THE NEW KITCHEN CLASSROOM: ASSESSING BLENDED LEARNING ACCEPTANCE IN CULINARY ARTS EDUCATION

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Abstract. Blended learning is a pedagogy that combines practical, hands-on, and online learning and is gaining popularity in TVET education because it offers flexible learning, enhances practical training by integrating theoretical concepts through online classes, and helps build technical and digital workplace skills among TVET graduates. However, the success of this pedagogical integration relies on students' acceptance. In blended learning, a lack of acceptance can reduce learning engagement, academic performance, motivation, and satisfaction, which can widen learning gaps. This research investigates factors such as learning flexibility, openness to new technology, attitude towards online learning, and basic technological skills on students' willingness to adopt blended learning in culinary arts education. A quantitative survey was administered to 253 diploma and degree culinary arts students at Universiti Teknologi MARA (UiTM) campuses across Malaysia. SPSS version 29 was used to conduct a hierarchical regression analysis to identify the significant factors that explain students' acceptance of blended learning. The findings reveal that factors such as openness to new technology play a dominant role in students' acceptance of blended learning. Attitude and basic technological skills are also highly correlated, indicating that students with a positive attitude toward blended learning also have the basic technological skills to operate without technological anxiety. Hence, a carefully developed curriculum that integrates the right blended learning pedagogy will not only benefit both students and educators but also help reduce pressure on TVET facilities.
Keywords: *blended learning, technical and vocational education and training, culinary arts education, technology acceptance*

Introduction

The rise of the Fourth Industrial Revolution and the global COVID-19 pandemic has transformed the educational landscape, leading to the widespread adoption of digital learning modalities (Zhao and Watterston, 2021). Within Technical and Vocational Education and Training (TVET), this shift is significant, especially during the pandemic, as TVET has long relied on face-to-face interaction and hands-on training. Practice-intensive fields like culinary arts are heavily affected, as both students and institutions are forced to adapt. The shift is sudden, forcing TVET institutions to adopt flexible, digital learning, which creates tension due to issues related to digital competence, infrastructure, policy support, resource allocation, and digital literacy (Mohd Rokeman et al., 2024). Blended learning refers to the strategic integration of face-to-face and online learning experiences, enabling teaching and learning to occur without the limitations of time and place (Garrison and Kanuka, 2004). However, the uncritical adoption of blended learning risks overlooking discipline-specific needs; for

instance, in culinary education, where knowledge and sensory evaluation are important, overreliance on digital modules may create a "skills gap" (Cheruiyot, 2025). Balancing soft skills and hard technical skills is imperative, as it helps create TVET graduates who are resilient in crises, able to adapt to technological changes, and ready for rapid career progression and immediate workplace readiness (Cheruiyot, 2025; Hussain et al., 2024). During the pandemic, TVET providers were forced to adapt and apply whatever strategies were available to cope with social distancing while ensuring that education remained continuously available. Thus, whether students' acceptance was fully investigated at that time remains unclear. However, positive impacts are evident through a forced technological leap in which institutions had to overcome resistance to digital learning. However, the negative impact on TVET education, in terms of dropout rates and students' acceptance, was never fully investigated, despite students' acceptance being a known predictor of success in an online environment.

This study is significant as it aims to provide a better understanding of students' acceptance of blended learning in TVET education. Apart from contributing towards new body of knowledge this study also offer better understanding in terms of the impact offers on the existing TVET facilities, as teaching and learning can be carried out in different settings; for instance, the theoretical part of the syllabus can be carried out using an online platform, while the critical hands-on training can be carried out in the practical facilities which help in reducing pressure towards existing TVET facilities. This will create a win-win situation for both students and TVET institutions, as students do not have to be on campus for every lesson, which leads to better scheduling, less classroom congestion, and the ability for the institution to accommodate a larger cohort. Therefore, this study aims to investigate these objectives: (RO1): To analyse the influence of culinary arts students' perceived learning flexibility on their acceptance of blended learning; (RO2): To investigate the role of students' openness to new technology in their acceptance of blended learning; (RO3): To determine the impact of students' attitudes towards online learning on their acceptance of blended learning; (RO4): To assess how students' self-rated basic technological skills influence their acceptance of blended learning.

Literature review

Blended learning acceptance in TVET

Despite blended learning offering various advantages to both learners and teachers, it can be challenging to implement in certain fields; for instance, in TVET education, which relies heavily on practical, hands-on application, it must be implemented with caution (Manditereza and Chamboko-Mpotaringa, 2024). While online classes provide a convenient solution for both teachers and students, too many online classes jeopardise TVET graduates' ability to grasp skills that are integral to TVET programs (Sharif et al., 2024). A lack of practical skills, or a practice gap, can create more problems for students' readiness for industrial training and future entry into the workforce. Many TVET institutions have integrated blended learning into their pedagogical approach for reasons such as convenience, cost-saving, and flexibility; however, barriers and challenges related to student readiness and engagement remain a major concern when implementing blended learning (Song and Lai, 2025).

Thus, it is imperative to investigate TVET students' acceptance of blended learning, as it will help TVET institutions improve their learning outcomes. High acceptance

indicates that students are actively involved in online forums and digital resources, which leads to better grades and understanding (Ahmad Zaini et al., 2013). High engagement also suggests less resistance among students, which leads to better motivation and more effective learning outcomes (Mohammadi et al., 2025). Previous studies on students' acceptance are mostly qualitative, as they aim to explore an in-depth understanding of this issue (Mohammadi et al., 2025; Song and Lai, 2025; Sharif et al., 2024; Sumarjan et al., 2023). This study, however, will investigate TVET students' acceptance using a quantitative research design to understand further acceptance of blended learning already integrated into current culinary arts pedagogy. The current study framework in *Figure 1* is replicated from a previous study by Shakeel et al. (2023).

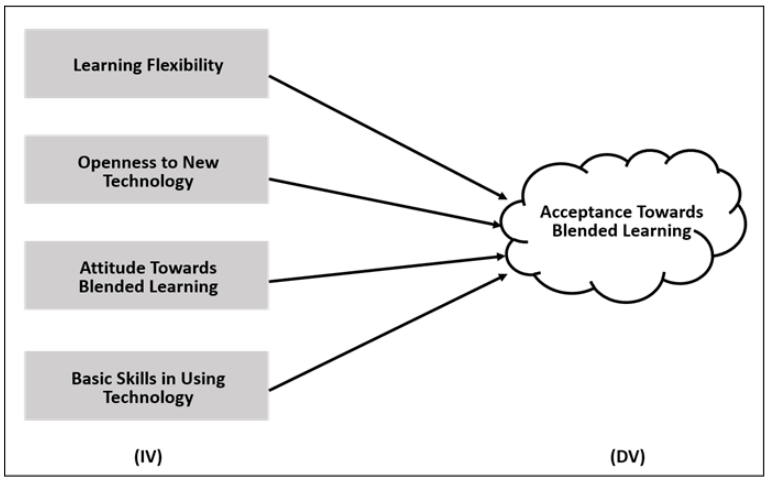


Figure 1. *Research framework*
Source: Shakeel et al. (2023).

Blended learning flexibility in TVET education

Blended learning in TVET helps to bridge the gap between theoretical knowledge and practical skills by offering better scheduling, pacing, and geographic flexibility. For TVET education providers, the main challenges often involve on-site workshops, which create scheduling difficulties and can strain existing facilities; by integrating online learning, institutions can minimise the need for workshop hours. Furthermore, students also have the flexibility and autonomy to learn the technical and theoretical aspects at their own convenience (Hashim and Hamidon, 2022). For instance, blended learning offers students pacing autonomy, allowing them to access online video demonstrations, structural guidelines, and online modules at any time or before the practical class, which helps improve student understanding of the topic (Manditereza and Chamboko-Mpotaringa, 2024). Furthermore, blended learning offers advantages that conventional pedagogy cannot, as it allows geographic inclusion, significantly lowers travel barriers, and expands program access 24 hours a day from any location in the world. Based on the arguments presented above, Hypothesis 1 is proposed:

H1: There is a significant relationship between students' flexibility in learning styles and their acceptance of blended learning.

Openness to new technology in blended learning TVET education

Openness to new technology is one of the most critical factors in determining the success of transitioning a TVET program into a blended learning model. Because TVET education relies heavily on hands-on, practical, and intensive curricula, both educators and students need to be open to embracing and adopting unfamiliar digital spaces (Shakeel et al., 2023). Openness from both educators and students allows for a variety of learning scenario designs, which will help improve the effectiveness of curriculum delivery and learning; this requires changes in attitude and adaptability (Harris et.al, 2009). Based on the arguments discussed above, the following Hypothesis 2 is proposed:

H2:There is a significant relationship between students' receptiveness to new technology and their acceptance of blended learning.

Attitude toward blended learning TVET education

Attitudes toward blended learning in TVET education are mixed. On one hand, students report positive perceptions and high satisfaction, as they believe this learning mode is more convenient, supports personal growth, and is more flexible than traditional face-to-face learning (Manditereza and Chamboko-Mpotaringa, 2024). Furthermore, students reported that blended learning modules that involved multimedia and physical classes are more effective because they keep students more engaged and less prone to digital fatigue (Song and Lai, 2025; Zhao et al., 2025). On the other hand, blended learning integrated into TVET is also viewed as problematic because it can lead to a loss of hands-on practice, technical inequities, and reduced instructional engagement, which can potentially decrease mastery of core trade competencies. Building on the above discussion, Hypothesis 3 is formulated:

H3: There is a significant relationship between students' attitudes towards online learning and their engagement in blended learning.

Basic skills in using technology in blended learning TVET education

Basic technology skills in TVET blended learning help to bridge the theoretical online studies with hands-on application. Students need basic competencies, such as navigating the learning management system (LMS), using hardware and software, and managing files (Shakeel et al., 2023). Mastering basic skills is directly linked to TVET students' acceptance of blended learning because it reduces technical anxiety, decreases cognitive load, and increases perceived usefulness. Based on the discussion above, the following Hypothesis 4 is formulated:

H4:There is a significant relationship between students' basic technological skills and their acceptance of blended learning.

Materials and Methods

Research design

This research employs a cross-sectional, correlational quantitative research design to determine how technological factors influence acceptance of blended learning. This design is highly appropriate because it allows the researcher to measure variables simultaneously across a sample population without manipulating the environment, providing a statistical snapshot of current behaviours and attitudes.

Population and sampling

The population for this study consists of diploma and degree culinary arts students from UiTM across Malaysia. An a priori power analysis was conducted using G*Power 3.1.9.7 to determine the required sample size for a linear multiple regression using a random model with four predictors. Based on a desired statistical power of .95, an alpha level of .05, and an expected population effect size (H_1 rho^2) of .10, the minimum required total sample size is N = 201. This configuration yields an actual power of .9503.

Data collection

The instrument was distributed via WhatsApp, Facebook, Telegram, and Instagram to reach culinary arts students throughout Malaysia. This strategy is more effective in reaching these respondents than a self-administered survey. Google Forms was used as the data collection medium because it records responses, making it easier for the researcher to track the number of responses and monitor progress. Data collection was carried out from January 2025 to March 2025.

Instrument

Variables are adopted from Shakeel et al. (2023) and categorised into independent factors and dependent variables as appropriate: Learning Flexibility, openness to new technologies, attitude towards online learning, proficiency with basic technology, and acceptance of online learning are examples of independent factors. As a result, different variables may be categorised as ordinal and measured using a Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Analysis

Quantitative data analysis for this study was performed using IBM SPSS Statistics 29. First, descriptive statistics (means, standard deviations, and frequencies) were calculated to summarize the participants' demographic profiles and responses. Next, a reliability analysis using Cronbach’s alpha was conducted to confirm that the measurement scales were reliable and consistent. Finally, a hierarchical linear regression analysis was executed to evaluate how well the four predictor variables could collectively predict the main outcome variable.

Reliability analysis

An internal reliability test will be conducted before moving forward with data gathering and additional analysis to address the objectives and research question. This evaluation is essential for determining the degree of consistency between respondents' assessments across all data gathered for the pilot research. All variables showed Cronbach's alpha scores greater than 0.7; therefore, there are no reliability issues

(Abraham and Barker, 2015). The questionnaire demonstrated high internal consistency across all subscales: Learning Flexibility (= .906, 3 items), Openness to New Technology (= .857, 5 items), Attitude Toward Online Learning (= .868, 4 items), Basic Skill in Using Technology (= .860, 5 items), and Acceptance of Blended Learning (= .883, 3 items).

Respondent's profile

Gender

A total of 253 respondents participated in this study. Based on gender distribution, female respondents make up 63.2% (n = 160), compared to 36.4% (n = 92) for male respondents.

Age

Most respondents were 23 years old (56.9%; n = 144). The 24-and-above age group follows this at 24.9% (63 respondents), and the remaining 18-to-20-year-old group at 17.8% (45 respondents). The 21-to-23-year-old group is expected to have the highest result because the survey environment is within culinary arts students in that age group.

Results and Discussion

Hierarchical regression analysis

A hierarchical regression test was carried out to investigate the outcome and understand the individual impact of factors simultaneously. Beyond predicting the outcome, this test also isolates the impact by measuring how much a single variable changes the outcome while holding everything else constant. Results in *Table 1* show that Model 4 has a value of 0.603, explaining 60.3% of the variance in the dependent variable (R^2 = .609) and an R^2 of .603 for acceptance of blended learning among UiTM culinary arts students across Malaysia. The overall regression model was statistically significant, F (4, 248) = 96.57, p < .001. Furthermore, adding the predictor in Model 4 significantly increased explained variance, ΔR^2 = .059, F change (1, 248) = 37.50, p < .001.

Table 1. *Hierarchical regression analysis.*

Model	R	R.square	Adjusted R square	SEE	RSC	F change	df1	df2	SFC
1	.443	.196	.193	1.34755	.196	61.240	1	251	.000
2	.681	.463	.459	1.10323	.267	124.487	1	250	.000
3	.742	.550	.545	1.01218	.087	47.997	1	249	.000
4	.781	.609	.603	.94526	.059	37.504	1	248	.000

Note: 1. Predictors: (Constant), Learning_Flexibility; 2. Predictors: (Constant), Learning_Flexibility, Openess_New_Tech; 3. Predictors: (Constant), Learning_Flexibility, Openess_New_Tech,Attitude_B; 4. Predictors: (Constant), Learning_Flexibility, Openess_New_Tech, Attitide_BL,Basic_Skill_Tech; SEE=Std. Error of Estimate; RSC=R Square Change; SFC=Sig. F Change.

Discussion

The main objective of this study is to examine the acceptance of blended learning among UiTM culinary students across Malaysia by investigating factors that influence acceptance, namely openness to new technology, attitude, basic technology skills, and

learning flexibility. The final hierarchical regression model result in Table 1 was highly robust, explaining 60.3% of the total variance in technology acceptance. Hence, it indicates that a comprehensive blend of psychological readiness, behavioural disposition, and practical competency is needed to improve overall acceptance, as highlighted in the above table. Among the four predictors, receptiveness to new technology produced the largest incremental contribution, increasing R^2 by 26.7%, followed by attitudes towards online learning (8.7%), basic technological skills (5.9%), and flexibility in learning style (19.6% as the initial model contribution).

***Table 2**. Hypothesis testing and results.*

HY	Predictor added	R^2	Adjusted R^2	ΔR^2	F Change	Sig.	Decision
H1	Flexibility in learning style	.196	.193	.196	61.240	< .001	Supported
H2	Receptiveness to new technology	.463	.459	.267	124.487	< .001	Supported
H3	Attitudes towards online learning	.550	.545	.087	47.997	< .001	Supported
H4	Basic technological skills	.609	.603	.059	37.504	< .001	Supported

Note: HY=Hypothesis.

(Hypothesis 1) Learning flexibility as a baseline

Learning flexibility in H1 accounted for 19.3% of the adjusted variance in the hierarchical regression test; this baseline suggests that while respondents show a positive attitude toward being adaptable and flexible in blended learning, it is not enough to guarantee full acceptance of blended learning. Hence, factors such as a positive attitude are also important in measuring acceptance of blended learning.

(Hypothesis 2) Psychological openness as a dominant role in acceptance

The most important finding of this study is that openness to new technology plays a dominant role in determining the acceptance of blended learning among culinary arts students in UiTM. A sharp increase in H2 (*Table 2*), with nearly 27%, indicates that whether respondents accept technology depends purely on their psychological willingness to embrace innovation. While adaptability is part of respondents' baseline, cognitive openness to change creates an opportunity for adoption. Respondents in this study are Gen Z; thus, openness to new technology and the ability to adapt to technology are not really issues, as they are a digital-native generation compared to previous generations (Princes et al., 2024).

(Hypothesis 3) Attitude towards blended learning as key determinant of acceptance

This study also found that attitude and acceptance of blended learning in TVET education were statistically significant ($\beta = .550$, SE = .087, $t = 47.997$, $p < .001$). This indicates that students who hold a favourable attitude towards blended learning are more likely to accept this learning approach. The positive relationship found in this study suggests that students who view blended learning as convenient, flexible, engaging, and useful are more likely to accept it. However, concerns about limited hands-on practice, unequal access to technology, and reduced interaction with instructors may result in less favourable attitudes towards blended learning and, in turn, lower acceptance. Overall, the findings indicate that students' attitudes play an important role in shaping their acceptance of blended learning in the TVET context.

(Hypothesis 4) Relationship of attitude and skills

The results for H4 indicate that basic technological skills have a positive and statistically significant effect on the dependent variable ($\beta = 0.609$, SE = 0.059, test statistic = 37.504, $p < .001$). Individuals who hold a positive attitude towards technology do not view blended learning as a threat or a burden. Hence, these individuals' acceptance of technology is much more positive, less frustrated, and much more motivated toward accepting blended learning. Therefore, basic skills in using blended learning platforms will support students' adoption, as users with technological anxiety may not view blended learning as a valuable learning tool.

Conclusion

This study investigates the acceptance of blended learning among UiTM Culinary students across Malaysia. Psychological, behavioural, and practical factors are the main determinants of blended learning acceptance. In comparison, general learning flexibility as a valuable foundational baseline and openness to technology emerge as the main psychological factors that determine acceptance. This study also shows the importance of attitude and practical technical skills, where basic technical skills help shape a positive attitude and hold unique predictive weight when evaluated together. Hence, users' cognitive and emotional willingness to accept innovation (mindset) is a critical foundation on which technical capabilities (skills) must be built for successful technology acceptance. This study also further clarifies that integrating online learning and practical hands-on learning can become indispensable pedagogical tools for Gen-Z. Despite blended learning showing broad acceptance among students, TVET providers and educators still need to take strategic actions to ensure its effectiveness; for instance, providing necessary training to both educators and students to mitigate technology anxiety is not an issue that hinders the successful implementation of blended learning. Targeted technical training for both educators and students can help mitigate technological anxiety and bridge literacy gaps among students from diverse backgrounds. Furthermore, professional development programs for faculty members are also imperative, as continuous digital pedagogical support for educators, especially those from older generations, will help them adapt to the pressure and ensure that the knowledge can be delivered efficiently and effectively.

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Conflict of interest

The authors confirm that there is no conflict of interest involving any parties in this research study.

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