. Therefore, an approach based on authentic scarcity framing needs to be applied so that the risk perception that is formed feels genuine and convincing. This study not only broadens our understanding of the role of perception in impulsive buying but also demonstrates that PSR serves as a psychological mediator, connecting scarcity stimuli with actual purchasing actions. Thus,

managing perception is the primary key to building an effective live commerce strategy and driving sales quickly.

LIMITATION

This study encountered several significant obstacles during the data collection process, particularly in reaching respondents from South Sulawesi and in identifying individuals with experience shopping at TikTok Shop. This is due to the preference of the majority of people in the region who still tend to use conventional e-commerce platforms such as Shopee and Tokopedia. Additionally, time constraints posed an obstacle in themselves, as the process of finding 200 respondents took longer than planned. This limitation resulted in delays in the research stages and affected the effectiveness of obtaining representative data.

In addition to technical factors in data collection, this study also encountered challenges in accessing specific target markets, such as adults or homemakers. This group demonstrated a high interest in TikTok Shop's live content. This limited access resulted in a less-than-optimal understanding of consumer behaviour in this segment. On the other hand, limited references and theoretical support relevant to the topic of perceived sellout risk also limited the depth of analysis. As a result, this study may not have been able to fully describe the dynamics of the risk of running out of products (sellout risk) as perceived by consumers on the TikTok Shop platform.

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