Examining Students' Satisfaction with an Entrepreneurial Education Application: A Case of BMC Touch

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ABSTRACT

With the growing integration of technology in education, Business Model Canvas (BMC) Touch has been introduced to support students in understanding BMC concepts effectively. As a newly developed application, the extent to which BMC Touch contributes to student satisfaction has not been explored. In particular, this study aims to examine the relationship between Perceived Usefulness (PU), Perceived Ease of Use (PEU), application performance, and interface quality with student satisfaction in using the BMC Touch application. The data were collected from a total of 109 undergraduate students enrolled in the Principles of Entrepreneurship (ENT530) course at Universiti Teknologi MARA (UiTM) Kedah Branch who participated in the study. Data were collected through a structured questionnaire measuring the four independent variables and student satisfaction. To analyze the data, correlational analysis was conducted to determine the strength and direction of the relationships among the variables. At the same time, multiple regression analysis was employed to identify the strongest predictor of student satisfaction. Notably, correlational analysis revealed that all four factors, PU, PEU, application performance, and interface quality, had significant positive correlations with student satisfaction. Further multiple regression analysis identified that interface quality and PU as the strongest predictors of student satisfaction. Furthermore, the results directly inform practical improvements to the BMC Touch application by emphasizing the need to enhance both its functionality and design quality to increase student engagement and satisfaction. This study contributes significantly to the field of educational technology, particularly within entrepreneurship education. This is achieved by offering empirical insights into how digital tools like BMC Touch can be optimized to better support entrepreneurial learning experiences and promote more effective technology-driven pedagogy.

Keywords: BMC Touch, interface quality, PEU, PU, performance, student satisfaction

INTRODUCTION

The integration of digital tools in education has revolutionized learning worldwide, offering students interactive, adaptive, and structured platforms to enhance their knowledge acquisition and engagement (Bond et al., 2021). Globally, the adoption of educational technology has accelerated, with institutions leveraging Learning Management Systems (LMS), AI-driven tutoring, and business simulation tools to enhance student-centered learning (OECD, 2023). In Malaysia, digital transformation in higher education is aligned with Education 5.0, emphasizing student-driven, technology-enhanced learning environments to equip learners with critical 21st-century skills (MOHE, 2021). Specifically, the adoption of entrepreneurship-focused digital platforms supports the country's goal of cultivating an innovation-driven economy.

Entrepreneurship education, in particular, has benefited from the rise of digital learning tools that enable experiential learning and real-world application of theoretical concepts. One such tool is BMC Touch, designed to assist students in developing business models using the Business Model Canvas (BMC) framework. The BMC is a strategic management tool that allows individuals and organizations to visually describe, analyze, and design business models. Notably, it provided a comprehensive framework that captures the essential components of how a business creates, delivers, and captures value. As universities increasingly emphasize entrepreneurship education,

platforms like BMC Touch have become instrumental in enhancing students' understanding of business concepts through real-time collaboration, structured decision-making, and visualization of business strategies. However, the effectiveness and long-term adoption of such applications are influenced by key factors, including Perceived Usefulness (PU), Perceived Ease of Use (PEU), application performance, and interface quality. Furthermore, ensuring high student satisfaction with digital learning tools is critical for sustained integration into entrepreneurship education, fostering engaged and innovative learners.

While many studies have examined the Technology Acceptance Model (TAM) and its impact on digital learning adoption (Davis, 1989; Venkatesh & Davis, 2000), few have specifically analyzed the relationship between PU, PEU, application performance, and interface quality in the context of entrepreneurship education applications. In addition, most existing studies focus on general e-learning platforms or business simulation tools, neglecting the specific user experience of BMC-related applications. This is especially true in terms of how their usability and design affect student satisfaction in entrepreneurship courses. Additionally, prior research predominantly investigates Western educational settings, leaving a gap in understanding how students in Malaysia interact with and perceive digital business modeling tools like BMC Touch. Thus, this study aims to fill this gap by assessing student satisfaction and critical factors influencing student satisfaction with the BMC Touch application.

This study seeks to provide empirical evidence on how students perceive the effectiveness and usability of BMC Touch. Specifically, the objective of this study is to analyze the relationship between PU, PEU, application performance, and interface quality with student satisfaction in using the BMC Touch. If students find the application challenging to use, unreliable, or lacking in functionality, their satisfaction levels may decline, leading to low adoption rates. At the same time, poor application performance and interface design could also hinder learning outcomes, preventing students from fully benefiting from the tool. In response, understanding how students perceive and interact with such applications is vital, as satisfaction is a key determinant of continued usage, learning outcomes, and overall instructional effectiveness (El-Masri & Tarhini, 2017). Without a clear understanding of how these factors impact student satisfaction, educators and developers may struggle to implement improvements that enhance the learning experience. Therefore, it is essential to investigate how PU, PEU, application performance, and interface quality influence student satisfaction using the BMC Touch application.

LITERATURE REVIEW

Mobile Applications as Educational Tools

The rise of mobile technology has revolutionized educational delivery, allowing for more interactive, student-centered, and flexible learning environments. Mobile applications provide interactive, flexible, student-centered learning experiences, making education more engaging and efficient (Crompton & Burke, 2018). These tools are particularly effective in promoting self-paced, personalized learning experiences, accommodating diverse learner preferences, and supporting continuous access to educational materials. Studies have consistently revealed that mobile learning

improves student engagement and fosters independent learning habits (Sung et al., 2016; Vitty et al., 2024).

In the context of entrepreneurship education, mobile applications offer significant pedagogical value. Entrepreneurship, a discipline that emphasizes innovation, problem-solving, and real-world application, aligns well with the capabilities of mobile learning tools. Research by de Agapito et al. (2024) indicated that students studying entrepreneurship benefit from digital tools that simulate real-life business planning and encourage experiential learning. Accordingly, gamified features, such as scenario-based tasks, quizzes, and reward systems, further enhance motivation and learning retention (Hamari et al., 2016). These applications also support peer collaboration and mentor-student interactions through integrated communication tools, facilitating constructivist and social learning approaches (Hrastinski, 2009; Vygotsky, 1978).

Moreover, mobile applications contribute to developing digital literacy and entrepreneurial competencies, both vital in today's global economy. According to Zawacki-Richter et al. (2019), mobile apps leveraging AI and learning analytics can adapt content delivery to suit individual learner needs, promoting more effective mastery of complex topics. These features are especially beneficial in entrepreneurship education, where learners are required to assess risk, forecast financials, and refine value propositions in iterative cycles. As a result, mobile learning enhances academic performance and prepares students for practical decision-making in dynamic business environments (Chen et al., 2015; Loorbach & Wittmayer, 2024).

The BMC Touch Application

The BMC Touch application is an interactive digital tool designed to facilitate business model development using the BMC framework. The application exemplifies how mobile learning tools can enhance entrepreneurship education through the integration of structured business model development and interactive digital functionality. One of its key features is its user-friendly interface, allowing students and entrepreneurs to easily create, edit, and visualize their business models. Simultaneously, the application provides a drag-and-drop functionality, enabling users to organize key business elements such as customer segments, value propositions, and revenue streams in a structured and systematic manner. This interactive approach enhances learning by making complex business planning more accessible and engaging. In other words, by supporting real-time edits, template customization, and collaborative features, BMC Touch promotes a hands-on learning experience that mirrors real-world entrepreneurial activities.

Additionally, the application includes pre-designed templates and customizable elements, which help users swiftly build their business models without starting from scratch. The performance and accessibility of the BMC Touch are also notable. It is designed to be compatible with various devices, including smartphones, tablets, and desktops, ensuring flexibility in usage. The application also incorporates cloud storage capabilities, allowing users to save their progress and access their business models anytime and anywhere. Remarkably, this feature reduces the risk of data loss and provides convenience for users who need to continue their work across multiple sessions.

Furthermore, the BMC Touch includes an analytics and feedback system, enabling users to assess the feasibility of their business models. It provides insights and recommendations based on

industry best practices, helping users refine their strategies. Moreover, the application also supports exporting and sharing business models in different formats, such as PDF or image files, which is beneficial for presentations and submissions.

This application addresses key challenges in entrepreneurship instruction by reducing cognitive load and increasing accessibility. A study by Rizna et al. (2024) highlighted how digital BMC tools support a more profound understanding of business model logic among university students by enabling continuous reflection and iterative refinement of ideas. Moreover, the application's cloud-based infrastructure also ensures seamless access across multiple devices, allowing students to engage with content synchronously or asynchronously. This aligns with blended and hybrid learning models increasingly adopted in higher education (Crompton & Burke, 2018; Means et al., 2013).

The Research Framework

Figure 1 displays the research framework for this study. The framework is adapted from the TAM, which implies the relationship between PU, PEU, application performance, and interface quality as independent variables, with student satisfaction with the BMC Touch application as the dependent variable of the study.
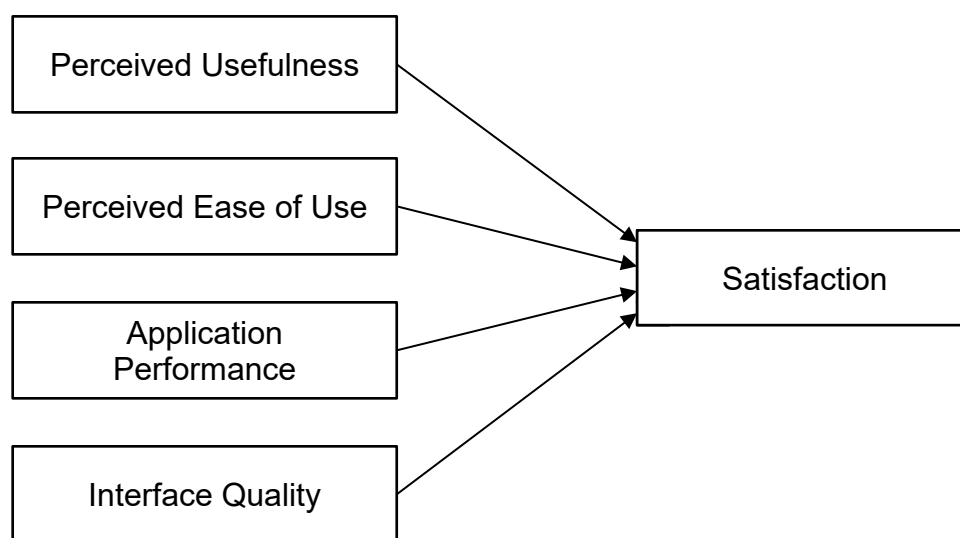

Figure 1. Research Framework

Firstly, PU, defined as the degree to which a person believes that using a particular system would enhance their performance, has consistently been identified as a significant predictor of user acceptance and satisfaction. Davis (1989) demonstrated that PU had a significant positive correlation with system usage among students. Learners who perceive an application as beneficial to their academic tasks are more likely to experience higher satisfaction and demonstrate continued usage. Thus, the more students believe BMC Touch enhances their learning, the more satisfied they are likely to be.

Secondly, PEU refers to the degree to which a person believes using a system would be effort-free. Systems that are user-friendly and easy to navigate reduce the cognitive burden on users, thereby fostering a more enjoyable experience (Liu et al., 2023). DeLone and McLean (2003) further emphasized that ease of use directly influences user satisfaction. When students find the BMC Touch intuitive and effortless, their frustration is minimized, leading to greater satisfaction and a higher likelihood of continued engagement.

Thirdly, application performance where it is encompassing system stability, responsiveness, and reliability. Application performance is another critical factor influencing users' satisfaction with a system. According to DeLone and McLean (2003), system quality, including technical performance, is a direct determinant of user satisfaction. Kang and Kim (2022) similarly discovered that users rated system reliability as one of the most critical factors in determining satisfaction, particularly for mobile applications. In the context of BMC Touch, frequent crashes, slow loading times, or technical glitches would erode student trust and satisfaction, highlighting the need for a robust and stable system.

Finally, interface quality includes the visual appeal and navigational structure of an application. Park and Kim (2020) noted that users are more satisfied with visually attractive, organized applications that are responsive to user needs. Correspondingly, a well-designed interface enhances usability and creates a positive user experience (Liu et al., 2021). Thus, for BMC Touch, ensuring a clean, intuitive, and engaging design is essential for fostering positive student attitudes and maximizing satisfaction.

By adapting TAM and integrating application performance and interface quality, this framework comprehensively explains the key determinants influencing student satisfaction with BMC Touch. Practically, it provides actionable insights for educators and developers seeking to improve digital learning applications through enhancing functionality. This ensures system reliability and focuses on user-centered design that can directly boost student engagement, satisfaction, and continued usage of educational technologies.

METHODOLOGY

This quantitative study examines the relationship between PU, PEU, application performance, and interface quality with student satisfaction using the BMC Touch application. Accordingly, the study was conducted among 109 students from the UiTM Kedah Branch, all of whom had prior experience using the BMC Touch application as part of their coursework in entrepreneurship or business-related subjects.

The sampling process employed a convenience sampling technique, where participants were selected based on their accessibility and willingness to participate. As such, students were invited to complete an online questionnaire via their course instructors and online class groups. While this approach allowed for efficient data collection within a limited timeframe, it also introduces potential sampling bias, as the sample may not fully represent the broader population of students using BMC Touch in other contexts or branches.

The research instrument was a structured online questionnaire developed to ensure consistency and efficiency in gathering responses. All items in the questionnaire were based on validated measurement scales adapted from previous studies on the TAM (Davis, 1989) and system usability research (DeLone & McLean, 2003). Subsequently, it was divided into six sections, including demographic information, PU, PEU, application performance, interface quality, and satisfaction. A five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) was used to measure each construct in the questionnaire. At the same time, to ensure reliability, a pilot study was conducted with 30 students, resulting in Cronbach's Alpha values above 0.90 for all variables, indicating high reliability and consistency in proceeding with full-scale data collection.

The universal Statistical Package for Social Sciences (SPSS) software version 28 was used to analyze the data gathered. Simultaneously, descriptive statistics were utilized to summarize the demographic profile of the respondents. In addition, Pearson correlation analysis was employed to determine the strength and direction of the relationships between the variables included in the study. Additionally, multiple regression analysis was conducted to assess the predictive power of the independent variables on student satisfaction with the BMC Touch.

Despite the study's valuable findings, there are notable limitations. The use of convenience sampling restricts the generalizability of the results to a wider student population. Furthermore, self-reported data through questionnaires may be subject to response bias, such as social desirability bias, where students might answer in a way they believe is expected rather than their true perceptions.

Ethical considerations were strictly observed throughout the study. Participation was voluntary, and informed consent was obtained from all respondents before completing the questionnaire. In line with this, participants were assured of the anonymity and confidentiality of their responses, and data were used solely for research purposes.

RESULTS AND DISCUSSION

This study focuses on undergraduate students from various faculties at UiTM Kedah Branch, specifically those enrolled in ENT530 during Semester 3 or Semester 4. With a total student population of 699 students who registered for the subject of Entrepreneurship, a sample of 109 students was selected for this study.

Table 1 summarizes correlational analysis results for the variables assessed in the study. The correlational analysis examined the relationships between PU, PEU, application performance, and interface quality with student satisfaction using the BMC Touch application. The results revealed that all four independent variables (PU, PEU, application performance, and interface quality) had significant positive correlations with student satisfaction. Among them, application performance exhibited the strongest relationship (r = .922), followed by PU (r = .897), interface quality (r = .894), and PEU (r = .886). These findings indicate that students who perceive the BMC Touch as useful, easy to use, and high-performing, with a well-designed interface, are more likely to report higher satisfaction levels.

Table 1. Correlational analysis

Measure	Mean	SD	(1)	(2)	(3)	(4)
(1) Perceived Usefulness	3.87	1.05	------			
(2) Perceived Ease of Use	3.81	1.05	.894**	------		
(3) Application Performance	3.88	1.00	.919**	.936**	------	
(4) Interface Quality	3.88	0.98	.897**	.886**	.926**	------
(5) Satisfaction	3.88	1.04	.897**	.886**	.922**	.894**

**Correlation is significant at the 0.01 level (2-tailed).*

The strongest correlation between application performance and satisfaction highlights the crucial role of system reliability, speed, and responsiveness in determining user experience. These results reinforce findings from prior studies, which suggest that the performance of an educational application significantly influences student engagement and overall satisfaction (Erandika et al., 2023; Lee & Xiong, 2022). When students experience seamless access to features without technical disruptions, their likelihood of being satisfied increases.

The strong correlation between PU and satisfaction reaffirms the central premise of the TAM, which posits that perceived benefits of the system are central to user adoption and satisfaction (Davis, 1989). Accordingly, when students recognize the application as an effective tool for enhancing their understanding and execution of business model concepts, their satisfaction increases.

Similarly, PEU's high correlation value reflects the significance of intuitive interfaces and minimal cognitive effort in encouraging sustained use and favorable evaluations of digital tools (Park, 2020; Venkatesh & Davis, 2000). This finding is also consistent with the TAM, which posits that ease of use enhances user adoption and satisfaction (Venkatesh & Davis, 2000).

Lastly, there is a strong correlation between interface quality and satisfaction. The relationship indicates that a well-designed interface contributes substantially to user contentment. This finding aligns with earlier research demonstrating that interface aesthetics, clarity, and interactivity are key factors in enhancing user satisfaction (Tella, 2020). Notably, a visually appealing and well-structured interface facilitates ease of use and fosters a more engaging learning experience.

Table 2. Model summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.933[a]	.871	.866	.38076

a. Predictors: (Constant), PU, PEU, Application Performance, Interface Quality

Table 3. Anova

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	102.150	4	25.537	176.151	<.001[b]
Residual	15.077	104	.145		
Total	117.227	108			

a. Dependent Variable: Satisfaction

b. Predictors: (Constant), PU, PEU, Application Performance, Interface Quality

Table 4. Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.063	.150		.415	.679
PU	.247	.095	.248	2.591	.001
PEU	.088	.102	.089	.862	.391
Application Performance	.449	.136	.433	3.301	.001
Interface Quality	.202	.104	.191	1.941	.055

a. Dependent Variable: Satisfaction

Furthermore, Tables 2, 3, and 4 present the results of multiple regression analyses performed on the independent and dependent variables. The results reveal significant insights into the factors influencing student satisfaction with the application. The overall model was statistically significant, indicating that the independent variables; usefulness, ease of use, performance, and interface quality collectively explain a substantial proportion of the variance in student satisfaction ($R^2 = .871$, $F(4,104) = 176.151$, $p < 0.001$). This suggests that the independent variables are crucial in shaping students' perceptions and experiences with the application.

Among the independent variables examined, application performance ($\beta = 3.301$, $p < .001$) and PU ($\beta = 2.591$, $p < .001$) emerged as significant predictors of student satisfaction towards the BMC Touch application. The finding that application performance is the strongest predictor underscores the significance of technical efficiency. Students highly value stability, responsiveness, and reliability in digital learning environments (Erandika et al., 2023; Lee & Xiong, 2022). When the application operates smoothly and seamlessly without crashes, delays, or bugs, students tend to have a more favorable experience (Davis, 1989; Venkatesh & Davis, 2000). The findings also imply that students who find the BMC Touch application beneficial and relevant to their academic needs are more likely to be satisfied with the usage of the application. These findings align with previous studies that highlight the significance of PU in determining user satisfaction with digital applications (Alalwan et al., 2017; Davis, 1989). This is particularly significant in entrepreneurship education, where students need to frequently revise and interact with their business models in real-time. However, two other independent variables, interface quality and PEU, do not significantly contribute to satisfaction.

CONCLUSION AND RECOMMENDATION

The findings of this study indicate a strong positive correlation between PU, PEU, application performance, and interface quality with student satisfaction regarding the BMC Touch application. Furthermore, the findings also highlight that application performance and PU are the primary drivers of student satisfaction with the BMC Touch. This suggests that students value an application that operates efficiently with minimal technical issues and offers meaningful academic benefits that directly support their learning processes in entrepreneurship education.

Based on these insights, several recommendations are proposed to enhance the BMC Touch application. Developers should prioritize optimizing system performance by improving stability, reducing loading times, and eliminating technical glitches that may disrupt the user experience. In addition, enhancing functionality is crucial, such as introducing features that allow for more seamless integration with LMS, providing interactive case studies, and enabling real-time feedback mechanisms. Increasing the PU of the application could also involve adding personalized learning pathways, where the application suggests relevant resources and activities based on student's progress and learning preferences. While maintaining an intuitive and visually appealing interface remains vital, the study clearly indicates that functionality and performance improvements should be the primary focus to maximize student engagement and satisfaction.

This study contributes significantly to the field of educational technology, particularly within entrepreneurship education, by demonstrating the critical role of well-designed, performance-driven applications in enhancing digital learning experiences. The findings offer empirical evidence that can guide the development of similar educational tools aimed at promoting entrepreneurial competencies through technology-enhanced learning environments. Looking forward, future research could expand the scope by investigating other crucial factors such as student motivation, digital literacy levels, and the impact of personalized learning features on satisfaction and learning outcomes. In addition, exploring how different student demographics and prior technological experiences affect engagement with BMC Touch could also yield more profound insights. Moreover, longitudinal studies examining the sustained impact of BMC Touch on entrepreneurial skills development would add valuable perspectives to the field.

Broadly, the implications of this research highlight the growing importance of designing educational technologies that are functional, user-friendly, and adaptable to individual learner needs. As digital learning continues to reshape the landscape of entrepreneurship education, continual improvements driven by user feedback, technological advancements, and pedagogical innovation will be vital in ensuring that tools like BMC Touch effectively support and empower the next generation of entrepreneurs.

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Conflict of Interest

The authors have no conflicts of interest to declare.

Authors' Contributions

All authors made substantial contributions to the paper. Nur Zainie and Azyyati conceptualized the study, designed the research framework, and conducted the data collection and analysis. Law

Kuan Kheng contributed to the literature review, developed the research methodology, and assisted in data interpretation. Farah and Syafiq provided critical revisions, ensured the accuracy of statistical analysis, and contributed to the discussion and conclusion. All authors participated in drafting and refining the manuscript, approved the final version for submission, and agreed to be accountable for all aspects of the work.