Original Article

Research on factors affecting the purchase intention on TikTok live stream of students in Hanoi: A SOR model approach

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Abstract: Vietnam has recently witnessed a strong development of social commerce. After the COVID-19 pandemic, e-commerce live streaming rose dramatically to become a phenomenal presence in the live streaming industry. More and more consumers, especially young people in the Vietnamese market are participating in e-commerce live streaming platforms for online shopping since purchasing goods via live stream is not only to satisfy personal needs but also to entertain customers. Significantly, live interaction has opened a new era for brands and businesses to reach customers during Industry 4.0. This study aimed to analyze factors affecting purchase intention on the TikTok live stream of students in Hanoi city based on theories and results obtained from previous studies. The primary data from a survey of 186 students was analyzed by using structural equation modeling (SEM). Findings revealed that five factors were identified to have a positive influence on purchase intention, including live streamer's attractiveness, price perception, scarcity persuasion, flow experience, and perceived value. Thereby, the research team proposed several solutions and recommendations for stakeholders in the investment and development of social commerce to build a system of factors and methods to help convert viewers into buyers on TikTok live stream in particular and on the Internet and other live broadcasting platforms in general.

Keywords: Purchase intention, social commerce, live stream, TikTok.

1. Introduction

According to Iris Marketing Agency (2020), 73.56 million Vietnamese people were using social networks, equivalent to 75.6% of the total population. Vietnam now has the second largest TikTok audience in Southeast Asia, with almost 50 million users engaged with the social video platform as of 2023. The age group of 16-25-year-olds accounts for 67% of total users

(according to Statista estimates for Quarter 4, 2022). TikTok has lately expanded its capability to become a social commerce platform in Vietnam, particularly the TikTok LIVE feature; this has allowed the ability to sell products on the platform more powerfully than ever.

The study's objective is to identify the factors affecting the online purchase intention of Hanoi students on the TikTok live stream. This study seeks to fill in the gaps in the literature on factors affecting purchase intention on live broadcast platforms, specifically TikTok LIVE. To the best of our knowledge, a huge number of previous research results have shown the stimulus-organism-response (SOR) model's superiority in predicting subjective and objective factors affecting product purchase decisions via live broadcasting platforms. However, these studies have focused on only one aspect of the Organism: belief, perceived risk, or perceived value. In addition, the most critical factor in stimulating the purchase decision of the viewer is to set out to be a celebrity. Such celebrities are famous individuals who have a particular influence on community groups and build viewers' trust to sell on live platforms. Furthermore, the products sold on live stream have also been run in a media campaign to promote viewers' awareness and approach to the user file. This helps viewers have a particular source of accurate information before entering the buying and selling process, increasing the conversion rate from viewer to buyer.

The new factor that the authors want to mention is the flow experience. The influence of this factor on perceived value and purchase intention has also been studied in many traditional sales cases. Chen et al. (2017) published a study concluding that flow experience positively affects perceived value when using live stream. However, it seems to be that till now none of the studies have analyzed this factor in the impact relationship between the flow of experience, perceived value, and purchase intention in the live stream case. Therefore, in this study, the authors continue to use the SOR model to build, analyze, and evaluate the influence of this factor on the perceived value and online purchase intention.

2. Conceptual and related literature

2.1. Live commerce

The concept of live streaming has emerged as the latest economic trend. After the change in consumption trends (moving from direct to online purchases), the scale of the live streaming market has been increasingly expanding. Live streaming was developed in the 1990s and has become a popular way of shopping with customers today.

Live video streaming services differ from other types of social media by the emergence of broadcasters or streamers. Zhu (2021) described live streaming as a tool for people to have a closer relationship via a wireless internet connection and a marketing strategy for marketers to promote their products. Another study by Rajasekar and Aithal (2022) found that digital live commerce gives consumers the closest shopping experience to that which they would find in a physical store. More customers prefer to shop via live stream because they can digitally interact with brands/influencers. More open and transparent interaction during the live stream will help consumers choose goods in greater quantity (He et al., 2022).

2.2. Streamers

Streamers directly communicate product information in a live broadcast to customers. They are the most critical bridges between consumers and brands and are essential in promoting product sales.

According to social psychology, the characteristics of information sources include three aspects: reliability, professionalism, and attractiveness. The professionalism of the informant will directly affect the persuasiveness of the information. The higher the quality of persuasive information a system provides to an individual, the higher the social influence of the information that the individual perceives (Liu et al., 2022). In addition, the reputation and attractiveness of streamers have a positive effect on consumer confidence. Surveys show that consumers' trust in streamers who are Key Opinion Leaders (KOLs) and celebrities tends to be higher. This is because customers trust the content that these opinion leaders create in

advance. These opinion leaders will directly post helpful information on social platforms, building a solid foundation for the usefulness of the information, thereby creating confidence in the products they sell and changing consumers' purchasing intentions (Le, 2022; Zou & Peng, 2019).

2.3. Stimulus-organism-response model

Mehrabian and Russell (1974) created the stimulus-organism-response (SOR) framework, one of the most widely used in environmental psychology (Le, 2022; He et al; 2022). The three main determinants of the SOR model are specified in this study as follows:

Stimulus (S) is a consumer stimulus that includes scarcity, price perception, and streamer appeal. Scarcity is defined as the use of limited quantity or limited time promotions to stimulate the scarcity effect in direct trade. Price perception is the perceived monetary value of a product or service. And streamers are influential content creators who provide helpful information regarding the sale of products or content.

Organism (O) is the internal assessment of consumers: flow experience and perceived value (Liu et al., 2022; Nguyen, 2022).

Response (R) is a result of consumers' answers to online shopping stimuli and their internal assessment of online purchase intention (Kim & Thapa, 2017; Nguyen, 2022).

2.4. Flow experience

Flow is understood as the narrowing of the focus of awareness, loss of sense of self, the ability to meet clear goals and give clear feedback, and a sense of control over the environment. When individuals enter a flow state, their attention is drawn to activities and objectives (Kim et al., 2017).

Frequent interactions in live commerce cause consumers to temporarily detach from reality and immerse themselves in the streaming environment, forgetting their worries and creating an experience that follows. Live streamers show products realistically, give effective reviews, make purchase suggestions, and increase customer interest while watching the live broadcast. Entertainment in live commerce can significantly influence stream experience, perceived value, and consumer attitudes (Chen & Lin, 2018). Consumer flow experiences impact attitudes, and when consumers are immersed in a live stream, they engage unconsciously and are motivated to purchase by the streamer.

2.5. Perceived value

Since the late 20th century, the concept of "perceived value" has been engaging researchers worldwide; it has emerged as a factor that plays an essential role in the survival of organizations and businesses.

According to Woodruff (1997), "perceived value" is the customer's liking, perception and evaluation of a product's features, the performance of the feature, and the results obtained from the feature, used to achieve (or interfere with) easily the customer's intentions and goals in the use cases". This concept closely combines desired and perceived value and emphasizes that value derives from customer perceptions, preferences, and evaluations. It also links the product to the use cases and effects achieved through use by the customers (Ma, 2021).

According to studies on perceived value, perceived value will affect customer behaviour, so learning about customer perceived value will help organizations and businesses to influence their manners, and customer choice demeanour, predicting customer behaviour in general and customer repurchase intention in particular (Le, 2022).

2.6. Online purchase intention

Grewal et al. (1998) define purchase intention as a consumer's capacity to intend to buy a particular product. Purchase intent is a critical step in the consumer purchasing process. Purchase intention is a type of decision-making that evaluates why a customer would buy a specific brand (Shah et al., 2012). Furthermore, purchase intentions are crucial in the business sector since they may be utilized to forecast potential earnings (Le, 2022).

According to Zeithaml (1988), a customer's decision to purchase a product is heavily impacted by the product's value and suggestions from other consumers, such as those on social media. Combining company-generated promotion (viral marketing) and user-generated

word of mouth (WOM) results in automatic retweets and recommendations from users who believe the business is worthwhile (Le, 2022).

3. Research methodology

3.1. Research model and hypothesis

Live streamer attractiveness is the most critical bridge between consumers and brands and is essential in promoting product sales. Many studies have shown that the success of live streaming depends heavily on the streamers (opinion leaders). Audiences expect to use media for entertainment and stress relief. The more creative and unique the content conveyed, the greater its impact on consumer trends (Pei- Lo, 2022; Liu et al., 2022). An entertaining e-commerce live stream will engage consumers and expose them to a specific scenario, thereby creating a positive emotional experience in terms of entertainment for consumers (Fang, 2012; Chen & Lin, 2018; Ho et al., 2022). Furthermore, Xu et al. (2020) call streamers "endorsers" for products or brands in the live streaming industry. Accordingly, the first work hypothesis is proposed:

H1: Live streamer attractiveness has a positive impact on the flow experience.

Zhu (2021) demonstrated that direct communication between the customer and the streamer gives consumers a friendly impression and closes the reception gap between the consumer and the streamer. Streamers provide efficient service during live streaming by focusing on personalizing needs and interests, increasing viewer-to-buyer conversions.

H2: Live streamer attractiveness has a positive impact on perceived value.

Price perception is defined as the perceived monetary value of a product or service (Sweeney & Soutar, 2001; Lo, 2022). Research by Zafar et al. (2020) finds that popular promotional tactics (e.g., bundle offers) promote higher price perceptions, which can spark individual purchases. Price perception attracts hedonistically motivated online shoppers, who initially enter the live stream for entertainment without the pre-existing intent of purchasing a product. Price plays an even more prominent role in live stream trade as it is a common

practice for people to use lucrative currency deals (i.e., exclusive discounts) to increase sales in the limited-time stream as much as possible.

H3: Price perception has a positive effect on perceived value.

Scarcity is defined as using limited-edition or limited-time promotions to stimulate a scarcity effect in live streaming commerce. Eisen et al. (2008) further established the effect of time and quantity scarcity on sensory stimulation. In addition, the authors have also demonstrated the power of scarcity persuasion in shaping perceived value - an expression of affection and perception - thereby showing that scarcity can affect the evaluation of product value. Lo et al.'s (2022) study supports this view by demonstrating that scarcity effects can positively contribute to both hedonic and utilitarian shopping values.

H4: Scarcity persuasion has a positive effect on perceived value.

Consumer flow experiences impact attitudes, and when consumers are immersed in a live stream, they engage unconsciously and are motivated to purchase by the streamer. In the online context, flow makes users fully engaged in online tasks and to be interested in continuing these activities. When the quality of the consumer experience is higher, the perceived value is higher, and the consumer is more willing to participate. Live commerce allows consumers to enjoy a greater sense of freedom, control, and participation and a better consumption experience, which can lead to consumer willingness to purchase. Flow experiences exhibit intense engagement, leading to high psychological engagement, such as user satisfaction and loyalty (Addo et al., 2021; Liu et al., 2022).

H5: Flow experience has a positive effect on online purchase intention.

In exploring flow experience, many scholars believe that flow experience as an enhanced form of consumer experience is the influencing factor of perceived value. Internet users can derive hedonistic and utilitarian value from the flow experience. Eisend (2008) believed that the consumer experience can increase the consumer's perceived value. Li (2018) found that consumer experience can positively affect consumers' perceived value when studying the

shopping behavior of university students. Lo et al. (2022) believed that the flow experience that customers gain during a live broadcast

significantly positively affects hedonic and utilitarian values.
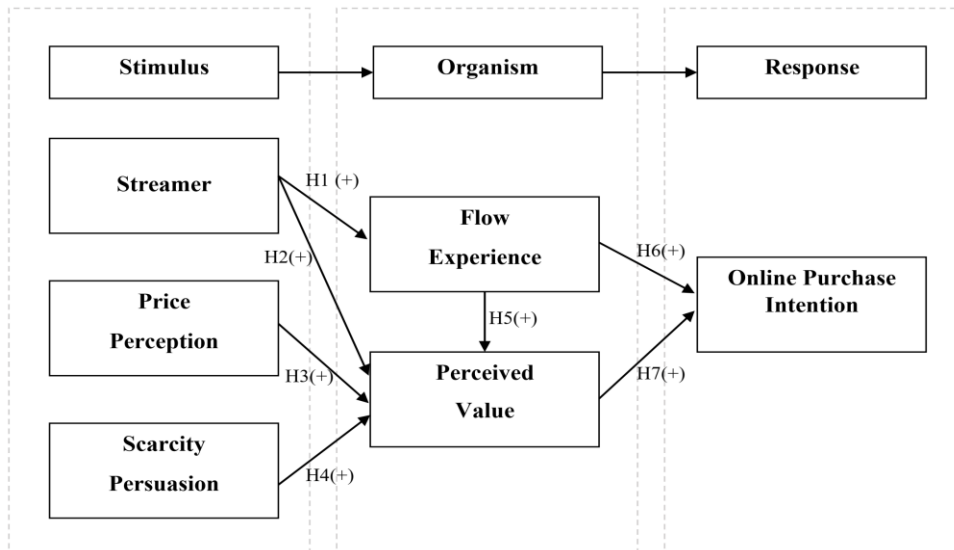

Figure 1: Research model
Source: The authors.

H6: Flow experience has a positive effect on perceived value.

Perceived value is the customer's liking, perception and evaluation of the product's features, the performance of the feature, and the results obtained from use to easily achieve the customer's intentions and goals in the use cases. For consumers, the price they perceive is more important than the product's actual price. The perceived value process is when a customer psychologically assesses a cost or benefit based on price comparison while purchasing a product or service. They always tend to try to maximize the total utility of any of their purchases. From a marketing perspective, perceived value is one of the most effective ways to improve customer satisfaction and maintain ongoing investments (Qing, 2022).

Le (2022) believed the price is necessary to create satisfaction when buying on live stream. The author proposes the following hypotheses:

H7: Perceived value has a positive effect on online purchase intention.

3.2. Measurement scale

There are two parts in the questionnaire prepared for the study. In the first part, the author designed questions regarding gender, age,

education level, frequency of watching live streams, and shopping experience directly on the TikTok app. The second part consists of 22 closed-ended questions to investigate the impact of criteria such as scarcity, price perception, attractiveness of streamer, flow experience, and perceived value on the online purchase intention of students in Hanoi city. All of these factors were measured by a five-point Likert scale from "totally disagree" (1) to "strongly agree" (5).

3.3. Sampling and data collection

Primary data was collected for the first time through personal experience or evidence. Through previously compiled author information, a survey was conducted to collect feedback from Hanoi students about the factors that affect their purchasing decisions on the TikTok live stream. The survey took place from April to May 2023, was distributed to customers that are students who work in Hanoi on Google Forms and shared on Facebook.

The study sample was determined according to Hair et al. (2010). The minimum sample size for structural equation modeling should be 150. Moreover, in several factor groups from 7 groups or less, each group must have at least 3 observed variables, and the commonality of the

observed variables must be 0.5 or more. The number of respondents is 186 in accordance with the research purpose.

4. Finding and discussion

4.1. Descriptive statistics

The total number of valid responses collected from the survey was 186, of which 127 respondents were female (68.3%) and 59 were male (31.7%). As such, the collected responses are not evenly distributed regarding gender, with more women using TikTok LIVE than men. During the survey, the authors found that the frequency of shopping on live stream among students in their fourth year is the largest. Besides, the statistical results show that the average income of students ranges from 3 million to 4 million VND per month. Final year students (year 4, year 5) will have a higher income (6 million - 8 million). Since the study program is completed, seniors have time to work full-time. Because of the limited budget, the criterion "delicious - nutritious - cheap" is the shopping maxim of many young people today. Most students will pay for products under 500 thousand Vietnam dong.

4.2. Cronbach's Alpha

Cronbach's Alpha value of each measurement is more significant than 0.7. Corrected Item Total Correlation shows the

relationship among an observed variable and all other observed variables in the same scale (same group).

4.3. Exploratory factor analysis (EFA)

The reliability of the measures in this research was first assessed using Cronbach's coefficient Alpha and then using EFA. The KMO index is $0.819 > 0.5$, proving that the data used for factor analysis is entirely appropriate. The result of Barlett's test is 2292,921 with the Sig significance level < 0.05, that is, the variables are correlated and satisfy the conditions of factor analysis. Factor analysis was performed according to Principal components with Promax rotation. The results showed that 22 observed variables were initially categorized into 6 groups. The value of total variance extracted = $73.936\% > 50\%$: satisfactory; then it can be said that these 6 factors explain 73.936% of the variation of the data.

The factor loading coefficients are all greater than 0.5, and there is no case that any variable uploads both factors simultaneously with the load factor close to each other. Therefore, the factors ensure convergent and discriminant values when analyzing EFA. In addition, there is no mixing of factors, which means that the question of one factor is not confused with the question of the other. So, after factor analysis, these independent factors are kept unchanged, not increased, or decreased by factors.
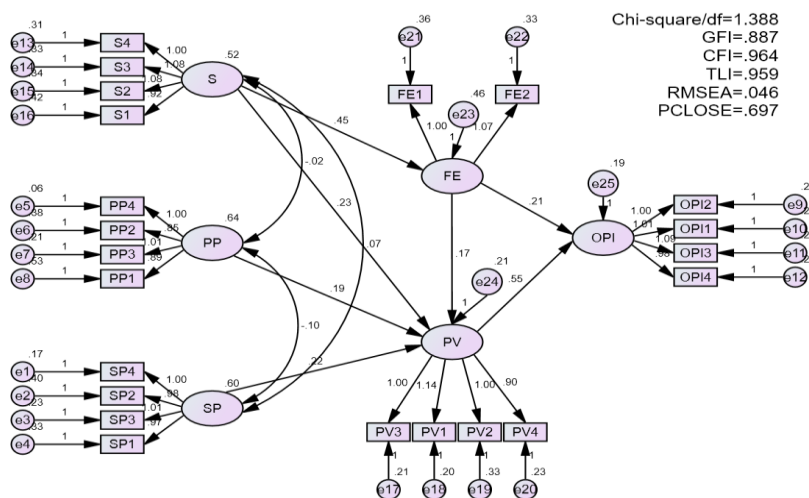

Figure 2: Results of SEM on AMOS application
Source: The authors.

4.5. Structural Equation Modeling (SEM)

For SEM analysis, according to Hair et al., the minimum required sample size is 150. The number of samples collected in this study is 186. Thus, the number of pieces is consistent with the model. SEM results showed that CMIN/DF = 1,388 < 3; GFI = 0.887 > 0.8; TLI= 0.959 > 0.9; CFI = 0.964 > 0.9; RMSEA = 0.046 < 0.06; PCLOSE = 0.697 > 0.05 are all satisfactory.

The outcomes of hypothesis testing are summarized in Table 1. Using the 95% confidence standard, the sig of FE acting on PV is 0.013 < 0.05, and that of FE acting on OPI = 0.02 < 0.05. The remaining variables all have sig equal to 0.000 (AMOS sign *** is sig equal to 0.000). In the Estimate column, all recorded results are positive. Therefore, these relationships are all significant and affect each other positively. Thus, 3 variables positively affect Perceived Value, including Streamer, Price Perception, and Scarcity Persuasion. There is one variable that has a positive effect on the Flow experience, which is Streamers. Moreover, both intermediate variables, Perceived Value and Flow Experience, put the positively influence on Online Purchase Intention. Therefore, all of the 7 hypotheses are accepted.

Table 1: Hypothesis test summary

			Estimate	S.E.	C.R.	P value
FE	<---	S	0.447	0.098	4.554	***
PV	<---	FE	0.172	0.069	2.478	0.013
PV	<---	S	0.231	0.069	3.326	***
PV	<---	PP	0.189	0.052	3.671	***
PV	<---	SP	0.218	0.055	3.932	***
OPI	<---	FE	0.209	0.067	3.128	0.002
OPI	<---	PV	0.553	0.094	5.898	***

Source: The authors.

Continuing to consider the standardized regression weights table; this normalized regression coefficients table is used to evaluate the impact of the independent variables on the dependent variable. Of the four variables affecting Perceived Value, Scarcity Persuasion (SP) is the variable with the most substantial impact ($\beta = 0.299$); the second is Streamers (S) with $\beta = 0.295$; the third is Price Perception (PP) ($\beta = 0.269$) and the last is Flow Experience (FE) ($\beta = 0.227$). With the intermediate variable FE, only one factor is mentioned: Streamer with $\beta = 0.431$.

Table 2*:* Standardized regression weights results of SEM model

			Estimate
FE	<---	S	0.431
PV	<---	SP	0.299
PV	<---	S	0.295
PV	<---	PP	0.269
PV	<---	FE	0.227
OPI	<---	PV	0.531
OPI	<---	FE	0.266

Source: The authors.

The squared multiple correlations table shows the R-squared value of the impact of the independent variables on the dependent variable. The R-squared value of Flow Experience is 0.185 = 18.5%, so the independent variables affect 18.5% of the variation of Flow Experience. Similarly, the independent variables affect 35.4% of the interpretation of Perceived Value and 45.7% of the variation of Online Purchase Intention.

Table 3: Squared multiple correlations results

	Estimate
FE	0.185
PV	0.354
OPI	0.457

Source: The authors.

4.6. Research discussion

This research was conducted to investigate what factors influence the purchase intention on the TikTok live stream of students in Hanoi. It has inherited previous studies' fundamental theories and results to build a model and the

results showed that 7 hypotheses proposed by the authors are consistent with the model and actual data collected through the survey.

First, research showed that flow experience affects students' purchase intention on live streams. This is consistent with previous studies on the affect of this factor on the sale of products (Liu et al., 2022; Nguyen, 2022). Although Nguyen (2022) did not specifically address this factor, her report results indicated that when students watch a live sales session, they are attracted to the presence of the live streamer. During this process, the streamers fully control the speed of the stream; interact with viewers through live commentary, and open attractive minigames that excite and intrigue consumers. It is the foundation of a flow experience for building positive emotions and trust in products and sellers, driving the propensity to buy products in life. In addition, the criteria for assessing the degree of immersion in a live stream under the direction of a streamer are also consistent with the factors that Nguyen and Nguyen (2022) examined, including attractiveness entertainment, expertise, and reliability.

Second, perceived value plays the most critical role in influencing purchase intention on live broadcasts. The perceived value is an intermediary in influencing the purchase intention of streamers, scarcity, price perception, and flow experience. Customers who are immersed in an online sale will feel the product they buy has a higher value than on other platforms. Specifically, in the case of TikTok LIVE, the value can be the pleasure of buying a low-priced, high-quality product, in limited quantity, or satisfaction with immediate answers by streamers. The results of this study showed that the author's hypothesis is consistent with previous studies: Lo et al. (2022), Le (2022), Sanjaya et al. (2023).

The research results revealed that scarcity is the primary motivating factor that significantly affects students' perceived value and purchase decisions in the context of live streaming. This discovery confirmed Lo et al.'s (2022) findings that scarcity drives impulsive purchases. The higher the scarcity, the greater the purchase intent on the live broadcast. The results are also consistent with Sanjaya et al.'s (2023) finding that prices and limited-time promotions and

interactions between individuals, including consumer-to-live broadcasters and consumer-to-consumer, have a positive impact on online purchase intention. Many students who participated in the survey also responded that because of the time to buy products with a 50% discount, 70% took place in only a few minutes and the goods are only sold in a tiny quantity while lots of other customers also want to buy them. Therefore, the order will be closed quickly due to customers' fear of missing the opportunity to get a cheap, beautiful, and unique product.

In addition, it was also found that the streamer is also known as one of the stimuli affecting purchase intention. However, unlike Nguyen et al. (2022) and Nguyen (2022), mentioned above, many students are more interested in entertaining, humorous, and unique information than in product information. Viewers are likelier to buy from streamers with a direct creative style: cosplaying cartoon characters or dancing while selling products. They do not need to be celebrities; they can create personalized and attractive live sessions. In addition, it was mentioned in some respondents' comments that they watch live because they are curious about viral trends or hot streamers, and suddenly become customers.

5. Suggestions and conclusion

5.1. Suggestions

Buying via a live stream has recently been booming in Vietnam despite its shortcomings. However, up to the present time, there has yet to be an exact number of statistics to prove the development of this industry.

The main factors affecting purchase intention are directly related to scarcity (limited number of discounted products), price perception, and the streamer (seller). This is suitable with the research model the authors have built before. However, this development of e-commerce live streaming has brought many consequences such as dumping and using unauthenticated information. Therefore, the authors have proposed some solutions.

Completing the training process and streamer evaluation criteria: The study concluded that in live commerce, streamer

attractiveness has an important role. However, streamers still live instinctively and have yet to understand a specific process of capturing customer psychology.

Establishing a legal corridor for the live stream process: Vietnamese management agencies need to have regulations on live streaming and improve the review and sanction of law violations.

Customers' role needs to be strengthened: They are vital reviewers and managers in developing live commerce on TikTok. The comparison and sanction complaint information also needs to be enhanced.

Enhancing the role of authorities in managing the business on TikTok LIVE to check necessary and sufficient conditions when opening a booth on TikTok Shop: according to the law, companies selling goods on TikTok LIVE must register their business and follow the lists of prohibited products. Despite making specific requirements, TikTok LIVE still needs an item to compare the information registered on the previous legal system.

5.2. Conclusion

In the current business era, technological advances by utilizing the live streaming feature have been adopted by many e-commerce businesses and are gaining popularity among buyers. Live streaming shopping allows customers to get the correct product information to attract their attention and ultimately increase online purchase interest. Significantly, with the generational transition going on, gen Z in general and students in particular are now becoming one of the major targets for enterprises to attract their own consumers. As one of the new and emerging e-commerce businesses in Vietnam, TikTok live stream provides a new way to approach potential markets with its coverage and boost their sales through this unique marketing stream. Many brands and companies in Vietnam now use live streaming on TikTok as part of their social commerce strategy to attract consumers.

The objective of the research is to study the factors influencing the purchase intention on TikTok live stream of students in Hanoi. Obtained results revealed 5 factors, including live streamer attractiveness, price perception,

scarcity persuasion, flow experience, and perceived value. The study has provided brands new insights into the factors that influence viewers' purchasing decisions to have a deeper understanding with the issue for brands when doing this kind of marketing activity, and has highlighted critical improvements that can be made to increase the likelihood of conversion from spectator to customer. Nonetheless, future studies can choose more variables related to product value and regulatory framework to research. The legal regulations on business on this platform must be tightened, which will increase customers' confidence. With the proper resources, verification is suggested to increase the sample size and observations of future research to address this generalizability concern.

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