

From Theory to Live Stream: Assessing The Effectiveness of TikTok Live Projects on Student Application of The 4Ps and Real-Time Engagement in a Fundamentals of Marketing Course

Mohd Amirul Hafiz Ramly^{1*}, Norashikin Zainuddin Tan², Fauzan Abas³, Dalila Ahmad⁴

^{1,2,3,4} Kolej Profesional MARA Bandar Melaka, 75300 Malaysia

Corresponding author: Mohd Amirul Hafiz Ramly

Email: amirul.ramly@mara.gov.my

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ABSTRACT

The rapid evolution of digital marketing, particularly the rise of live stream commerce on platforms such as TikTok, has created a need for marketing education to bridge the gap between theoretical knowledge and practical application. This study assesses the effectiveness of a TikTok Live project as a pedagogical tool for enhancing students' application of the 4Ps (Product, Price, Place, Promotion) and developing real-time engagement competencies in a Fundamentals of Marketing course. This study used a quantitative research design and a structured questionnaire administered to 205 students who completed a group-based TikTok Live promotion project. The instrument measured three study constructs: Perceived Usefulness (PU) and Perceived Ease of Use (PEOU), adapted from the Technology Acceptance Model (TAM), together with Quality of Application & Engagement (QAE); Project Efficiency was treated as the dependent variable. Descriptive analysis indicated strong performance, with mean scores of approximately 4.0/5.0 for application of the 4Ps and real-time engagement. Among the self-efficacy items, handling unexpected questions recorded the lowest mean score (3.75/5), while confidence in interacting with live comments remained high (3.95/5). Correlation analysis showed very strong positive relationships between Project Efficiency and PU ($r = 0.943$), PEOU ($r = 0.936$), and QAE ($r = 0.935$), all significant at $p < 0.001$. Regression analysis showed that PU, PEOU, and QAE collectively explained 92.4% of the variance in Project Efficiency ($R^2 = 0.924$, $F(3, 201) = 819.47$, $p < 0.001$), with PU emerging as the strongest predictor ($\beta = 0.349$), followed closely by QAE ($\beta = 0.342$) and PEOU ($\beta = 0.307$). VIF values were below 5, although the condition-index results indicate that the individual regression coefficients should be interpreted with some caution. Overall, the findings provide support for the adapted TAM framework in this experiential learning context and suggest that TikTok Live projects can help bridge marketing theory and practice.

Keywords: Technology Acceptance Model (TAM), Experiential Learning, TikTok Live, Marketing Education, 4Ps Marketing Mix, Real-Time Engagement

How to Cite

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1.0 INTRODUCTION

1.1 Background of the Study

The marketing landscape is undergoing substantial transformation, driven by the continued growth of digital platforms and a shift in consumer behaviour toward interactive and authentic experiences. The growth of social media has increased the adoption of digital marketing strategies for brand positioning and building consumer relationships (Guarda et al., 2021). TikTok's rapid growth has further strengthened its role as a prominent social media platform and digital marketing channel.

As a core course for diploma students at Kolej Profesional MARA Bandar Melaka (KPMBM), Fundamentals of Marketing introduces the principles of the marketing mix, namely the 4Ps (Product, Price, Place, Promotion). Although students may develop a solid theoretical foundation, they may have fewer opportunities to apply these principles in an interactive digital marketplace. Salwanisa and Wikartika (2023) note that digital marketing on TikTok influences the consumer decision-making process of Millennials and Gen Z, including need recognition, information search, and product evaluation.

To address this theory-practice gap, a TikTok Live project was implemented in the Fundamentals of Marketing course at Kolej Profesional MARA Bandar Melaka. Moving beyond conventional assignments, student groups were tasked with promoting a selected product through a dedicated TikTok Live session. The project began in Week 3, when students observed and analysed affiliate and host live streams to understand the platform's culture and marketing tactics. Following this observation phase, each group selected a product, prepared a live-sales strategy, and conducted its own live-hosting event in Week 10. This structure moved students from passive observation of digital marketing to active application of marketing concepts.

1.2 Problem Statement

A significant gap exists between the theoretical teaching of foundational marketing principles, such as the 4Ps, and the interactive, real-world skills the digital economy demands. While students may understand marketing concepts in class, conventional assignments may offer limited exposure to the dynamic, high-engagement environment of platforms such as TikTok Live. This study addresses the limited empirical evidence on whether a TikTok Live project can help bridge this gap by strengthening students' practical application of the 4Ps and their real-time audience engagement skills. Choudhary et al. (2020) similarly discuss the opportunities and challenges TikTok presents as a rapidly emerging digital marketing platform.

1.3 Research Objectives

The primary objective of this study is to assess the effectiveness of the TikTok Live project in enhancing student learning outcomes in a Fundamentals of Marketing course. The research examines how this pedagogical activity supports applying marketing theory. Specifically, the study aimed:

1. To assess the level of student competency in applying the 4Ps (Product, Price, Place, Promotion) within the context of a live-streaming environment.
2. To identify the degree of real-time audience engagement and interaction achieved by students during their TikTok Live sessions.
3. To determine the extent to which the TikTok Live project influences students' perceived confidence and practical skills in digital marketing.

1.4 Research Questions

This research aims to address the following key questions:

1. What is the level of student competency in applying the 4Ps (Product, Price, Place, Promotion) within a TikTok Live marketing project?

2. How do students perceive the effectiveness of the TikTok Live platform for achieving real-time audience engagement and interaction?
3. To what extent does participation in the TikTok Live project influence students' confidence and perceived skills in executing digital marketing strategies?

1.5 Significance of the Study

This study contributes to the modernisation of marketing pedagogy by addressing the theory-practice gap in digital-era education. The results offer useful insights for educators, curriculum developers, and academic administrators seeking to enhance the relevance and effectiveness of marketing courses. By examining the relationship between the TikTok Live project, applied marketing skills, and real-time engagement, the study may inform strategies for better preparing students for contemporary digital marketing practice.

2.0 LITERATURE REVIEW

2.1 Overview of TikTok as a Marketing Channel in Malaysia

TikTok was originally developed primarily as an entertainment platform but has become an influential marketing channel in Malaysia. With more than 16 million monthly active users in the country in 2023, its reach shows the platform's growing relevance to Malaysian digital audiences (Malaysian Digital Association, 2023).

In Malaysia, TikTok Shop has further merged social content and commerce. Bain & Company (2023) highlighted the growing importance of social and digital platforms in product discovery and purchase consideration among Southeast Asian consumers, including Malaysians.

The platform's unique algorithm is a key driver of its marketing effectiveness. Unlike more static social networks, TikTok's "For You" page (FYP) provides a highly personalised and endlessly scrolling feed, enabling content to go viral rapidly and organically. For marketers, this means the potential for high-impact campaigns that can quickly capture national attention.

2.2 The Theory-Practice Gap in Marketing Education

A persistent challenge in marketing and business education is the gap between classroom theory and practical application. Students may understand marketing concepts but still struggle to apply them in dynamic business settings. This theory-practice divide can limit the development of practical competence and confidence required in professional marketing activities (Rousseau & McCarthy, 2021).

2.3 Experiential Learning as a Pedagogical Solution

To bridge this gap, educators have increasingly used experiential learning approaches. Kolb's (1984) experiential learning theory proposes a cycle of concrete experience, reflective observation, abstract conceptualization, and active experimentation. In marketing education, experiential activities may include simulations, client-based projects, and social media campaigns (Wilson & Thomas, 2020). These activities aim to deepen students' understanding of theory while developing communication, problem-solving, and applied decision-making skills (Martin & Garcia, 2021).

2.4 The Rise of Live Stream Commerce and TikTok as a Marketing Platform

At the same time, the commercial landscape has seen rapid growth in live stream commerce. This format combines entertainment, social interaction, and e-commerce, creating a marketing channel in which persuasion and audience interaction occur in real time (Li & Wang, 2022). TikTok's algorithm-driven content delivery and highly interactive format have strengthened its role in brand communication and social commerce (Chen et al., 2023).

2.5 The 4Ps and Real-Time Engagement in a Digital Context

The live stream environment requires a dynamic application of the traditional 4Ps framework (Chen et al., 2023). Product-related communication can be supported through real-time demonstrations of features and benefits (Zhang & Liu, 2022).

Price communication requires hosts to explain value and respond to audience questions, sometimes alongside time-sensitive offers (Guo, 2021). Place is represented by the digital pathway through which viewers access product information or purchase options (Fisher, 2022), while Promotion is integrated with entertainment, host communication, and audience interaction (Harris, 2023). In this context, real-time engagement can be reflected through comments, likes, shares, and viewer interaction, requiring both interpersonal communication skills and technological fluency (Li & Wang, 2022).

2.6 Synthesizing the Gap and Justifying the Current Study

Although experiential learning is well established as a pedagogical approach (Kolb, 1984), and live stream commerce has received increasing attention as a business phenomenon (Li & Wang, 2022), there remains limited empirical research at the intersection of these areas. In particular, relatively little attention has been given to TikTok Live as a formal pedagogical activity within a marketing curriculum and to how students apply marketing concepts while engaging with an audience in real time.

Therefore, this study evaluates a TikTok Live project as an experiential learning activity. It focuses on two central outcomes aligned with the course context: students' applied understanding of the 4Ps and the development of real-time engagement skills.

2.7 Theoretical Framework: Technology Acceptance Model (TAM)

To assess students' perceptions of the TikTok Live project as a pedagogical tool, this study draws on the Technology Acceptance Model (TAM). Originally developed by Davis (1989), TAM identifies perceived usefulness and perceived ease of use as central determinants of technology acceptance; subsequent extensions have further examined the processes shaping technology acceptance and use (Venkatesh & Davis, 2000).

This research adapts the core TAM constructs to the educational context and supplements them with a study-specific application and engagement construct:

1. Perceived Usefulness (PU) of TikTok Live for Learning: This construct assessed students' perceptions that using TikTok Live supported their understanding and application of marketing concepts, including the 4Ps and real-time engagement skills.
2. Perceived Ease of Use (PEOU) of TikTok Live: This construct assessed students' perceptions of the platform's usability, including the ease of managing live-streaming tasks, presenting marketing content, and interacting with an audience.
3. Quality of Application & Engagement (QAE): This study-specific construct represents the quality of students' application of marketing concepts and engagement during the live-stream project. It captures confidence and competency in explaining product features, price, place, promotion, and integrating the 4Ps in a live setting.

By applying TAM in this educational setting, the study moves beyond general satisfaction and provides a structured framework for examining how students' perceptions of usefulness and ease of use are associated with the quality and efficiency of project execution.

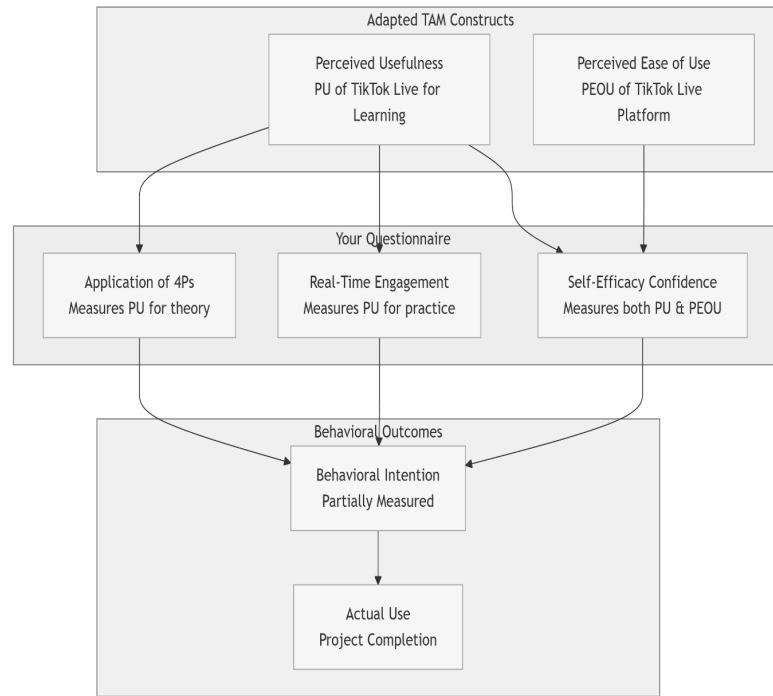
2.8 Conceptual Framework

The conceptual framework adapts the Technology Acceptance Model (TAM) to evaluate the TikTok Live marketing project. Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) represent the core TAM-related constructs, while Quality of Application & Engagement (QAE) is included as a study-specific intermediate construct reflecting the quality of students' applied marketing performance and audience engagement.

Perceived Usefulness (PU) captures students' beliefs that TikTok Live supports key learning objectives, including the application of the 4Ps and the development of real-time engagement skills. Perceived Ease of Use (PEOU) reflects students' assessment of the effort required to use TikTok Live for the academic task, including managing the live-stream interface, integrating planned marketing content, and handling audience interaction. Quality of Application & Engagement (QAE) represents the demonstrated quality of applying the 4Ps and engaging with viewers during the live stream. In the study's regression analysis, overall project effectiveness is operationalized through the Project Efficiency outcome. The

framework therefore examines whether PU, PEOU, and QAE are associated with Project Efficiency while retaining the educational focus on applied 4Ps knowledge, real-time engagement, and student confidence.

Figure 1 Conceptual framework for The Effectiveness of TikTok Live Projects on Students Application of the 4Ps and Real-time Engagement in a Fundamentals of Marketing Course



3.0 METHODOLOGY

3.1 Research Design

This study adopted a quantitative research design to assess the effectiveness of the TikTok Live project in achieving its intended learning outcomes. The quantitative approach enabled systematic measurement of the study variables and statistical analysis of relationships among the constructs within the study cohort. A cross-sectional survey design was used, with data collected following completion of the TikTok Live project.

3.2 Questionnaire Development

The primary data collection instrument was a structured questionnaire designed to measure students' perceptions of the TikTok Live project and its learning outcomes. The questionnaire contained five sections aligned with the study framework and used 5-point response scales. The instrument was administered to all 205 participating students following completion of their TikTok Live sessions.

The first section collected demographic information, including age, gender, prior TikTok experience, and previous live-streaming experience. The second section used retrospective pre-post items to capture students' perceived changes in confidence across seven areas related to TikTok Live marketing. The third section assessed students' application of the 4Ps in the live-stream environment, while the fourth section assessed real-time communication and audience engagement. These sections used 5-point response scales. The final section included open-ended questions intended to capture additional feedback on challenges and rewarding aspects of the project.

3.2.1 Research Instruments

The research instrument was structured around three study constructs: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Quality of Application & Engagement (QAE). PU and PEOU were adapted conceptually from established TAM measures (Davis, 1989), while QAE was used as a study-specific construct to represent students' applied marketing and engagement performance. Project Efficiency served as the dependent outcome in the regression analysis.

Table 1 Research Instruments

Instruments	Label
Perceived Usefulness	PU
Understand to demonstrate a product's features and benefits more effectively.	PU1
Justify the product's price to audience.	PU2
Communicated how and where to purchase the product.	PU3
Successfully used promotional tactics.	PU4
Effectiveness of using 4Ps in a real-world scenario.	PU5
The interactive nature of the live stream was a crucial part of the marketing experience.	PU6
Perceived Ease of Use	PEOU
Confident interacting with and responding to live comments.	PEOU1
Handling unexpected questions or technical issues during the live stream.	PEOU2
Responded to comments during my live stream.	PEOU3
Comfortable answering questions about the product.	PEOU4
Live comments influenced the flow or content of my presentation.	PEOU5
Quality of Application & Engagement (QAE)	QAE
Confident in my ability to explain a product's features and benefits clearly.	QAE1
Confident justifying a product's price to an audience.	QAE2
Explaining the "Place" (where to buy) effectively.	QAE3
Creative promotional tactics in a live setting.	QAE4
Integrating the 4Ps into a single, coherent presentation	QAE5

3.3 Data Collection Method

3.3.1 Population and Sampling

The target population consisted of students enrolled in the Fundamentals of Marketing course who participated in the TikTok Live project during the specified semester. The sampling frame covered the entire course cohort. A census approach was used, comprising 205 students who completed the project and questionnaire.

3.3.2 Data Collection Process

Primary data were collected through a structured online questionnaire administered via Google Forms after students completed their TikTok Live sessions. The questionnaire incorporated demographic information, retrospective confidence ratings, TAM-related perceptions, self-efficacy items, and measures of 4Ps application and real-time engagement.

3.4 Data Analysis Procedure

Data from the 205 respondents were analysed using quantitative statistical techniques to address the research objectives and examine relationships within the adapted TAM framework. Descriptive and inferential analyses were used to provide a structured assessment of the TikTok Live project's outcomes.

3.4.1 Descriptive Analysis

Descriptive analysis was used to summarize respondents' demographic characteristics and their perceptions of the TikTok Live project. Frequency distributions and percentages were reported for categorical variables such as age, gender, prior TikTok experience, and prior live-streaming experience. Means and related descriptive measures were used for the 5-point scale items covering Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Quality of Application & Engagement (QAE), and project-related outcomes.

3.4.2 Inferential Analysis

Inferential analysis was used to examine relationships among the study constructs. Multiple regression analysis assessed the contribution of PU, PEOU, and QAE to Project Efficiency, while an additional regression model examined the relationship of PU and PEOU with QAE.

3.4.3 Correlation Analysis

Pearson's correlation coefficients were calculated to evaluate the strength and direction of associations among PU, PEOU, QAE, and Project Efficiency.

3.4.4 Software and Tools

The data were analysed using SPSS and RStudio for regression, correlation, and descriptive analysis. These tools supported data management, statistical estimation, and reporting of the study results (Pallant, 2020).

3.4.5 Ethical Considerations

Participation in the study was voluntary, and survey responses were handled confidentially. Participants were informed of the research purpose, the intended use of the data, and their right to withdraw without penalty. The questionnaire was administered using procedures intended to protect participants' privacy and anonymity.

4.0 RESULTS AND ANALYSIS

4.1 Demographic Factor

4.1.1 Age distribution

Age Group	Frequency	Percentage (%)
18 - 20	202	98.5
21 - 23	1	0.5
Over 26	2	1
Total	205	100

The sample was predominantly composed of students aged 18-20 years (98.5%), consistent with the age profile of students taking the Fundamentals of Marketing course at the institution. Most participants were enrolled in Semesters 2 and 3.

4.1.2 Gender Distribution

Gender	Frequency	Percentage (%)
Male	72	35.1
Female	131	63.9
Prefer not to say	2	1
Total	205	100

The gender distribution of the 205 respondents who participated in this study is presented in Table 4.1.2. As shown, the sample comprises **72 male students (35.1%)**, **131 female students (63.9%)**, and **2 students (1.0%)** who preferred not to disclose their gender.

4.1.3 TikTok Experience Level

Experience level	Frequency	Percentage (%)
No experience (Never used it)	9	4.4
Beginner (Passive viewer)	63	30.7
Intermediate (Regular user)	112	54.6
Advanced (Content creator)	21	10.2
Total	205	100

The analysis shows that most students were already familiar with TikTok before the project. As shown in Table 4.1.3, the largest group (54.6%) were Intermediate users who regularly use the app, post comments, and create simple videos. Another 30.7% were Beginners who only watch content, while 10.2% were Advanced users who create content regularly and have used TikTok Live before.

4.1.4 Live Streaming Experience

Live Streaming Experience	Frequency	Percentage (%)
Yes	73	35.6
No	132	64.4
Total	205	100

As shown in Table 4.1.4, 73 students (35.6%) reported prior experience hosting a live stream on a social media platform such as Instagram, Facebook, or TikTok, while 132 students (64.4%) had never hosted a live stream before the assignment. This combination of relatively high general TikTok familiarity (64.8% intermediate/advanced users) and lower prior live-streaming experience (35.6%) indicates that familiarity with the platform did not necessarily translate into experience as a live-stream host.

4.2 Self-Efficacy (Confidence)

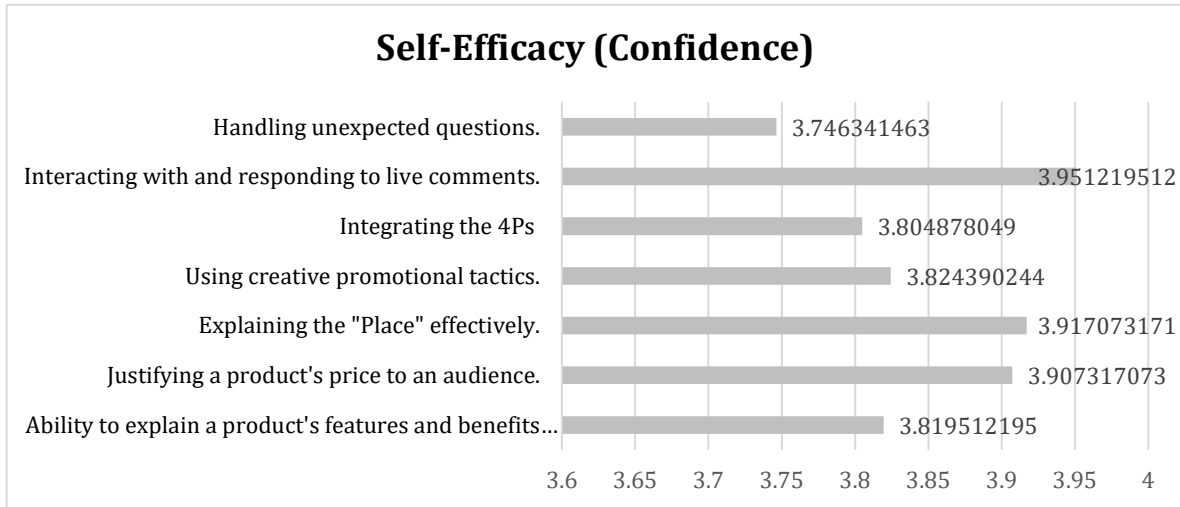


Diagram 1 Self-efficacy (confidence) in host live streaming

The self-efficacy results indicate generally positive confidence in conducting TikTok Live marketing after the project. The highest mean score was for interacting with and responding to live comments (3.95/5), followed by explaining 'Place' effectively (3.92/5) and justifying a product's price (3.91/5). Confidence in explaining product features and benefits was 3.82/5, while handling unexpected questions recorded the lowest mean score (3.75/5). Overall, the results suggest that students felt reasonably confident across the measured aspects, although responding to unexpected situations remained comparatively more challenging.

4.3 Application of the Marketing Mix (4Ps)

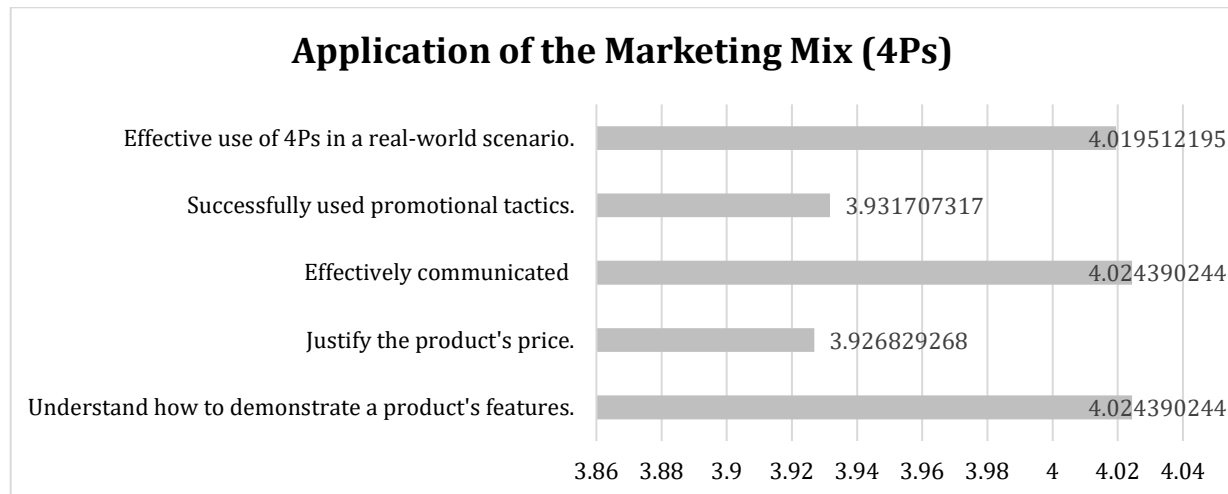


Diagram 2 Application of the Marketing Mix (4Ps) in live streaming

The analysis of students' application of the 4Ps shows consistently high scores, with an overall mean of approximately 3.99 out of 5. Students reported the strongest performance in demonstrating product features (4.02) and communicating where to purchase the product (4.02). They also reported strong ability to apply the 4Ps in a real-world scenario (4.02). Scores for justifying the product's price (3.93) and using promotional tactics (3.93) were slightly lower but remained high. These descriptive results suggest that the live-stream activity supported students' practical application of the marketing mix.

4.4 Real-Time Engagement

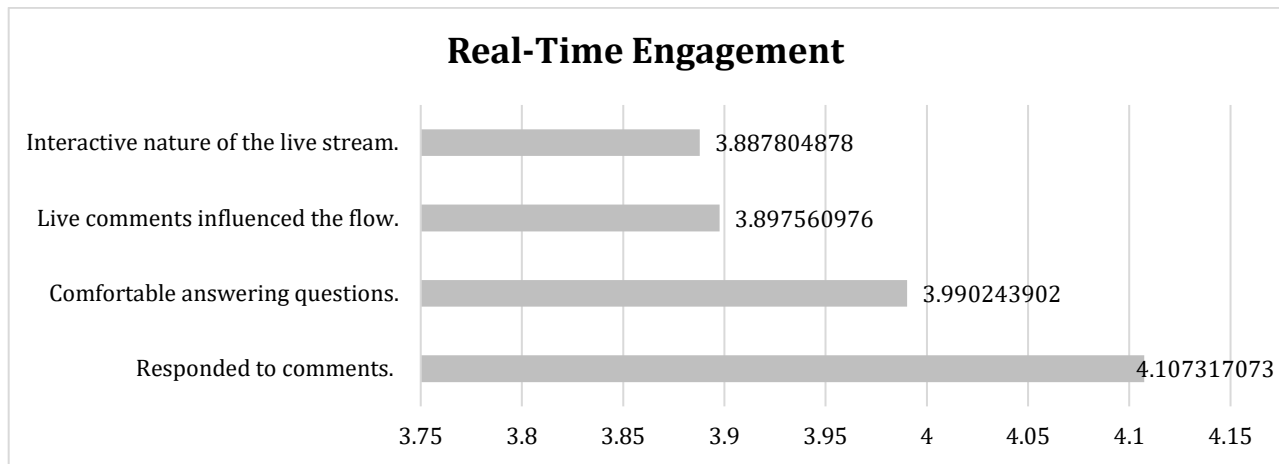


Diagram 3 Real-Time Engagement from the host live streaming

The analysis of students' real-time engagement during their TikTok Live sessions shows consistently high scores, with an overall mean of approximately 3.97 out of 5. Students reported the highest score for responding to comments (4.11), followed by comfort in answering questions from viewers (3.99). The scores for live comments influencing the flow of the presentation (3.90) and recognition of the interactive nature of the live stream (3.89) were slightly lower, suggesting that adaptive, real-time interaction remains an area for further development.

4.5 Regression Analysis

4.5.1 Model Summary

Dependent Variable: Quality of Application & Engagement (QAE)								
Model	R	R ²	Adjusted R ²	Std. Error	F	df1	df2	Sig.
1	.847	.717	.714	.385	257.19	2	202	<.001
Predictors: (Constant), Perceived Usefulness (PU), Perceived Ease of Use (PEOU)								

Diagram 4 Model Summary

The regression analysis indicates that Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) collectively explain 71.7% of the variance in Quality of Application & Engagement (QAE) ($R^2 = 0.717$, Adjusted $R^2 = 0.714$). The model is statistically significant, $F(2, 202) = 257.19$, $p < 0.001$, indicating strong explanatory power within this sample. These findings suggest that students' perceptions of usefulness and ease of use are strongly associated with the quality of their application and engagement during the TikTok Live project. The results provide support for the adapted TAM framework in this experiential learning context.

4.5.2 Standardized Coefficients

Variable	Unstandardized Coefficients	Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta (β)		Tolerance	VIF
(Constant)	0.005	0.021		0.253	0.801	
PU	0.349	0.011	0.349	33.099	<.001	0.231
PEOU	0.307	0.010	0.307	31.666	<.001	0.258
QAE	0.342	0.009	0.342	39.492	<.001	0.283
<i>a. Dependent Variable: Project Efficiency</i>						

Diagram 5 Standard Coefficient

Multiple regression analysis was conducted to examine the relationships of Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Quality of Application & Engagement (QAE) with Project Efficiency. As presented in Diagram 5, all three predictors were positive and statistically significant ($p < 0.001$). PU emerged as the strongest predictor ($\beta = 0.349$, $t = 33.099$, $p < 0.001$), followed by QAE ($\beta = 0.342$, $t = 39.492$, $p < 0.001$) and PEOU ($\beta = 0.307$, $t = 31.666$, $p < 0.001$). These results indicate that higher perceived usefulness, ease of use, and quality of application and engagement were associated with higher Project Efficiency. VIF values ranged from 3.534 to 4.324 and tolerance values from 0.231 to 0.283. Although the VIF values were below 5, the strong intercorrelations among predictors warrant cautious interpretation of their individual effects (Pallant, 2020).

4.5.3 Collinearity Diagnostics

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions			
				(Constant)	PU	PEOU	QAE
1	1	3.975	1.000	.00	.00	.00	.00
1	2	0.015	16.280	.02	.01	.12	.85
1	3	0.007	23.840	.45	.08	.83	.10
1	4	0.003	36.410	.53	.91	.05	.05
<i>a. Dependent Variable: Project Efficiency</i>							

Diagram 6 Collinearity Diagnostics

Collinearity diagnostics produced Condition Index values ranging from 1.000 to 36.410. Dimension 4 recorded a Condition Index of 36.410, exceeding the commonly used threshold of 30 for potentially serious collinearity, with PU showing a high variance proportion (0.91) (Belsley et al., 1980). At the same time, VIF values remained below 5 (PU = 4.324, PEOU = 3.873, QAE = 3.534). Taken together, the diagnostics do not require removal of a predictor solely on the basis of VIF, but they do indicate substantial overlap among the constructs. Accordingly, the individual regression coefficients should be interpreted cautiously, particularly given the strong correlations among PU, PEOU, and QAE.

4.6 Correlation Analysis

Variable	PU	PEOU	QAE	Project Efficiency
PU	1			
PEOU	.840**	1		
QAE	.823**	.800**	1	
Project Efficiency	.943**	.936**	.935**	1
**. Correlation is significant at the 0.01 level (2-tailed), $p < 0.001$				

Diagram 7 Correlation Analysis

Correlation analysis examined the relationships among Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Quality of Application & Engagement (QAE), and Project Efficiency. All reported correlations were positive and statistically significant at $p < 0.001$. Project Efficiency showed very strong correlations with PU ($r = 0.943$), PEOU ($r = 0.936$), and QAE ($r = 0.935$). Squaring these pairwise correlations indicates approximately 87-89% shared variance between Project Efficiency and each construct considered separately; this should not be interpreted as unique variance explained by each predictor because the predictors are also strongly intercorrelated. PU correlated with PEOU ($r = 0.840$), PU with QAE ($r = 0.823$), and PEOU with QAE ($r = 0.800$). These patterns are broadly consistent with the relatedness expected among technology-acceptance and application constructs.

5.0 DISCUSSION

5.1 Discussion of Findings

5.1.1 Interpretive Discussion

The findings indicate that the TikTok Live project provided students with an opportunity to apply marketing concepts in a practical, interactive setting. The sample predominantly consisted of young adults (98.5% aged 18-20), while 64.4% had never hosted a live stream before the assignment, supporting the rationale for providing structured experiential exposure. Self-efficacy scores were generally positive: students reported the highest confidence in interacting with live comments (3.95/5), while handling unexpected questions recorded the lowest confidence score (3.75/5). Application of the 4Ps was also high (overall mean approximately 3.99/5), with pricing communication and promotional tactics (both 3.93/5) showing slightly more room for improvement. Real-time engagement averaged approximately 3.97/5, with responding to comments scoring highest (4.11) and adaptive use of live feedback scoring slightly lower (3.90). The regression model explained 92.4% of the variance in Project Efficiency, with PU ($\beta = 0.349$), QAE ($\beta = 0.342$), and PEOU ($\beta = 0.307$) all significant predictors. However, the very strong correlations among the constructs and the elevated condition index indicate that the individual predictor coefficients should be interpreted cautiously.

5.1.2 Analytical Discussion

The regression and correlation analyses indicate that Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Quality of Application & Engagement (QAE) are strongly associated with Project Efficiency in the TikTok Live marketing project. The regression model explained 92.4% of the variance in Project Efficiency ($R^2 = 0.924$, $F(3, 201) = 819.47$, $p < 0.001$), indicating very high explanatory power within this sample and providing support for the adapted TAM-based framework.

PU was the strongest predictor of Project Efficiency ($B = 0.349$, $\beta = 0.349$, $p < 0.001$), indicating that students who perceived TikTok Live as useful for learning marketing concepts tended to report higher project efficiency.

QAE also showed a strong positive relationship with Project Efficiency ($B = 0.342$, $\beta = 0.342$, $p < 0.001$). Its coefficient was close to that of PU, suggesting that the quality of students' application of marketing concepts and audience engagement was strongly associated with overall project performance.

PEOU showed a significant positive relationship with Project Efficiency ($B = 0.307$, $\beta = 0.307$, $p < 0.001$), indicating that students who perceived the TikTok Live platform as easier to use also tended to report more efficient project execution.

The correlation matrix also revealed strong associations among the predictors. In particular, PU and PEOU were strongly correlated ($r = 0.840$), indicating that students who perceived the platform as useful also tended to perceive it as easier to use, a pattern broadly consistent with TAM-related expectations.

The collinearity diagnostics require some caution. Although all VIF values were below 5 ($PU = 4.324$, $PEOU = 3.873$, $QAE = 3.534$), the Condition Index reached 36.410 in Dimension 4, with PU showing a high variance proportion (0.91). This indicates notable overlap among the predictors and suggests that their individual regression coefficients should not be interpreted as fully independent effects.

In conclusion, this analysis confirms that PU, PEOU, and QAE are all significant positive predictors of Project Efficiency in the TikTok Live marketing project.

5.2 Implications of the Study

5.2.1 Theoretical Implications

This study extends the application of the Technology Acceptance Model (TAM) to an experiential marketing education context. First, the findings show that the TAM-related constructs of Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) are strongly associated with project-related learning outcomes. Second, the study incorporates Quality of Application & Engagement (QAE) as an additional performance-related construct, linking students' technology perceptions with their applied marketing and engagement experience. QAE was strongly associated with Project Efficiency ($\beta = 0.342$), although the present analysis did not formally test an indirect or mediation effect. Third, the study places TAM alongside Kolb's Experiential Learning Theory as complementary perspectives for interpreting how technology perceptions and hands-on activity may jointly shape students' learning experiences. The strong intercorrelations among PU, PEOU, and QAE also suggest possible construct overlap, which future validation studies should examine more explicitly.

5.2.2 Practical Implications

This research provides practical recommendations for marketing educators implementing TikTok Live projects. First, because handling unexpected questions recorded the lowest self-efficacy score (3.75/5), educators may incorporate mock live sessions, role-playing exercises, and technical practice to strengthen students' ability to respond to unplanned situations. Second, because Perceived Usefulness (PU) is the strongest predictor of Project Efficiency ($\beta = 0.349$), educators can make the career relevance of live-streaming skills explicit by connecting project activities to employability competencies in digital marketing. Third, the significant relationship between Perceived Ease of Use (PEOU) and Project Efficiency ($\beta = 0.307$) suggests the value of clear platform guidance, peer technical support, and reliable institutional infrastructure. Fourth, the slightly lower scores for price justification (3.93) and promotional tactics (3.93) suggest opportunities for targeted support in pricing communication, creative promotion, and real-time objection handling.

5.3 Limitations of the Study

While this study provides valuable insights into the effectiveness of TikTok Live projects as a pedagogical tool in marketing education, several limitations should be acknowledged:

Demographic Representation

The study sample was predominantly composed of students aged 18-20 (98.5%) from a single institution, with female students (63.9%) outnumbering male students. This demographic concentration limits the generalizability of the findings to older learners, postgraduate students, working professionals, or other student populations.

Sample Bias

The reliance on a census approach within a single course at Kolej Profesional MARA Bandar Melaka, while ensuring complete representation of the target population, limits the diversity of the sample. This approach likely overrepresents students from a specific institutional context with unique curriculum structures, resource availability, and support systems,

while underrepresenting students from other institutions with different pedagogical approaches, potentially skewing the results.

Methodological Limitations

The study relies heavily on quantitative methods, particularly self-reported survey responses collected at a single point following project completion. While these methods are effective for gathering broad insights and enabling robust statistical analysis, they may not capture the nuanced motivations, challenges, and learning processes underlying student experiences.

Geographic and Institutional Scope

The research is localized, focusing on a specific student population at a single institution in Melaka. This narrow geographic and institutional scope restricts the applicability of findings to other regions, countries, or educational contexts with differing cultural norms, technological infrastructure, or pedagogical traditions. The unique characteristics of Malaysian TikTok culture and the specific institutional support structures at Kolej Profesional MARA may have influenced outcomes in ways that would not replicate in other settings.

Single Project Context

The study evaluated a single TikTok Live project within one semester, which may not capture the full learning trajectory or the cumulative effects of repeated experiential interventions. Students' confidence and competence might develop differently with multiple live-streaming opportunities, and the novelty effect of a first-time experience could have influenced their perceptions and performance.

6.0 CONCLUSION

The findings indicate that the TikTok Live project can serve as a useful experiential activity for connecting theoretical marketing knowledge with practical application in a Fundamentals of Marketing course. PU, PEOU, and QAE collectively explained 92.4% of the variance in Project Efficiency, indicating strong explanatory power in this sample and supporting the adapted TAM-based framework. However, given the strong intercorrelations and elevated condition index, interpret the individual predictor effects with appropriate caution.

Students reported strong overall performance, with mean scores of approximately 3.99/5 for application of the 4Ps and 3.97/5 for real-time engagement. In the self-efficacy assessment, confidence was highest for interacting with live comments (3.95/5), followed by explaining 'Place' (3.92/5) and justifying price (3.91/5), while handling unexpected questions recorded the lowest score (3.75/5). These results suggest that real-time adaptation to unexpected situations may benefit from additional pedagogical support.

Perceived Usefulness (PU) emerged as the strongest predictor of Project Efficiency ($\beta = 0.349$, $p < 0.001$), followed closely by Quality of Application & Engagement (QAE) ($\beta = 0.342$, $p < 0.001$) and Perceived Ease of Use (PEOU) ($\beta = 0.307$, $p < 0.001$). These relationships indicate that students' perceptions of usefulness and usability, together with the quality of their application and engagement, were strongly associated with project efficiency.

Project Efficiency was very strongly correlated with PU ($r = 0.943$), PEOU ($r = 0.936$), and QAE ($r = 0.935$). The corresponding squared correlations indicate approximately 87- 89% pairwise shared variance, but these values should not be interpreted as unique contributions because PU, PEOU, and QAE were themselves strongly intercorrelated ($r = 0.800$ - 0.840). The overall pattern is broadly consistent with the adapted TAM-based framework while also highlighting the need for future construct-validation work.

The demographic findings also show that 64.8% of students had at least moderate TikTok experience, while 64.4% had never hosted a live stream before the project. This contrast suggests that general familiarity with a social media platform does not necessarily translate into confidence or experience in live-stream marketing, supporting the educational value of structured practice.

Overall, the study supports using TikTok Live as an innovative experiential activity in marketing education. By drawing on TAM and experiential learning, it offers a framework for understanding how students' technology perceptions, applied marketing skills, and real-time engagement relate to project outcomes.

Future research on TikTok Live projects in marketing education should address several important directions to extend and deepen the findings of this study:

Future studies should adopt broader and more diverse sampling methods, including multiple institutions across different regions, to ensure representation across age groups, academic levels, and institutional contexts. Research should include postgraduate students, part-time learners, and students from different cultural and socioeconomic backgrounds to provide more comprehensive evidence.

Longitudinal studies tracking the same cohort of students across multiple projects or throughout their academic programs would provide valuable insights into how competencies develop and persist over time. Such designs could reveal whether skills gained through a single TikTok Live project translate into improved selling performance.

A mixed-methods approach, incorporating qualitative methods such as in-depth interviews, focus groups, and analysis of live stream recordings, can complement quantitative surveys to capture deeper insights into student motivations, challenges, and learning processes. Understanding why certain students struggled with live comment interaction or how successful adapters navigated unexpected situations would provide rich contextual data to inform pedagogical refinements.

Future research should employ quasi-experimental designs comparing students who complete TikTok Live projects with control groups who undertake traditional assignments (e.g., written reports, presentations) on the same marketing topics. Such comparisons would strengthen causal inferences about the relative effectiveness of experiential learning compared to conventional pedagogical approaches.

Research should compare the effectiveness of TikTok Live with other live-streaming platforms (Instagram Live, Facebook Live, Shopee Live, YouTube Live) to determine whether platform-specific features influence learning outcomes. Such studies could also explore how platform algorithms, audience demographics, and feature sets shape students' experiences and the development of different marketing competencies.

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8. CONFLICT OF INTEREST

The authors declare no known competing financial interests or personal relationships that could have influenced the work reported in the paper.

9. AUTHOR CONTRIBUTION STATEMENT

Mohd Amirul Hafiz Ramly contributed to the conceptualisation, research design, and writing of the original draft. He also developed the theoretical framework and conducted the literature review.

Norashikin Zainuddin Tan was responsible for data collection, methodology design, statistical analysis using SPSS, and validation of the results.

Fauzan Abas and Dalila Ahmad contributed to interpreting the findings and preparing tables and figures. All authors have read and approved the final version of the manuscript.

10. ETHICS STATEMENT

This research followed applicable ethical principles for research involving student participants at Kolej Profesional MARA. All participants were informed of the study's purpose, the voluntary nature of participation, and their right to withdraw without consequence. We obtained written informed consent before data collection. We maintained participants' privacy and confidentiality, anonymised the data, and used it solely for academic purposes. No personally identifying information was disclosed in the reporting of the study.

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