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 combines product presentation, conversation, promotion, and checkout in the same real-time setting. This study examines how these features are associated with impulse buying among Malaysian Technical and Vocational Education and Training (TVET) students. The model extends the Technology Acceptance Model (TAM) by including live-stream interactivity and subjective norms from the Theory of Planned Behavior (TPB). A cross-sectional survey was completed by 350 students from Malaysian polytechnics and community colleges who had purchased through a live stream within the previous three months. The data were analysed with PLS-SEM. The measurement model met the required reliability and validity criteria. Interactivity predicted perceived usefulness ($\beta = .441$, $p < .001$). 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 $R^2 = .680$. The sequential indirect path from interactivity to impulse buying through perceived usefulness and attitude was also significant ($\beta = .077$, $t = 4.218$, $p < .001$, 95% BCa CI [.045, .118]). The results show that live-stream purchasing among TVET students is shaped by both technology-related evaluations and social influence. The findings are relevant 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 retail is no longer limited to product pages and conventional checkout screens. In live-stream commerce, viewers can watch a product demonstration, ask questions, read other viewers' comments, respond to a host, receive promotional offers, and purchase without leaving the broadcast. These activities occur at the same time, making live-stream shopping a more socially interactive form of e-commerce.

Research on live-stream commerce has grown quickly. Reviews of the field show recurring interest in platform features, streamer characteristics, social interaction, product presentation, trust, engagement, and purchasing outcomes [8], [9], [12]. Real-time interaction is especially important because it is one of the clearest differences between live-stream shopping and static e-commerce. A viewer who is uncertain about a product can ask for clarification or observe how the host and other viewers respond before deciding whether to buy.

Impulse buying is particularly relevant in this setting because a live broadcast can compress the time between exposure, evaluation, and purchase. Earlier studies link impulse buying in live commerce with factors such as interactivity, social presence, scarcity, price cues, parasocial interaction, and affective responses [10], [11], [13]. At the same time, recent reviews note that the literature is still theoretically fragmented and that many studies, especially those conducted in East Asian settings, rely on the Stimulus-Organism-Response (S-O-R) framework [8], [9].

This pattern leaves room for a technology-adoption explanation. TAM proposes that perceived usefulness and perceived ease of use shape users' evaluations of a technology [4]. Live-stream shopping, however, also involves visible social influence: viewers see comments, recommendations, host behaviour, and the purchasing activity of others. For that reason, the present model adds subjective norms from TPB [1]. The intention is not to test the full TPB model, but to represent a social influence component alongside the two core TAM beliefs.

Malaysia provides a useful setting for this question. Wong et al. [16] examined live-stream purchase intention among Malaysian university students, but TVET students remain less visible in this literature. This group is relevant for two reasons. They are active digital consumers, and many are also being prepared for employment, entrepreneurship, and technology-enabled business. Live commerce therefore has implications for both consumer behaviour and vocational education.

Against this background, the study tests an Extended TAM in which live-stream interactivity and subjective norms are linked to attitude and impulse buying. The study focuses specifically on Malaysian TVET students and asks whether technology beliefs and social influence can explain spontaneous purchasing in a setting that is usually discussed through S-O-R-based explanations.

RQ1: How do live-stream interactivity, perceived usefulness, perceived ease of use, and subjective norms influence Malaysian TVET students' evaluations of live-stream shopping?

RQ2: To what extent do attitude toward live-stream shopping and subjective norms explain impulse buying behavior?

RQ3: How effectively does the Extended TAM explain variation in attitude toward live-stream shopping and impulse buying behavior among Malaysian TVET students?

II. Theoretical Background And Hypotheses Development

A. Technology Acceptance Model and Live-Stream Commerce

TAM identifies perceived usefulness and perceived ease of use as central beliefs in technology acceptance [4]. In a live-shopping context, usefulness may come from faster product discovery, demonstrations, promotions, or immediate answers to product questions. Ease of use concerns the effort required to navigate the stream, locate product links, apply vouchers, and complete payment. Because these functions are experienced together with interaction between hosts and viewers, TAM is used here as a foundation rather than as a complete account of impulse buying.

B. Live-Stream Interactivity and Perceived Usefulness

Interactivity is a practical feature of live commerce. A host can respond to questions, demonstrate an item on request, clarify specifications, or react to comments while the broadcast is still running. Viewers may also exchange information with one another. These immediate responses can make the channel more useful by reducing uncertainty and supplying information that is relevant to a viewer's decision at that moment.

C. Perceived Usefulness and Attitude Toward Live-Stream Shopping

Perceived usefulness concerns whether viewers believe that live-stream shopping helps them accomplish shopping-related tasks. For students, this may include finding deals, comparing products, seeing demonstrations, or obtaining information quickly. When the channel is seen as useful in these ways, a more favourable attitude toward using it is expected.

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

Using a live-shopping interface involves several actions at once: following the video, reading comments, opening product links, using vouchers, managing a cart, and making an electronic payment. When these steps are straightforward, the shopping process requires less effort. This should contribute to a more favourable evaluation of live-stream shopping.

E. Subjective Norms and Attitude Toward Live-Stream Shopping

Subjective norms describe perceived social pressure from people or groups that matter to the individual [1]. In a live stream, this influence can come from friends, classmates, online communities, influencers, hosts, and the visible behaviour of other buyers. Recommendations and signs of social approval may therefore shape how students evaluate live-stream shopping.

F. Subjective Norms and Impulse Buying Behavior

Social influence may continue beyond general attitude and affect the purchase itself. A viewer can see purchase notifications, enthusiastic comments, endorsements, or strong participation from other viewers while an offer is active. These signals can make a purchase appear popular or time-sensitive and may reduce the amount of deliberation before checkout.

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

Attitude refers to a person's overall evaluation of performing a behaviour. A student who sees live-stream shopping as enjoyable, worthwhile, or attractive may be more receptive to offers encountered during a broadcast. A favourable attitude does not mean that an impulse purchase will always occur, but it may increase readiness to act on an unplanned buying opportunity.

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.

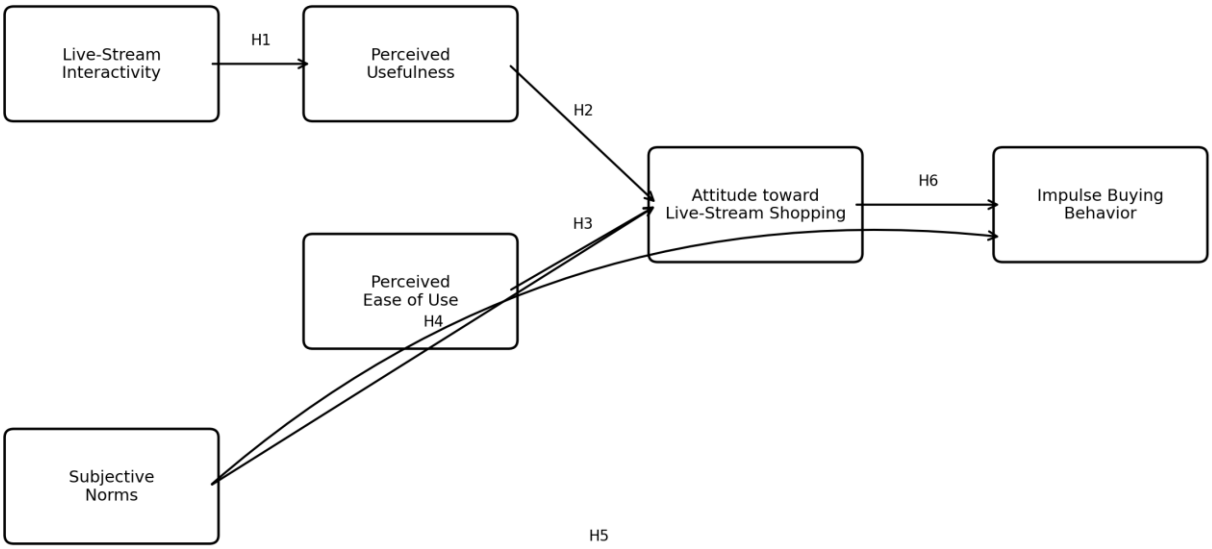
H4: Subjective norms positively influence attitude toward live-stream shopping.

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.

Fig. 1 Proposed Extended TAM for live-stream shopping



III. RESEARCH METHODOLOGY

A. Research Design

The study used a quantitative cross-sectional design. Data were collected with an online questionnaire because participation required students who had recent experience with live-stream shopping. Each respondent represented one unit of analysis.

B. Population, Sampling and Data Collection

The population of interest was full-time Malaysian TVET students enrolled in selected Premier Polytechnics, Conventional Polytechnics, and Community Colleges. Purposive sampling was used because respondents needed relevant purchasing experience. To qualify, a respondent had to be a current Malaysian TVET student and had to have purchased at least one product through a live-stream shopping session, such as TikTok Shop Live, Shopee Live, Instagram Live, or an equivalent platform, during the previous three months. The survey was distributed online for six weeks in March and April 2026 through student communication channels, academic networks, and student technopreneur groups. Of 382 responses received, 32 were removed after checks for completeness, attention-check performance, straight-lining, response patterns, and potentially problematic multivariate observations. The final sample was 350. Mandatory response settings reduced item-level missing data. An a priori G*Power 3.1.9.7 calculation used $f^2 = .15$, $\alpha = .05$, power = .95, and three predictors. The minimum required

sample was N = 119 (critical F[3,115] = 2.684); therefore, the retained sample was well above the minimum and produced achieved power greater than .999.

Participation was voluntary. The first page of the online survey contained the informed-consent information, including the academic purpose of the study, anonymity and confidentiality, and the right to withdraw without penalty. The procedure followed the institutional research guidelines of Politeknik Kota Bharu, and no personally identifying information was required for the structural analysis.

C. Measurement Instrument

The questionnaire used reflective multi-item measures drawn from established work on technology adoption, consumer behaviour, and live commerce, with wording adapted to the live-stream context. Responses were recorded on a five-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). Perceived usefulness and perceived ease of use were anchored in Davis [4], subjective norms and attitude in Ajzen [1], and impulse buying behaviour in established impulse-buying research including Beatty and Ferrell [2].

D. Data Analysis

SmartPLS 4 was used to estimate the PLS-SEM model. Following the two-stage procedure described by Hair et al. [5], the measurement model was checked first, followed by the structural model. For the reflective measures, the assessment covered indicator reliability, Cronbach's alpha, rho_A, composite reliability, AVE, and HTMT. The structural assessment included collinearity, path coefficients, R^2, f^2, specific indirect effects, and 5,000-resample BCa bootstrapping with two-tailed tests at $\alpha = .05$ and 95% confidence intervals. Several procedural steps were used to limit common method bias, including clear instructions, shuffled construct items, visual separation of scales, and anonymity. As a statistical check, full-collinearity VIF values ranged from 1.241 to 1.820, below the 3.3 threshold suggested by Kock [7].

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 [6]. 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 result is straightforward: students who experienced greater live-stream interactivity also reported greater perceived usefulness. This suggests that the value of a live stream is not only in watching a product presentation. The ability to ask for clarification, request a demonstration, receive an immediate answer, and observe other viewers can make the channel more useful for evaluating a purchase.

B. Technology Beliefs and Attitude

Both usefulness and ease of use were related to attitude, as expected from TAM. Usefulness had the larger coefficient, indicating that functional value mattered more in this sample than interface convenience alone. Ease of use still made a significant contribution, so a low-friction path from viewing to checkout remains relevant to students' overall evaluation of live shopping.

C. The Dual Role of Subjective Norms

Subjective norms were related to both attitude and impulse buying. The result points to two roles for social influence. It can shape whether students view live shopping favourably, and it can also operate closer to the point of purchase. This is plausible in a live environment where comments, endorsements, and purchase activity are visible while the buying decision is being made.

D. Attitude as the Strongest Direct Predictor of Impulse Buying

Among the direct predictors of impulse buying, attitude had the largest coefficient (β = .482). Students who evaluated live-stream shopping more favourably were more likely to report impulse buying behaviour. This result adds a technology-evaluation route to explanations of spontaneous purchasing that have often been framed through S-O-R mechanisms.

E. Sequential Indirect Effect of Interactivity

The indirect result helps connect the technology and behavioural parts of the model. Interactivity was not specified as a direct predictor of impulse buying. Instead, its association with impulse buying operated through perceived usefulness and then attitude. The significant indirect coefficient (β = .077, t = 4.218, p < .001, 95% BCa

CI [.045, .118]) therefore supports a sequence in which an interactive feature first changes the perceived value of the channel, which then shapes evaluation and purchasing behaviour.

VI. Theoretical Contributions

First, the findings show that TAM remains useful in a live-commerce setting even when the outcome of interest is spontaneous purchasing rather than technology adoption alone.

Second, adding subjective norms captures an aspect of live shopping that the core TAM variables do not represent: viewers are making decisions in a setting where the behaviour and opinions of other people are highly visible. The study uses this TPB construct selectively and does not claim to test the full TPB framework.

Third, the significant INT → PU → ATT → IBB pathway provides a specific mechanism linking real-time interaction with impulse buying. It suggests that interactivity can matter because it increases the functional value of the shopping channel before influencing attitude and, subsequently, buying behaviour.

Finally, the study contributes evidence from Malaysian TVET students, a population that is relevant not only as a consumer group but also as a group being prepared for digital work and entrepreneurship.

VII. Practical Implications

A. Live-Commerce Marketers

For live-commerce sellers, the results suggest that interactivity should serve a practical purpose. Hosts should be able to answer questions, demonstrate product features when requested, and explain alternatives clearly. A simple checkout process also matters. At the same time, social proof should be used carefully; fabricated endorsements, false scarcity, and misleading purchase counters can damage trust and raise ethical concerns.

B. TVET Education and Technopreneurship

For TVET programmes, live commerce can be treated as a practical digital-business context. Training could include live-host communication, product demonstration, social-commerce analytics, customer engagement, e-payment, inventory coordination, and ethical promotion. These skills are relevant to students who may later operate as sellers or digital entrepreneurs, not only as consumers.

C. Financial Literacy and Consumer Education

The findings also have a consumer-education dimension. Because the model explains a substantial share of variance in impulse buying, financial-literacy activities for students could explicitly address time pressure, social proof, scarcity messages, influencer persuasion, and other cues that can accelerate unplanned spending.

VIII. Limitations And Future Research

The use of purposive non-probability sampling means that the findings should not be generalized beyond comparable TVET populations without caution.

Because the data were collected at one point in time, the reported paths should be interpreted as associations rather than strong causal evidence. Longitudinal, experimental, or field designs could test temporal ordering more directly.

The measures were self-reported. Future studies could combine survey responses with behavioural indicators such as transaction records, clickstream data, order value, or product returns.

The analysis did not model differences by platform or product category. Multi-group work could examine TikTok Shop Live and Shopee Live, as well as gender, purchase frequency, and product-category differences.

Additional constructs may also improve the model. Candidates include fear of missing out, parasocial interaction, social presence, flow, trust, scarcity perceptions, financial literacy, AI-generated hosts, virtual influencers, augmented reality, and consumer vulnerability.

A further comparison between TVET students, conventional university students, and non-student youth would help determine whether educational orientation or entrepreneurial exposure is associated with different live-shopping responses.

IX. CONCLUSION

This study used an Extended TAM to examine impulse buying among Malaysian polytechnic and community-college students. Interactivity was associated with perceived usefulness, while usefulness, ease of use, and subjective norms were associated with attitude toward live-stream shopping. Attitude was the largest direct predictor of impulse buying, and subjective norms also had a direct relationship with the outcome. The significant INT → PU → ATT → IBB pathway shows how an interactive feature can be connected with spontaneous purchasing through perceived value and attitude. Overall, the results portray live-stream shopping as both a technology-use and a social-consumption setting. For TVET education, this matters because the same students who encounter these persuasive environments as consumers may also enter digital commerce as future entrepreneurs and 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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