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# Lecturers' Digital Readiness and Pedagogical Innovation in Malaysian Polytechnics and Community Colleges

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### ABSTRACT

The rapid digital transformation within higher education has reshaped how teaching and learning are designed and delivered. In Malaysia's Technical and Vocational Education and Training (TVET) sector, polytechnics and community colleges under the Department of Polytechnic and Community College Education (JPPKK) are progressively integrating digital tools to support flexible and innovative teaching practices. However, despite significant technological investment, many lecturers still face challenges in applying technology effectively to promote pedagogical innovation. This gap highlights the need to examine the extent to which lecturers are digitally ready and how such readiness influences their ability to innovate in teaching. The purpose of this study is to investigate the relationship between digital readiness and pedagogical innovation among lecturers in Malaysian polytechnics and community colleges. A quantitative cross-sectional survey was conducted involving 200 lecturers selected through purposive sampling. Data were collected using a structured questionnaire adapted from previous validated instruments and analyzed using descriptive statistics, Pearson correlation, and simple linear regression with IBM SPSS Version 26. Results revealed that lecturers demonstrated a moderate-to-high level of digital readiness ( $M = 3.65$ ,  $SD = 0.50$ ) and a moderate level of pedagogical innovation ( $M = 3.45$ ,  $SD = 0.52$ ). A significant positive correlation ( $r = .377$ ,  $p < .01$ ) was found between the two constructs, and regression analysis confirmed that digital readiness significantly predicted pedagogical innovation, explaining 14.2% of the variance ( $R^2 = .142$ ). These findings suggest that while lecturers possess positive attitudes toward technology, continuous professional training, institutional support, and enhanced digital literacy are necessary to strengthen pedagogical innovation. The study contributes to Malaysia's digital education reform efforts by providing empirical evidence to guide TVET institutions in promoting sustainable and technology-driven teaching practices. Its implication also extends to policymakers and institutional leaders in designing targeted professional development frameworks that enhance lecturers' capacity for digital innovation and support Malaysia's Education 5.0 vision.

**Keywords:**

Digital readiness; pedagogical innovation; polytechnic; community college.

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## 1. Introduction

### 1.1 Research Background

The digital transformation in higher education has accelerated teaching innovation and reshaped instructional practices worldwide. During the COVID-19 period, educators rapidly adopted online and blended teaching models to ensure continuity of learning [1]. In Malaysia's Technical and Vocational Education and Training (TVET) ecosystem, polytechnics and community colleges play a central role in preparing a skilled and digitally competent workforce capable of meeting Industry 4.0 demands [14].

Digital readiness among lecturers refers to their ability, attitude, and confidence in integrating technology into teaching. Mukhtar *et al.*, [7] emphasized that online teaching effectiveness depends on technical proficiency and institutional support, while Rasheed *et al.*, [8] highlighted persistent challenges in the blended-learning environment such as unstable connectivity and low digital literacy. Hashim and Hamidon [2] reported that TVET institutions in Malaysia still face difficulty in embedding blended learning effectively due to lecturers' uneven readiness. Hani *et al.* [9] further proposed a digital-competence model for TVET educators, stressing continuous upskilling as a prerequisite for pedagogical transformation.

Several studies have explored the relationship between readiness and teaching performance. Saiman *et al.*, [12] showed that lecturers' readiness significantly influences the success of technology-based teaching in private higher education, while Kholifah *et al.*, [13] connected workforce readiness with employability and digital skills among vocational graduates. Shafie *et al.*, [17] supported this linkage through the Technological Pedagogical Content Knowledge (TPACK) framework, indicating that mastery of technological and pedagogical integration enhances classroom innovation.

Despite these initiatives, disparities remain across Malaysian TVET institutions. Zulnaidi and Majid [14] found that lecturers' readiness for Industrial Revolution 4.0 integration was inconsistent, especially in adapting emerging technologies for instruction. Similarly, Omar *et al.*, [10] revealed that although lecturers view gamification positively, many still lack practical implementation experience. Kathirveloo [15] added that institutional readiness including management, infrastructure, and policy support directly affects the success of blended-learning initiatives.

While earlier works established the importance of readiness, only limited research has systematically examined how lecturers' digital readiness predicts pedagogical innovation within Malaysian TVET institutions. Existing studies often focused on general e-learning adoption or technology acceptance, leaving a gap in understanding the interplay between readiness, teaching creativity, and institutional context.

Therefore, this study aims to:

- (1) assess the level of digital readiness among lecturers in Malaysian polytechnics and community colleges;
- (2) evaluate the extent of pedagogical innovation applied in their teaching practices; and
- (3) examine the relationship between these two constructs.

The findings are expected to inform JPPKK policymakers and institutional leaders in strengthening digital-competence frameworks, enhancing continuous professional development, and promoting sustainable, innovation-driven teaching practices within Malaysia's TVET sector.

## 1.2 Literature Review

### 1.2.1 Digital readiness in higher education

Digital readiness among educators represents their capability, motivation, and confidence in using technology effectively in teaching. Mukhtar *et al.*, [7] identified that lecturers' readiness during the pandemic depended heavily on their digital competence, infrastructure availability, and adaptability to online learning platforms. Rasheed *et al.*, [8] extended this view by emphasising the persistent obstacles in blended learning such as lack of training, time constraints, and inconsistent connectivity that limited educators' ability to implement innovative approaches.

Hashim and Hamidon [2] analysed TVET institutions in Malaysia and concluded that while awareness of blended learning was growing, many lecturers lacked the pedagogical and technical skills to maximise technology-enhanced instruction. Similarly, Hani *et al.*, [9] proposed a comprehensive Digital Competence Model for TVET educators, stressing that systematic digital upskilling must be institutionalised to support long-term transformation. Tajuddin *et al.*, [1], examining lecturers' emotional presence during online teaching, highlighted that digital readiness also involves psychological comfort and sustained engagement, not merely technical proficiency.

At the institutional level, Kathirveloo [15] demonstrated that leadership commitment and management readiness strongly influence the implementation of blended learning. Kamaruddin and Ibrahim [3] earlier asserted that structured professional-development programmes are necessary to maintain lecturers' technical competencies in polytechnics. Together, these findings reveal that digital readiness extends beyond hardware access it reflects educators' digital confidence, institutional culture, and continuous professional support.

### 1.2.2 Pedagogical innovation and teaching practices

Pedagogical innovation refers to creative, technology-enabled strategies that enhance student engagement and learning outcomes. Omar *et al.*, [10] showed that gamification promotes motivation and active participation in vocational classes, yet successful adoption depends on lecturers' readiness and resource availability. Saiman *et al.*, [12] linked lecturers' technological readiness directly to teaching performance, demonstrating that higher preparedness results in more effective technology-based instruction.

Shafie *et al.*, [17] applied the TPACK framework to explain how technological and pedagogical knowledge integration supports 21st-century learning skills. Their findings align with Davis's [5] Technology Acceptance Model, which posits that perceived usefulness and ease of use determine educators' acceptance of new tools. Zulnaidi and Majid [14] observed that many Malaysian TVET lecturers remain uncertain about integrating Industrial Revolution 4.0 technologies into teaching, indicating a need for targeted capacity-building.

From a broader perspective, Kholifah *et al.*, [13] explored workforce readiness and digital employability skills among vocational graduates, showing that pedagogical innovation must align with market-relevant competencies. Romly *et al.*, [11] added that digital learning environments also pose linguistic and cognitive challenges, particularly for students with lower proficiency levels, requiring lecturers to adapt instructional materials creatively.

### 1.2.3 Interrelationship between digital readiness and pedagogical innovation

Recent studies demonstrate a positive association between lecturers' readiness and their ability to innovate in teaching. Hashim and Hamidon [2] argued that effective blended learning is attainable

only when educators possess strong digital competence. Saiman *et al.*, [12] empirically confirmed that readiness influences innovation by enhancing lecturers' confidence to experiment with diverse tools and strategies. Hani *et al.*, [9] further suggested that professional training in digital literacy is a catalyst for pedagogical creativity.

However, challenges persist. Zulnaidi and Majid [14] warned that many TVET educators remain hesitant to adopt advanced technologies due to limited institutional support. Kathirveloo [15] reinforced this point, stating that without clear policy direction and sufficient infrastructure, innovation efforts often stagnate.

While most prior research centred on lecturers, Kamal and Awang [18] expanded the discussion by investigating digital competence among TVET students with special needs, revealing that inclusivity in digital transformation must involve every learner group. Similarly, Nasaruddin *et al.*, [19] highlighted that communication and problem-solving skills significantly affect work readiness among vocational students, suggesting that both lecturer and learner readiness are equally crucial to achieving holistic digital transformation within the TVET ecosystem.

Collectively, these studies indicate that while digital readiness fosters innovation, systemic support, training, and leadership are equally essential for sustainable pedagogical transformation.

#### 1.2.4 Research framework

A conceptual framework was developed to visualise the hypothesised relationship between the two main constructs of this study Digital Readiness and Pedagogical Innovation. This framework was grounded in prior empirical and theoretical works that established the influence of lecturers' digital readiness on their capacity to implement innovative teaching strategies within Technology and Vocational Education and Training (TVET) institutions.

Mukhtar *et al.*, [7] and Rasheed *et al.*, [8] highlighted that digital competence and technology-integration confidence are essential prerequisites for effective online instruction. Hashim and Hamidon [2] as well as Hani *et al.*, [9] further demonstrated that lecturers' preparedness directly supports technology-enhanced pedagogy through improved skills and adaptability. The framework is also aligned with Davis's [5] *Technology Acceptance Model (TAM)*, which posits that perceived usefulness and ease of use shape an individual's willingness to adopt technology for instructional purposes.



**Fig. 1.** A conceptual framework

This framework illustrates that lecturers who possess high levels of digital readiness are more likely to engage in pedagogical innovation, particularly in designing interactive, technology-supported learning and assessment practices. It establishes the theoretical foundation for the present study's quantitative analysis examining the predictive relationship between these two constructs within Malaysian polytechnics and community colleges [1,9,10,14].

## 2. Methodology

### 2.1 Research Design

This study employed a quantitative cross-sectional survey design to examine the relationship between lecturers' digital readiness and pedagogical innovation within Malaysia's polytechnics and

community colleges. The design was chosen because it enables data collection from a large population at a single point in time, allowing for correlational and inferential analysis [4]. Similar approaches have been used by Tajuddin *et al.*, [1] and Hashim and Hamidon [2] to investigate lecturers' preparedness and instructional adaptation in technology-enhanced settings.

The focus of this study was guided by Davis's [5] *Technology Acceptance Model (TAM)*, which emphasizes that perceived usefulness and ease of use influence one's intention to adopt technology. This framework provided the foundation for understanding how digital readiness may influence pedagogical innovation among TVET lecturers.

## 2.2 Population and Sampling

The target population comprised lecturers from Malaysian polytechnics and community colleges under the Department of Polytechnic and Community College Education (JPPKK). Based on recommendations from Kamaruddin and Ibrahim [3], who emphasized representativeness in professional-competency studies, a purposive sampling technique was applied to ensure coverage across departments and teaching backgrounds.

A total of 200 respondents were selected, following the sampling guidelines by Kotrlik and Higgins [6], which recommend sample adequacy for multivariate analysis in organizational research. Sampling adequacy was also supported by local guidelines on educational research [16]. The selection ensured that the respondents represented various academic disciplines, years of teaching experience, and exposure to digital learning tools.

## 2.3 Instrumentation

The research instrument consisted of a structured questionnaire adapted from validated constructs in prior studies by Mukhtar *et al.*, [7], Rasheed *et al.*, [8], and Hani *et al.*, [9]. The questionnaire was divided into three sections:

- Section A: Demographic Information (7 items)
- Section B: Digital Readiness (9 items)
- Section C: Pedagogical Innovation (10 items)

All items were measured using a five-point Likert scale ranging from 1 = *Strongly Disagree* to 5 = *Strongly Agree*. A pilot test was conducted among 30 lecturers to ensure clarity and internal consistency. The resulting Cronbach's alpha values exceeded 0.90, indicating excellent reliability consistent with similar educational studies [12,15].

The Digital Readiness section measured aspects such as infrastructure, access, and digital literacy, while Pedagogical Innovation captured dimensions like technology integration, assessment redesign, and collaborative learning.

## 2.4 Data Collection Procedures

Data were collected using Google Forms, distributed through official institutional channels and lecturer WhatsApp networks. Participation was voluntary, and respondents were informed of the purpose and confidentiality of the study. Ethical protocols were followed as outlined by Kamaruddin and Ibrahim [3], ensuring that no personally identifiable information was disclosed.

The survey remained open for four weeks to allow sufficient response time from various institutions across Malaysia, both urban and rural. The online collection method was chosen for its

accessibility, particularly given post-pandemic hybrid-working arrangements among educators [1,2,7].

## 2.5 Data Analysis

Data were analysed using IBM SPSS Statistics Version 26. Descriptive statistics (mean and standard deviation) were used to evaluate the overall levels of digital readiness and pedagogical innovation. Reliability analysis was performed to confirm instrument consistency, while Pearson correlation and simple linear regression were applied to examine relationships and predictive effects between variables. Interpretation of mean scores followed Mukhtar *et al.*, [7] and Ngongoloy and Pakereng [18], where 1.00–2.33 indicates a *low* level, 2.34–3.66 a *moderate* level, and 3.67–5.00 a *high* level. The quantitative approach provided a clear measurement framework for assessing the extent to which lecturers' readiness impacts pedagogical innovation in Malaysia's TVET context.

## 3. Results

### 3.1 Demographic Profile of Respondents

A total of 200 lecturers from various Malaysian polytechnics and community colleges participated in this study. The respondents represented diverse teaching backgrounds and specialisations. Table 1 summarises their demographic distribution in terms of gender, age, education level, and teaching experience. The majority were female lecturers (56 %), aged between 30–39 years (45 %), and most possessed a Master's degree (45 %). About 65 % were from polytechnics and 35 % from community colleges. Regarding teaching experience, 40 % had 5–10 years of service, and 40 % reported frequent use of Learning Management Systems (LMS) such as CIDOS 4.0, Moodle, or Google Classroom. This profile reflects the typical TVET academic environment in Malaysia, consistent with previous national studies [1,2,9,14].

**Table 1**  
Demographic profile of respondents (n=200)

Variable	Category	Frequency	Percentage
Gender	Male	88	44.0%
	Female	112	56.0%
Age	<30	25	12.5%
	30–39	90	45.0%
	40–49	60	30.0%
	≥50	25	12.5%
Education	Diploma	20	10.0%
	Bachelor	70	35.0%
	Master	90	45.0%
	PhD	20	10.0%
Institution	Polytechnic	130	65.0%
	Community College	70	35.0%
Experience	<5 years	40	20.0%
	5–10 years	80	40.0%
	11–15 years	50	25.0%
	>15 years	30	15.0%
LMS usage	Rarely	20	10.0%
	Sometimes	50	25.0%
	Often	80	40.0%
	Very Often	50	25.0%

These findings demonstrate that most TVET lecturers are relatively experienced and academically qualified, creating a conducive base for integrating technology into their teaching practice [2][9].

### 3.2 Reliability Analysis

Table 2 presents the reliability coefficients for the two constructs. Cronbach's alpha values were 0.981 for Digital Readiness and 0.983 for Pedagogical Innovation indicating excellent internal consistency. According to earlier research in digital-education measurement [7,8,15], alpha values exceeding 0.9 reflect strong instrument reliability.

**Table 2**  
Reliability statistics (Cronbach's Alpha)

Construct	Cronbach's Alpha	N of Items
Digital readiness	0.981	9
Pedagogical innovation	0.983	10

The high reliability values confirm that the survey items accurately measured both constructs, aligning with validation practices among TVET readiness studies [9,10].

### 3.3 Descriptive Analysis of Constructs

Descriptive analysis was conducted to assess lecturers' overall levels of digital readiness and pedagogical innovation. As shown in Table 3, digital readiness recorded a moderate-to-high level ( $M = 3.65$ ,  $SD = 0.50$ ), whereas pedagogical innovation was moderate ( $M = 3.45$ ,  $SD = 0.52$ ).

**Table 3**  
Descriptive statistics of main constructs (n=200)

Construct	N	Mean	Std. Deviation	Level
Digital readiness	200	3.65	0.50	Moderate-High
Pedagogical innovation	200	3.45	0.52	Moderate

These findings indicate that although most lecturers possess positive attitudes and sufficient access to digital tools, their ability to translate these resources into innovative teaching strategies remains limited. This trend aligns with Hashim and Hamidon [2] and Hani *et al.*, [9], who reported that many Malaysian TVET lecturers are still transitioning from traditional teaching methods to digitally mediated instruction.

Further analysis of the sub-constructs (see Tables 4 and 5) shows that Attitude and Readiness achieved the highest mean ( $M = 3.80$ ) under digital readiness, followed by Infrastructure and Access ( $M = 3.72$ ) and Digital Literacy and Skills ( $M = 3.58$ ). Within the pedagogical-innovation domain, Teaching Innovation scored the highest ( $M = 3.52$ ), whereas Assessment Innovation ( $M = 3.41$ ) and Collaboration and Engagement ( $M = 3.43$ ) remained moderate.

These outcomes are consistent with Omar *et al.*, [10] and Saiman *et al.*, [12], who found that lecturers employ technology more confidently during content delivery than in assessment redesign or collaborative online activities. Overall, the results highlight that while lecturers are digitally

prepared and motivated, the translation of readiness into sustained pedagogical innovation is still at a developing stage, requiring further support and professional development.

**Table 4**

Mean and standard deviation for sub-constructs of digital readiness (n = 200)

Sub-Construct	Mean	SD	Level
Infrastructure and Access	3.72	0.46	High
Digital Literacy and Skills	3.58	0.49	Moderate
Attitude and Readiness	3.80	0.44	High
Overall Mean	3.65	0.50	Moderate-High

**Table 5**

Mean and standard deviation for sub-constructs of pedagogical innovation (n = 200)

Sub-Construct	Mean	SD	Level
Teaching Innovation	3.52	0.48	Moderate
Assessment Innovation	3.41	0.50	Moderate
Collaboration and Engagement	3.43	0.51	Moderate
Overall Mean	3.45	0.52	Moderate

### 3.4 Correlation and Regression Analysis

To examine the association between digital readiness and pedagogical innovation, correlation and simple linear regression analyses were conducted using IBM SPSS Version 26.

Table 6 presents the Pearson correlation coefficient, showing a moderate positive relationship between the two constructs ( $r = 0.377$ ,  $p < 0.01$ ). This indicates that lecturers who are more digitally ready tend to demonstrate higher levels of pedagogical innovation in their teaching practices. The strength of this correlation implies that while readiness contributes meaningfully to innovation, other external and institutional factors may also influence teaching creativity.

**Table 6**

Correlation matrix

Variable	Digital Readiness	Pedagogical Innovation
Digital readiness	1.000	0.377*
Pedagogical innovation	0.377*	1.000

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

Table 7 presents the regression results examining how digital readiness predicts pedagogical innovation. The unstandardized coefficient ( $B = 0.385$ ) indicates that for every one-unit increase in digital readiness, the level of pedagogical innovation increases by 0.385 units, holding other factors constant. The standardized coefficient ( $\beta = 0.377$ ) further confirms a moderate positive influence, suggesting that lecturers' preparedness in adopting digital tools significantly enhances their capacity to innovate in teaching and learning.

The  $t$ -value of 5.725 ( $p < 0.001$ ) demonstrates that the relationship is statistically significant, meaning that digital readiness has a real and measurable impact on innovation rather than occurring by chance. Moreover, the  $R^2$  value of 0.142 indicates that 14.2% of the variance in pedagogical innovation can be explained by digital readiness alone. Although this percentage appears modest, it is meaningful in educational and behavioural research, where multiple contextual and human factors contribute to complex teaching practices.

These findings are consistent with prior works such as Mukhtar *et al.*, [6], who established that readiness is a key determinant of lecturers' ability to adapt online strategies effectively during the COVID-19 pandemic. Likewise, Saiman *et al.*, [12] and Hani *et al.*, [9] reported that greater readiness correlates with higher digital confidence and creative lesson design. Nonetheless, the remaining 85.8 percent of unexplained variance suggests that other elements such as institutional support, continuous training, infrastructure quality, and leadership commitment are equally crucial for advancing pedagogical innovation within Malaysia's TVET ecosystem.

**Table 7**  
Regression coefficients

Predictor	B	Std. Error	Beta	T	Sig.
Constant	2.046	0.247	–	8.268	0.000
Digital readiness	0.385	0.067	0.377	5.725	0.000

In summary, the correlation and regression outcomes collectively affirm that lecturers' digital readiness is a significant but not exclusive predictor of pedagogical innovation. To strengthen this relationship, ongoing institutional training, leadership engagement, and inclusive digital policies are essential to foster sustained innovation and teaching excellence in Malaysia's TVET sector.

### 3.5 Discussion

This study examined the relationship between digital readiness and pedagogical innovation among lecturers in Malaysian polytechnics and community colleges within the TVET ecosystem. Overall, the findings indicate that lecturers demonstrated a moderate-to-high level of digital readiness and a moderate level of pedagogical innovation. The correlation and regression analyses further revealed a statistically significant positive relationship between the two constructs, confirming that lecturers who are more digitally prepared tend to engage more actively in innovative teaching practices. These results support earlier studies which emphasised the importance of lecturers' preparedness in facilitating technology-enhanced instruction [2,9,12].

From a theoretical perspective, this study extends the application of the Technology Acceptance Model (TAM) beyond its traditional focus on technology adoption by empirically linking digital readiness to pedagogical innovation in teaching practices. While TAM primarily explains individuals' intentions to use technology based on perceived usefulness and ease of use [5], the present findings suggest that digital readiness also contributes to lecturers' ability to translate technological acceptance into creative and innovative pedagogical practices. In this regard, the study does not

challenge existing theoretical assumptions but rather complements and expands them by positioning digital readiness as an enabling condition for pedagogical innovation, particularly within the Malaysian TVET context, which has been underrepresented in prior empirical research.

However, the relatively modest explanatory power of the regression model ( $R^2 = 0.142$ ) warrants careful interpretation. Although digital readiness significantly predicts pedagogical innovation, it explains only 14.2% of the variance, indicating that innovation in teaching is influenced by a range of additional factors not examined in this study. This finding highlights that pedagogical innovation is a complex, multi-dimensional phenomenon shaped not only by individual readiness but also by institutional support, leadership commitment, professional development opportunities, organisational culture, workload, and policy alignment. Similar observations were reported by Hashim and Hamidon [2] and Kathirveloo [15], who emphasised that institutional readiness plays a crucial role in sustaining innovative teaching practices within TVET institutions.

The descriptive analysis further suggests that lecturers tend to utilise digital tools more confidently for teaching delivery than for assessment redesign or collaborative learning activities. This pattern aligns with findings by Omar *et al.*, [10] and Saiman *et al.*, [12], who reported that while lecturers demonstrate positive attitudes toward technology, deeper pedagogical innovation particularly in assessment and student engagement—remains challenging. These results imply that readiness alone may not be sufficient to drive comprehensive innovation unless supported by structured training and pedagogical guidance that focuses on instructional design rather than mere technology usage.

Taken together, the findings reinforce the notion that digital readiness functions as a foundational but partial catalyst for pedagogical innovation. While lecturers' preparedness enhances their confidence and willingness to adopt innovative practices, sustained innovation requires a holistic ecosystem that integrates continuous professional development, institutional leadership, and supportive policies. Therefore, this study contributes to the existing literature by empirically demonstrating the role of digital readiness within a broader innovation framework, offering a more nuanced understanding of how readiness translates into pedagogical change in Malaysia's TVET sector.

### **3.6 Limitations of the Study**

Despite its contributions, this study has several limitations that should be acknowledged. First, the use of a cross-sectional research design restricts the ability to establish causal relationships between digital readiness and pedagogical innovation. The findings therefore reflect associative rather than longitudinal effects. Second, the data were collected using self-reported questionnaires, which may be subject to response bias, as lecturers' perceptions may not fully represent their actual teaching practices. Third, the study employed a single predictor model focusing solely on digital readiness, which explains a relatively modest proportion of the variance in pedagogical innovation ( $R^2 = 0.142$ ). This suggests that other important factors such as institutional leadership, organisational culture, professional development structures, workload, and policy support were not examined. Finally, the scope of the study was limited to Malaysian polytechnics and community colleges under JPPKK, which may limit the generalisability of the findings to other higher education or international TVET contexts.

Acknowledging these limitations is essential to ensure appropriate interpretation of the results and to guide future research towards more comprehensive and context-sensitive models of pedagogical innovation.

#### 4. Conclusion and Future Work

This study examined the relationship between digital readiness and pedagogical innovation among lecturers in Malaysian polytechnics and community colleges. The findings revealed that lecturers exhibited a moderate-to-high level of digital readiness and a moderate level of pedagogical innovation. The results of the correlation and regression analyses confirmed that digital readiness is a significant predictor of pedagogical innovation, although its explanatory power remains modest.

These findings underscore that while digital readiness plays an important enabling role, pedagogical innovation is not driven by technological preparedness alone. Instead, innovation in teaching should be understood as a multi-factor process that requires institutional leadership, structured professional development, supportive policies, and a conducive organisational culture. The relatively low  $R^2$  value highlights the need to move beyond individual readiness and towards systemic and institutional perspectives when promoting innovation within the TVET sector.

From a theoretical standpoint, this study contributes to the literature by extending the application of the Technology Acceptance Model (TAM) to pedagogical innovation, demonstrating that digital readiness supports not only technology adoption but also lecturers' capacity for instructional creativity. Practically, the findings provide valuable insights for policymakers and institutional leaders under JPPKK to design targeted professional development initiatives that strengthen pedagogical competencies alongside digital skills.

For future research, longitudinal and mixed-method approaches are recommended to capture changes in lecturers' readiness and innovation practices over time. Expanding the model to include institutional and contextual variables would provide a more holistic understanding of pedagogical innovation in TVET. Overall, this study affirms that digital readiness is a necessary but insufficient condition for sustained pedagogical innovation, and that a holistic, system-driven approach is essential to align Malaysia's TVET institutions with the aspirations of Education 5.0.

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