Interactive Live-Stream Shopping and Impulse Buying Behavior Among Malaysian TVET Students: An Extended Technology Acceptance Model

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Abstract— Live-stream shopping is the integration of product presentation, conversation, promotion, and check-out all in real-time. The purpose of this study is to investigate the association of these features to impulse buying among Technical and Vocational Education and Training (TVET) students in Malaysia. The model is the same as the Technology Acceptance Model (TAM) with the addition of live stream interactivity and subjective norms from the Theory of Planned Behavior (TPB). 350 students in Malaysian polytechnics and community colleges were surveyed in a cross-sectional design who had recently bought from a live stream in the past 3 months. PLS-SEM was used to analyse the data. Results of the measurement model showed that it was reliable and valid. Perceived usefulness ($\beta = .441$, $p < .001$) was predicted by interactivity. Perceived usefulness ($\beta = .362$, $p < .001$), perceived ease of use ($\beta = .284$, $p < .001$), and subjective norms ($\beta = .321$, $p < .001$) predicted attitude and explained 61.2% of its variance ($R^2 = .612$). Impulse buying was predicted by attitude ($\beta = .482$, $p < .001$) and subjective norms ($\beta = .253$, $p < .001$), with $R^2 = .680$. There was also a significant sequential indirect effect from interactivity on impulse buying via perceived usefulness and attitude ($\beta = .077$, $t = 4.218$, $p < .001$, 95% BCa CI [.045, .118]). The findings indicate that an evaluation of technology together with social influences influence live-stream purchasing among TVET students. Findings are related to digital marketing, consumer financial literacy and TVET technopreneurship education.

Keywords— live-stream shopping, impulse buying behavior, Technology Acceptance Model, subjective norms, TVET students

I. INTRODUCTION

Online shopping isn't confined to product pages and traditional check-out screens anymore. Live-stream commerce is the ability for viewers to watch a product in action, ask questions, read comments from other viewers, interact with the host, get discount offers and/or buy a product without leaving a live-stream event. The activities take place simultaneously and it is considered as a more socially interactive type of ecommerce.

The number of studies on live-stream commerce has rapidly increased. There is a consistent emphasis on platform functionality, streamer attributes, social dynamics, content delivery, credibility, interaction, and conversion rates throughout the field reviews. Impulse buying steps in here: When confronted with a live broadcast, the time to consider and then buy can be reduced. Research has revealed that variables like interactivity, social presence, the scarcity of product, price cues, parasocial interaction with the environment, and affective responses are contributors to impulse buying in ecommerce [9] [10] [12]. In the meantime, a recent review shows that the literature is theoretically fragmented, and many studies, in particular in East Asian contexts follow the Stimulus-Organism-Response (S-O-R) paradigm. [7, 8].

This overall trend provides an opportunity for a technology-adoption explanation. TAM suggests that perceived usefulness and perceived ease of use influences users' technology judgment [3]. But live-streamed shopping also has a visual social impact: comments, suggestions, actions of the presenter and purchase behavior of the participants is perceptible. For this, subjective norms of TPB [1] were included in the current model. However its goal is not to test the whole TPB model, but rather; to add the social influence component along with the two basic beliefs of the TAM.

Malaysia is a good backdrop to discuss this issue. Wong et al. [13] had investigated the live-stream purchase intention among students in Malaysian universities, nevertheless, TVET students are less prominent in this literature. There are two reasons for this group's relevance. They are digital consumers and being trained many of them to be working, entrepreneurs, involved in technology based business. Therefore, there is relevance to live commerce and consumer behaviour and vocational education.

In this context, the study examines an Extended TAM where the subjective norms and live-stream interactivity are connected to attitude and impulse buying. The study is specifically focused on TVET students in Malaysia and is interested in whether the technology beliefs in conjunction with social influence can explain spontaneous purchasing in a context where it is conventionally explained using S-O-R based explanations.

RQ1: What is the effect of livestream video interactivity, perceived usefulness, perceived ease of use, and subjective norms on the attitude of Malaysian television media vocational education students towards livestream shopping?

RQ2: How much can attitude toward live shop and subjective norms predict impulse buying?

RQ3: To what extent is the variation in attitude towards live-stream shopping influenced by Extended TAM among TVET students in Malaysia?

II. THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

A. Technology Acceptance Model and Live-Stream Commerce

Perceived usefulness and perceived ease of use are important beliefs in the technology acceptance TAM [3]. Usefulness might include faster product location, product demonstrations, product promotion and instant product question response in the live-shopping setting. Ease of use refers to how easy it is to use the stream, locate product links, utilize vouchers, and make their payments. As the interaction between host and viewers is a lived reality of the functions, here TAM functions as a foundation but were not used as extensive a description of impulse buying.

B. Live-Stream Interactivity and Perceived Usefulness

Some of the key affordances of live commerce are interactivity. During the broadcast, the viewers can exchange information with each other, while the hosts can answer to questions asked by viewers, demonstrate an item when asked, explain the items' specifications and return comments. Previous live-shopping studies reveal that interactivity can be considered as a valid environmental cue in this context [9]. Live Stream Commerce research proposes that interaction by live-stream can be an attribute to enrich information sharing and shopping process in a broader context [11]. The channel should be more useful to the shopper if there are interactions that reduce uncertainty or provide information, when needed or wanted. So live-stream interaction should positively impact on perceived usefulness – the more interaction, the better.

C. Perceived Usefulness and Attitude Toward Live-Stream Shopping

Perceived usefulness indicates the extent to which the shopper thinks using the channel will help him or her complete the shopping task [3]. These could be faster discovery of products, product demos, product comparisons, promotions, or instant answers to queries about products, all of which can be included under the banner of live-stream shopping. Results of live-stream shopping also indicate that perceived usefulness closely relates to the consumers' evaluation of the format [14]. If students perceive the live-stream shopping channel as being useful, rather than simply entertaining, they will be more likely to have a positive attitude toward live-stream shopping.

D. Perceived Ease of Use and Attitude Toward Live-Stream Shopping

Perceived ease of use relates to the ease in using a technology [3]. With a live-shopping session, the viewers are encouraged to follow the process of content in the video, read comments, use vouchers, add items to a cart, make electronic payments, all in the same environment. An easier to use system will be evaluated more positively as there are fewer barriers to what the user wants to do from their functional aspects of system use, as shown by the TAM. This is particularly true for live commerce, where a long and tedious path to the checkout can end the live commerce moment. Based on this, then, a smoother process should lead to a better attitude towards live-stream shopping.

E. Subjective Norms and Attitude Toward Live-Stream Shopping

Subjective norms refer to the social pressure from important others and/or groups perceived by the individual [1]. All that pressure is particularly pronounced in live commerce: friends, online communities, influencers, hosts and other viewers can show what is popular, desirable, or socially acceptable. Studies have found that the presence

and actions of streamers and other consumers in the live stream can influence both consumers' internal responses and their purchase intentions [12]. These cues could also provide an effect when the students are buying products in these socially connected digital environments, which might impact the quantity purchasing and the evaluation of live-stream shopping overall.

F. Subjective Norms and Impulse Buying Behavior

Social influence also can be effective nearer the actual decision to buy. In live sessions, viewers might see the comments about buying, excited comments, endorsements, social contagion, scarcity messages, and other shoppers visibly participating. Previous studies demonstrate that social and persuasive factors in live-stream-selling have the potential to amplify cognitive and affective responses that might lead to impulsive purchase [10,12]. Subjective norm thus may serve a direct behavior-producing function; if others or the sociorah is important to the student, and if the others or the surrounding context seem to approve the purchase, the student might be tempted to follow suit without much reflection.

G. Attitude Toward Live-Stream Shopping and Impulse Buying Behavior

Attitude is a person's overall judgement of acting out a behaviour [1]. When used in this study, it measures students' positive or negative attitudes toward live-stream shopping (whether they think shopping through livestream is good, worth it, or nice). While you don't have to make an impulse buy just because something positive is said about it, you will be less resistant to the next time a product comes up in a broadcast and it can help you decide to go with it. This does not contradict live-shopping studies which connect attitudes to shopping behaviour [14] or the general literature on impulse buying and how situational and psychological factors can lead to impulse buying [2, 10]. Therefore, a more positive attitude should be related to impulse buying.

H. Hypotheses

H1: Live-stream interactivity positively influences perceived usefulness.

H2: Perceived usefulness positively influences attitude toward live-stream shopping.

H3: Perceived ease of use positively influences attitude toward live-stream shopping.

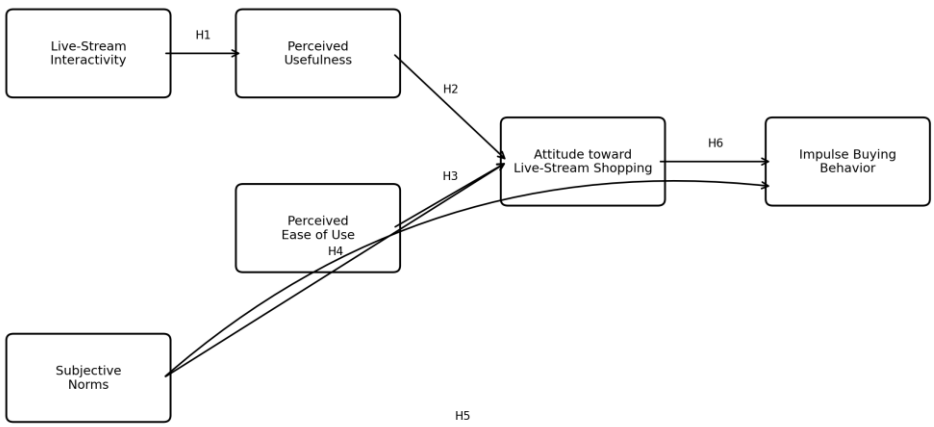
H4: Subjective norms positively influence attitude toward live-stream shopping.

H5: Subjective norms positively influence impulse buying behavior.

H6: Attitude toward live-stream shopping positively influences impulse buying behavior.

H7: Perceived usefulness and attitude toward live-stream shopping sequentially mediate the relationship between live-stream interactivity and impulse buying behavior. This hypothesis unifies the arguments above. The channel will be more useful due to interactiveness, which in turn, is expected to have a positive impact on the shopper's attitudes towards the channel which will lead to the higher receptiveness toward an unplanned purchase. This proposed sequence does not regard interactivity as a sufficient trigger for impulse buying in itself, but rather as an attribute, the behavioural significance of which can only be determined by perceived value and evaluation. This pathway is in line with the overall literature that indicates that live-commerce cues frequently evoke purchasing decisions via mediating cognitive and/or affective states [8] [9] [10] [12].

Fig. 1 Proposed Extended TAM for live-stream shopping



III. RESEARCH METHODOLOGY

A. Research Design

This study involved a quantitative cross sectional design. To gather the data, an online questionnaire was used, as participation was contingent with students having had some live-stream shopping experience recently. There was one unit of analysis per respondent.

B. Population, Sampling and Data Collection

The target population of interest was Full-time Malaysian TVET students from selected Polytechnic/Selected Community Colleges. The sampling technique used was purposive sampling since the respondents were expected to have the appropriate purchasing experience. The qualification for a respondent is being a current Malaysian TVET student who had made at least one purchase via live-stream shopping platforms (TikTok Shop Live, Shopee Live, Instagram Live, or a similar platform) in the past three months. The survey was sent to students and academic networks, as well as student technopreneurs' groups in six weeks via the student communication and academic networks through March and April 2026. Response checks for completeness, attention-check performance, straight-lining, response patterns, and possibly problematic multivariate observations resulted in 32 responses being eliminated out of 382 received. The final sample was 350. Response rate for items decreased when setting was mandatory. An a priori G*Power 3.1.9.7 calculation used $f^2 = .15$, $\alpha = .05$, power = .95, and three predictors. Retained sample was well above the minimum required sample size N = 119 with achieved power > .999 (critical $F[3,115] = 2.684$).

Participation was voluntary. The informed-consent information was included on the first page of the online survey document—this included the academic purpose of the study, anonymity and confidentiality, and the right to withdraw without any penalty. The procedure was conducted in accordance with the guidelines of the institutional research of Politeknik Kota Bharu and no personal information was needed for the structural analysis.

C. Measurement Instrument

The questionnaire adopted reflective multi-item measures based on existing studies regarding the technology adoption and consumer behaviour, while the wording was contextualized to live-stream. Responses were made on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). The perceived usefulness and perceived ease of use were adapted from Davis [3]; subjective norms and attitude were adapted from Ajzen [1] and impulse buying behaviour was adapted from relevant impulse-buying studies such as Beatty and Ferrell [2].

D. Data Analysis

SmartPLS 4 was used to estimate the PLS-SEM model. The two-stage procedure, as outlined by Hair et al. [4] was followed when examining the measurement and structural models. The assessment of the reflective measures required the indicator reliability, Cronbach's alpha, rho_A, composite reliability, AVE and HTMT. Structural analysis results consisted of collinearity, path coefficients, R2, f2, specific indirect effects, BCa bootstrapping with 2 tailed tests, $\alpha = .05$ and 95% CIs and resamples of 5,000. Common method bias was minimized through several procedural steps that involved giving clear instructions, shuffling constructs, visually separating scales, and maintaining anonymity. As a statistical test, full-collinearity VIFs were within the range of 1.241 to 1.820, which was less than 3.3 as recommended by Kock [6].

IV. RESULTS

A. Respondent Profile

TABLE I
RESPONDENT PROFILE

Variable	Category	n	%
Gender	Male	132	37.7
	Female	218	62.3
Age	18–20 years	145	41.4
	21–23 years	178	50.9
	24–25 years	27	7.7
Institution	Premier Polytechnic	180	51.4
	Conventional Polytechnic	125	35.7
	Community College	45	12.9

Primary platform	TikTok Shop Live	210	60.0
	Shopee Live	105	30.0
	Instagram Live/Others	35	10.0
Monthly live-stream purchases	1–2 times	162	46.3
	3–5 times	138	39.4
	More than 5 times	50	14.3

Women accounted for 62.3% of the sample, and most respondents were between 18 and 23 years old. TikTok Shop Live was the primary live-shopping platform for 60.0% of respondents.

B. Measurement Model Assessment

All retained indicators loaded between .724 and .882. Reliability coefficients exceeded .70 for every construct, and AVE ranged from .582 to .673. These results met the study's criteria for internal consistency and convergent validity.

TABLE II
MEASUREMENT MODEL ASSESSMENT

Construct	**Items**	**Loading Range**	**α**	**rho_A**	**CR**	**AVE**
Live-Stream Interactivity	4	.742–.835	.831	.838	.887	.612
Perceived Usefulness	4	.724–.828	.814	.820	.877	.601
Perceived Ease of Use	4	.730–.815	.792	.801	.854	.582
Subjective Norms	4	.751–.840	.825	.831	.883	.615
Attitude	4	.768–.852	.853	.858	.898	.651
Impulse Buying Behavior	4	.781–.882	.862	.869	.906	.673

HTMT was used to assess discriminant validity [5]. Every ratio was below .85, supporting empirical separation among the six constructs.

TABLE III
HTMT DISCRIMINANT VALIDITY

Construct	**INT**	**PU**	**PEOU**	**SN**	**ATT**	**IBB**
INT	—					
PU	.512	—				
PEOU	.428	.485	—			
SN	.395	.441	.382	—		
ATT	.548	.612	.520	.554	—	
IBB	.482	.535	.449	.581	.724	—

C. Structural Model

Structural collinearity was not problematic; inner VIF values ranged from 1.24 to 1.82. The bootstrap results supported all six direct hypotheses. Interactivity predicted perceived usefulness ($\beta = .441$, $t = 8.125$, $p < .001$, 95% BCa CI [.332, .548], $f^2 = .241$). Attitude was predicted by perceived usefulness ($\beta = .362$, $p < .001$), perceived ease of use ($\beta = .284$, $p < .001$), and subjective norms ($\beta = .321$, $p < .001$); together these variables explained 61.2% of attitude ($R^2 = .612$). For impulse buying, attitude ($\beta = .482$, $p < .001$) and subjective norms ($\beta = .253$, $p < .001$) were significant predictors, and the model explained 68.0% of the variance ($R^2 = .680$).

TABLE IV
STRUCTURAL MODEL RESULTS

Hyp.	Path	β	t	p	95% BCa CI	f^2	Decision
H1	INT → PU	.441	8.125	<.001	[.332, .548]	.241	Supported
H2	PU → ATT	.362	6.451	<.001	[.251, .472]	.162	Supported
H3	PEOU → ATT	.284	4.923	<.001	[.171, .395]	.114	Supported
H4	SN → ATT	.321	5.812	<.001	[.212, .430]	.143	Supported
H5	SN → IBB	.253	4.102	<.001	[.132, .374]	.092	Supported
H6	ATT → IBB	.482	9.341	<.001	[.381, .583]	.312	Supported
H7	INT → PU → ATT → IBB	.077	4.218	<.001	[.045, .118]	—	Supported

H7 was also supported. The specific indirect path INT → PU → ATT → IBB was significant (β = .077, t = 4.218, p < .001, 95% BCa CI [.045, .118]). In practical terms, higher interactivity was associated with greater perceived usefulness; usefulness was associated with a more favourable attitude; and attitude, in turn, was associated with stronger impulse buying behaviour. Because the model does not contain a direct INT → IBB path, this finding is reported as a sequential indirect effect rather than labelled as full or complementary mediation.

V. DISCUSSION

A. Live-Stream Interactivity as a Source of Perceived Usefulness

The first finding is simple: those more involved in the live-streaming are more likely to report it as a valuable experience. That is an indication the value of a live stream isn't just viewing a product presentation. Asking questions and seeing a demonstration, getting prompt response and viewing others watching can help make this channel more beneficial for gauging a purchase.

B. Technology Beliefs and Attitude

Attitude was found to be related to ease of use as well as usefulness as predicted by the TAM. The usefulness coefficient was greater, pointing to the importance functional value, as opposed to convenience interface on its own, for this sample. Ease was also a key driver, and ease of "viewing to checkout" remains a crucial element of students' live shopping experience.

C. The Dual Role of Subjective Norms

Subjective norms were related to both attitude and impulse buying. The results indicated two roles for social influence. It can influence the attitude of the students towards the concept of live shopping and it can also be used nearer to the point of purchase. In real life, when the buying decision is taken, comments and endorsements exist and buying is visible, so it's not an outlandish assumption to make that it's the same in the online world.

D. Attitude as the Strongest Direct Predictor of Impulse Buying

The highest coefficient (β = .482) was attitude, which was a predictor of impulse buying. The positive attitude towards live-stream shopping was linked to impulse buying. This finding provides a technology-evaluation trajectory as an explanation of spontaneous buying that has been discussed in terms of S-O-R mechanisms.

E. Sequential Indirect Effect of Interactivity

The indirect result helps to link the technology and behaviour components of the model. No direct mention of interactivity as a direct predictor of impulse buying. Rather, it operated via perceived usefulness and then attitude with respect to impulse buying. The large indirect coefficient (β = .077; t = 4.218; p < .001; 95% BCa CI [.045, .118]) indicates that there is a pathway in which an interactive feature first influences perceived value of the channel, and the influence of perceived value in turn determines the evaluation and purchasing behaviour.

VI. THEORETICAL CONTRIBUTIONS

Second, the results indicate that this TAM is applicable to a live-commerce context when the behavior of interest is not only the adoption of technology but also spontaneous purchasing.

Second, by incorporating subjective norms an additional dimension of live shopping is added to the core TAM variables: the viewer is faced with a situation in which the behaviour and attitudes of others are very salient. This TPB construct is used selectively and the study does not make the claim of testing the full TPB framework.

Third, the substantial INT → PU → ATT → IBB path gives a specific way of linkage between real time interaction and impulse buying. It argues that interactivity does make a difference as it can lead to a higher functional value of the shopping channel before attitude and ultimately buying behaviour.

Last but not least, the research provides evidence from the Malaysian TVET students, who is pertinent as a consumer group as well as group being prepared for digital work and entrepreneurship.

VII. PRACTICAL IMPLICATIONS

A. Live-Commerce Marketers

The results indicated that there's a need for interactivity for live-commerce sellers, but it needs to be practical. Hosts need to be ready to respond to questions asked, demonstrate and describe the product features, and provide clear alternatives. A trouble-free checkout procedure is important as well. Meanwhile, social proof content must be managed well, as fake endorsements, fake scarcity and fake purchase counters can lead to loss of trust and ethical issues.

B. TVET Education and Technopreneurship

It can be concluded that live commerce is a practical context for a TVET programme which can be regarded as digital-business. They may include such things as live-host communications and product showcasing, socialcommerce analytics, customer engagement, e-payment, inventory management and ethical promotion. It is not just that the students will become consumers later in their lives, but as sellers, or as digital entrepreneurs.

C. Financial Literacy and Consumer Education

The results come with a "consumer-education caveat," as well. Since time pressure, social proof, scarcity, and other explicit cues that can pressure students into making impulse purchases account for a large portion of variance in impulse buying, financial-literacy activities for students could explicitly target such messages and influencer persuasion.

VIII. LIMITATIONS AND FUTURE RESEARCH

But due to the sampling method of the study (purposive non-probability sampling), the findings of the study should be generalized to similar TVET population with caution.
Data were only collected once, so the paths identified should only be read as associations, and not strong causal evidence. A more direct test of temporal ordering would be with longitudinal, experimental or field designs.

All measures were self-reported. It would be interesting to feed survey answers into data on behaviour, such as number of transactions, clickstream data, value of orders and product returns, in the future.
Since no attempt was made to model platform or product category differences, the findings might be applicable to other platforms. The differences among gender, purchase frequency, and product-category could be analysed across multi-group work which can include TikTok Shop Live and Shopee Live.
Other constructs also can enhance the model. These can range from the fear of missing out, to parasocial interaction, social presence, flow, trust, scarcity perceptions, financial literacy, AI-generated hosts, virtual influencers, augmented reality and consumer vulnerability.
An additional comparison of TVET students, conventional university students and non-student youth would show if there would be a difference in the responses to live-shopping that could be related to their educational orientation or exposure to entrepreneurship.

IX. CONCLUSION

The aim of the study was to explore impulse buying among the Malaysian Polytechnic and Community Colleges students through an Extended TAM. Interactivity positively predicted perceived usefulness, which in turn positively predicted attitude toward live-stream shopping, as did the other factors of usefulness, ease of use, and

subjective norms. The largest direct predictor of impulse buying was attitude, which also had a direct relationship with the outcome, as well as subjective norms. The INT → PU → ATT → IBB pathway is significant and this pathway indicates the linkage between interactive feature with spontaneous purchasing through perceived value and attitude. The results as a whole depict live-stream shopping as a technology-use and a social-consumption context. This is important for TVET education, as the students who are exposed to these persuasive environments as consumers might also be involved in digital commerce as future entrepreneurs/sellers.

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DECLARATION OF GENERATIVE AI USAGE

During the preparation of this work, the author(s) used generative AI tools for language refinement, editing support, and manuscript-formatting assistance. The author(s) reviewed and edited the final output as needed and take full responsibility for the content of the article.

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