

Opportunity or Threat: Investigating Faculty Readiness to Adopt Artificial Intelligence in Higher Education

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Abstract

Artificial Intelligence (AI) is increasingly being integrated into higher education, providing opportunities to enhance teaching and learning through personalised instruction, automated assessments, and data-driven insights. However, faculty members' readiness to integrate AI into their teaching practices plays a critical role in its effective implementation. While global studies have primarily examined AI adoption in higher education, research on faculty readiness within Caribbean institutions remains limited, presenting a significant gap in the literature.

This study used the Unified Theory of Acceptance and Use of Technology (UTAUT) model to assess the influence of perceived benefits, facilitating conditions, and attitude towards AI on adoption readiness. A quantitative survey was administered to a sample of 78 faculty members from The University of the West Indies, Cave Hill campus, collecting data on their AI experience and perceptions.

The findings indicate that perceived benefits of AI and institutional support are significant predictors of faculty readiness, while attitude towards AI does not significantly influence adoption. The study also identifies limited AI expertise, lack of training opportunities, and concerns about AI's ethical implications as key barriers to readiness to adopt.

These results highlight the need for structured AI training programs, enhanced institutional support, and clear policies to facilitate AI adoption among faculty. The findings have broader implications for universities in developing regions, emphasising the importance of targeted faculty development to ensure effective AI integration in higher education.

Keywords: artificial intelligence, generative AI, higher education, faculty readiness, UTAUT

Introduction

Background and Context

The integration of Artificial Intelligence (AI) into various sectors has influenced industries and services worldwide, enhancing operations and decision-making processes. In Higher Education Institutions (HEIs), AI-based tools and applications have been introduced to support teaching, learning, and administrative functions

(Rodway & Schepman, 2023). AI offers various capabilities, including automated curriculum design, assessment grading, personalised student feedback, and adaptive learning platforms. These advancements can streamline administrative tasks and provide more tailored learning experiences, thereby improving student engagement and instructional efficiency (Gupta & Bhaskar, 2020; Krstić et al., 2022).

In recent years, there has been a growing interest in leveraging AI to refine teaching and learning practices in HEIs. AI-powered tools have the potential to enhance instructional practices by providing real-time analytics, adaptive learning environments, and automated support systems (Hwang et al., 2020; Krstić et al., 2022). For instance, AI-driven adaptive learning platforms can modify instructional content to suit individual student needs, providing instant feedback to optimise learning outcomes (Krstić et al., 2022; Lee & Qiufan, 2021). Similarly, intelligent tutoring systems can support diverse learning styles through customised learning paths and adaptive assessments (Kelleher & Tierney, 2018; Moura & Carvalho, 2023).

As AI adoption continues to expand globally in higher education (Keith & Waldron, 2024; Papaspyridis, 2020; Voskoglou & Salem, 2020), faculty readiness remains a critical determinant of its successful implementation. The integration of AI-driven technologies into university instruction is not merely a matter of availability but depends significantly on faculty members' willingness, confidence, and institutional support. Effective AI adoption requires universities to address several key areas that influence faculty engagement and preparedness.

First, faculty must be aware of how AI can function as both an administrative and pedagogical tool, facilitating tasks such as grading automation, curriculum planning, and personalised student feedback. Research indicates that faculty familiar with AI applications are more likely to integrate these technologies into their teaching effectively (Harris, 2024). However, without a clear understanding of AI's capabilities and limitations, faculty may remain hesitant to explore its potential benefits.

Second, faculty perceptions of AI's benefits and challenges significantly influence their willingness to adopt AI in education (Luckin & Holmes, 2016; Ofosu-Ampong, 2024; Unterhalter, 2019). While AI can improve efficiency, automate time-consuming tasks, and provide data-driven insights, concerns persist about data privacy, ethical dilemmas, and potential threats to academic integrity. Ofosu-Ampong (2024) highlights that addressing faculty concerns

regarding AI's ethical implications and ensuring transparency in AI-assisted assessments are critical steps toward fostering a positive attitude toward AI adoption. Without clear guidance and institutional reassurance, faculty may resist AI implementation due to uncertainty about its longterm impact on pedagogy.

Third, the successful adoption of AI in higher education hinges on both the willingness and readiness of faculty members to embrace these transformative technologies (Ofosu-Ampong, 2024). As key stakeholders in the educational process, faculty acceptance and integration of AI into teaching practices are pivotal for effective implementation (Alnasib, 2023; Chatterjee & Bhattacharjee, 2020). By fostering a supportive environment and providing adequate training, institutions can enhance faculty readiness, thereby facilitating the successful adoption of AI in higher education (Harris, 2024).

Finally, clear institutional policies on AI adoption are essential to ensure structured and responsible implementation in higher education. Universities must establish guidelines that address AI governance, ethical considerations, data privacy, and academic integrity while also providing clear directives on AI's role in assessment and content creation (Chan, 2023).

As a regional HEI, The University of the West Indies (The UWI) must proactively engage with AI, as it serves a diverse student population across its five campuses. To remain competitive in a globalised education landscape, UWI must implement policies that support AI adoption by both faculty and administrative staff. The UWI (2024) produced a draft policy on AI, signalling a growing institutional commitment to ethical AI integration. This study contributes to these ongoing efforts by examining faculty readiness and providing insights into the factors influencing AI adoption in Caribbean higher education.

AI Adoption in the Caribbean Higher Education Context

While AI adoption is a global trend, the Caribbean is still in the early stages of integrating AI into education. Walcott (2024) showed that AI education in Barbados is primarily focused

on tertiary institutions and adult learners, with limited structured AI training at the primary and secondary levels. The Government of Barbados recognises AI's role in education but faces challenges related to bias in AI algorithms, faculty training gaps, and the absence of a formal regulatory framework. Professor Sir Hilary Beckles, Vice-Chancellor of the UWI and Chairman of the Caribbean Examinations Council (CXC) has emphasised the need for a sophisticated policy framework to prevent AI-driven biases in assessments (*Barbados Today*, 2024). The Barbados Accreditation Council (BAC) has highlighted limited AI literacy training for faculty as a key barrier to adoption (BAC, 2024). Additionally, the Central Bank of Barbados has stressed the urgency of establishing AI governance policies to guide ethical and effective AI integration in education (Central Bank of Barbados, 2024).

Given these factors, understanding faculty readiness for AI adoption in Caribbean higher education is critical. Faculty members are key stakeholders in the instructional process, and their attitudes, preparedness, and institutional support significantly influence AI integration in university settings. This study, therefore, provides one of the first empirical investigations into faculty readiness to adopt AI in a Caribbean HEI. The findings hold regional significance, as universities in the Caribbean face unique structural, financial, and policy-related challenges that impact AI adoption.

Literature Review

Defining AI and Generative AI

Artificial Intelligence (AI) is a broad field of computer science that focuses on creating systems capable of performing tasks traditionally requiring human intelligence, such as problem-solving, decision-making, and data analysis (Russell & Norvig, 2021). AI technologies encompass a range of machine learning algorithms, natural language processing (NLP), and automation systems that are increasingly used in education, healthcare, finance, and other sectors (Luckin, 2017).

Since the release of ChatGPT in late 2022, Generative AI (GenAI) has gained popularity as a specific subfield of AI. GenAI refers to AI models designed to synthesise new content, including text, images, music, and programming code. Unlike traditional AI, which analyses and processes existing data, GenAI generates new content, including text, images, music, and code based on learned patterns from training data (Ebert & Louridas, 2023). Popular Gen AI applications include ChatGPT, DALL·E, and Bard (now Gemini), which are widely used in educational contexts for automated essay feedback, content summaries, and creative problem-solving exercises (Yu & Guo, 2023).

For the purposes of this study, we primarily focus on faculty readiness for AI in higher education, with an emphasis on AI in general, rather than specifically on GenAI. While GenAI tools are highly visible and have gained significant attention in recent educational discussions, this study did not limit its scope to any particular type of AI. Instead, it focused on AI adoption broadly, encompassing various applications such as adaptive learning systems, predictive analytics, automated assessment tools, and AI-driven content generation.

Artificial Intelligence in Education

AI's role in education is multifaceted, supporting teaching, learning, and administrative functions (Luckin, 2017). Researchers emphasise AI's ability to enhance instructional design, automate routine tasks, and provide personalised learning experiences (Miao et al., 2021). Additionally, AI can support faculty by reducing workload, particularly through grading automation, attendance tracking, and curriculum planning (Alnasib, 2023; Papaspyridis, 2020; Voskoglou & Salem, 2020).

While some scholars argue that AI can improve student engagement and learning outcomes, others caution against overreliance on AI-driven instruction (Huang et al., 2019; Xu, 2020). Xu (2020) suggests that educators who integrate AI into their classrooms may see significant benefits, including enhanced student

engagement and academic performance through personalised feedback, adaptive learning pathways, and data-driven decision-making. AI can also help automate administrative tasks, enabling educators to focus more on differentiated instruction and targeted student support. However, concerns remain about AI's ethical implications, particularly regarding bias in AI models, data security, and academic integrity (Kasneci et al., 2023).

AI and Sustainable Development Goal 4 in Education

Sustainable Development Goal 4 (SDG4) aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (United Nations, 2015). A core tenet of this goal is to enhance accessibility and equity in education, particularly for students facing socio-economic challenges. Several researchers have argued that AI, given its potential to enhance adaptability and accessibility in learning, presents a valuable opportunity for HEIs seeking to advance the aims of SDG4 (Browne & Shen, 2017; Eager & Brunton, 2023; Ilie & Rose, 2017; Jennings, 2019; Keith & Waldron, 2024).

In line with SDG4, researchers highlight AI's potential to bridge educational gaps, support underserved populations, and improve student learning outcomes (Browne & Shen, 2017; Eager & Brunton, 2023). AI-powered adaptive learning platforms, intelligent tutoring systems, and real-time assessment tools have been identified as key innovations that support equitable access to quality education (Keith & Waldron, 2024). By leveraging AI tools for customised content delivery, automated assessments, and real-time feedback, HEIs can make inclusive and equitable education a tangible reality for students regardless of socio-economic constraints.

In middle- and low-income countries, AI holds particular significance due to challenges such as limited educational resources, teacher shortages, and inconsistent instructional quality (Ilie & Rose, 2017). AI-driven language translation tools, automated grading systems, and personalised learning assistants can

expand educational opportunities for marginalised communities, addressing disparities in teacher availability and instructional quality (Jennings, 2019).

The Caribbean Context

According to the SDG4 Regional Monitoring Report, Latin America and the Caribbean (LAC) face growing disparities in tertiary education quality, primarily driven by socio-economic inequalities (UNESCO, 2021). HEIs play a critical role in reducing these disparities by leveraging AI technologies to streamline administrative processes, personalise student learning, and enhance assessment practices (Luckin & Holmes, 2016; Unterhalter, 2019). AI-driven solutions such as automated grading systems, intelligent tutoring platforms, and predictive analytics for student success have the potential to improve educational equity and institutional efficiency across the Caribbean.

Despite the increasing global focus on AI's role in higher education, regional studies remain limited. Recent Caribbean-based research has explored specific applications of AI in higher education, yet much of this work remains fragmented. Cross et al. (2023) examined how medical schools can integrate ChatGPT into their pedagogy, while Roberts et al. (2024) investigated AI's role as an assessment tool in HEIs. Keith and Waldron (2024) provided a broader exploration of AI's intersection with SDG4, highlighting the potential for AI technologies to drive innovation and inclusivity in Caribbean HEIs.

Adding to this body of work, Walcott (2024) provides a regional analysis of AI education in Barbados, focusing on how AI initiatives are being implemented in tertiary institutions and the policy challenges associated with AI adoption. Walcott (2024) highlights gaps in faculty training, limited AI literacy among educators, and the absence of a structured AI governance framework within Caribbean HEIs. These findings reinforce the urgent need for institutional policies and capacity-building initiatives to ensure that AI adoption supports both equity and quality improvements in Caribbean higher education.

While these studies contribute valuable insights, a comprehensive investigation into faculty perceptions, institutional readiness, and policy development surrounding AI integration in Caribbean HEIs is still needed. Addressing these gaps will be essential to ensuring that AI technologies are deployed effectively and equitably across the region.

Models and Theories of Adoption

Several theories and models have been developed to explain the intention of potential users to adopt innovative technologies such as AI. Some noteworthy frameworks include:

- Technology Acceptance Model (TAM) (Davis, 1989), which explains how users' perceptions of usefulness and ease of use influence their decision to adopt technology.
- Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003), which integrates multiple technology adoption theories to provide a comprehensive framework for understanding the acceptance and use of technology.
- Theory of Planned Behaviour (TPB) (Ajzen, 1991), which emphasises that behavioural intentions toward technology adoption are shaped by attitudes, subjective norms, and perceived behavioural control.
- Diffusion of Innovations (DOI) (Rogers, 2003), which outlines how innovations spread within a population and identifies key factors influencing the rate of adoption.

Theoretical Framework: UTAUT in Higher Education

The UTAUT framework (Venkatesh et al., 2003) serves as the primary theoretical model for this study. The model consolidates elements from existing well-known models, such as the Technology Acceptance Model (TAM), the Theory of Reasoned Action (TRA), and the Innovation Diffusion Theory (IDT), to provide a comprehensive framework and a

holistic understanding of the factors influencing individuals' acceptance and use of technology. Its strength lies in its ability to explain up to 70% of the variance in behavioural intention toward technology adoption, as compared with other alternative models and theories, when applied to the same dataset, which could only account for 17-53% of the variance in the variable, behavioural intention (Venkatesh et al., 2003). This high explanatory power establishes the UTAUT model as particularly valuable for interpreting users' intentions to embrace modern technologies, such as AI.

The UTAUT framework has been used to understand technology adoption in higher education. For instance, Lewis et al. (2013) utilised the UTAUT model to examine factors influencing professors' intentions to use both established and emerging technologies in their classrooms. Their study identified performance expectancy, effort expectancy, social influence, and facilitating conditions as significant determinants of technology adoption among faculty members.

Similarly, Al-Riyami et al. (2023) investigated faculty members' behavioural intentions toward adopting Fourth Industrial Revolution (4IR) related technologies in HEIs. Applying the UTAUT framework, they found that performance expectancy, facilitating conditions, effort expectancy, social influence, and attitude toward using technology significantly impacted faculty members' intentions to use 4IR-related technologies. Notably, performance expectancy had the strongest influence, accounting for 43% of the variance in behavioural intention.

Furthermore, Da Silva Soares et al. (2025) recontextualised the UTAUT framework to explore higher education staff's acceptance of technology-enhanced feedback and marking tools, such as online embedded rubrics. Their qualitative study highlighted the relevance of performance expectancy, effort expectancy, social influence, and facilitating conditions in shaping faculty attitudes toward adopting new assessment technologies. The authors also suggested adaptations to the UTAUT model to better fit the higher education context.

Collectively, these studies underscore the applicability of the UTAUT model in assessing factors that influence faculty adoption of emerging technologies in higher education.

Factors Influencing AI Adoption

Several factors influence the adoption of AI by faculty in HEIs, including the perceived benefits of AI, faculty attitudes towards AI, and facilitating conditions created by the institution's administration. Perceived benefits refer to faculty members' optimism about how AI can enhance education at both the micro and macro levels. Faculty attitudes towards AI, whether favourable or unfavourable, can significantly affect their willingness to incorporate it into their teaching practices; and facilitating conditions encompass the enabling environment, including human and physical resources (Ayanwale et al., 2022).

Studies have consistently shown that attitude towards AI is a significant predictor of its adoption or use (Sánchez-Prieto et al., 2017; Scherer et al., 2019; Teo et al., 2008). Specifically, attitudes towards AI influence both the intention and the extent of its use in the classroom (Alnasib, 2023). Chatterjee and Bhattacharjee (2020) affirmed the importance of attitude and behavioural intention regarding the adoption of AI in higher education. Similarly, other studies (Islahi & Nasrin, 2019; Wang et al., 2021) have concluded that attitude significantly affects the adoption of AI, with university faculty being influenced by their attitudes towards its potential to enhance student learning.

Moreover, AI in higher education is associated with numerous perceived benefits. It has been suggested that AI can reduce workload by assisting with administrative tasks such as automatic grading and feedback (Baker et al., 2019; Owoc et al., 2021); essay scoring (August & Tsaima, 2021); and plagiarism detection (Braiki et al., 2020). Additionally, AI can enhance the learning experience by performing tasks that would otherwise require human effort, such as personalising learning, automating grading, tracking student progress, and providing real-time feedback (Pedró, 2020).

Notwithstanding the perceived benefits of AI, research has also identified demographic factors such as gender, age, academic rank, and years of teaching experience as key influencers of AI adoption in education. Studies suggest that male educators are more likely than females to adopt technologies in their classrooms. This inclination may be attributed to higher levels of anxiety among female educators towards technology adoption in general (Alnasib, 2023). Moreover, Weger et al. (2022), whose research focused on the adoption of AI-enabled autonomous systems technology, also reported that women were less likely than men to adopt technology.

Regarding age, there are mixed findings. While younger individuals are often more inclined to adopt novel technologies due to their ability to learn interaction patterns and openness to experiment (Parasuraman & Colby, 2015), limited studies have focused on the rate of adoption by faculty in higher education. Alnasib (2023) found variations in AI adoption, with higher readiness among the age group of 31–50 compared to those aged 20–30. This suggests that academics aged 31–50 are more likely to embrace AI in their teaching, possibly due to their maturity and openness to new ideas. However, academic rank did not significantly affect AI adoption among faculty members (Alnasib, 2023).

Barriers to AI Adoption

The adoption of AI in higher education is not without its challenges. Faculty members (who play a central role in the implementation of AI technologies) often encounter barriers that hinder their adoption of these tools. These barriers encompass various challenges, including a lack of training, insufficient vision from universities regarding AI applications, shortages of AI experts within academic institutions (AlAhmari, 2022), and limited recognition of the importance of AI applications among faculty. Alnasib (2023) confirmed the need for hands-on training in implementation of AI modalities and enabling infrastructures such as materials and facilities.

Al-Subhi (2020) provided detailed insights into these challenges, reporting issues such as

the perception that adopting AI requires more effort than traditional teaching methods; a lack of awareness about AI's role in education; inadequate incentivisation of AI adoption among faculty; insufficient training programs for faculty in AI applications; and inadequate time allotted for training in AI adoption strategies and applications. Gupta and Bhaskar (2020) also emphasised institutional and administrative barriers to AI adoption, including deficiencies in resources and time. Additionally, a lack of equipment and infrastructure were identified by Salem and Mohammadzadeh (2018) and Teeroovengadum et al. (2017). Research emerging from Egypt by Sharawy (2023) concluded that while there was evidence of faculty intention and willingness to incorporate AI, there was also a lack of funding and supporting policy for the incorporation or adoption of AI; thus underscoring the point that successful AI adoption by faculty was predicated on the creation of facilitating conditions inclusive of training, resources, infrastructure, and policy guides (Sharawy, 2023). It can be argued, therefore, that universities and institutions of higher learning must fulfill the demands of millennials who function in a technological milieu, implying that there is still much more that needs to be done in terms of facilitation (Bucea-Manea-Toniş et al., 2020).

Conceptual Framework

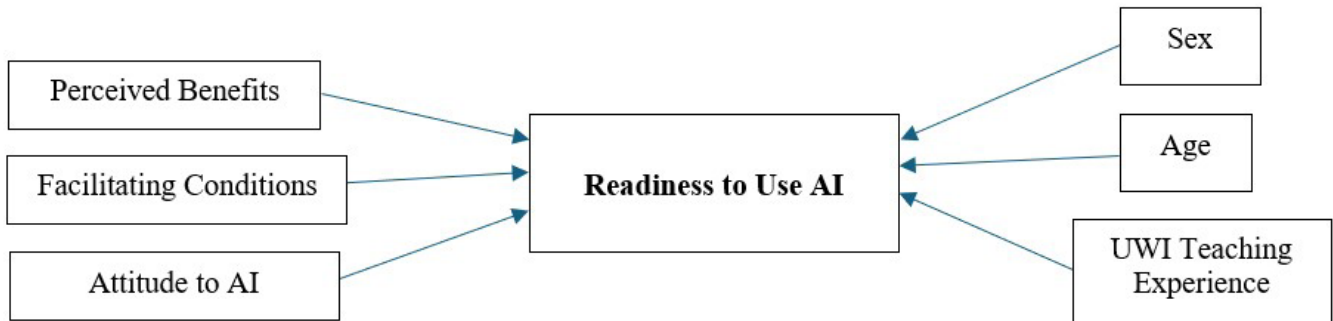
The conceptual framework for this study focuses on readiness to adopt AI in higher education, rather than the actual adoption of AI technologies. Readiness to adopt AI refers to faculty members' preparedness and willingness to integrate AI tools into their teaching practices. This construct is distinct from adoption, which pertains to the actual implementation and ongoing use of AI tools. Readiness, therefore, serves as a precursor to adoption; it represents the factors that must be in place for faculty members to be willing to engage with AI technologies in their classrooms. The framework suggests that faculty members' readiness to adopt AI is influenced

by several key factors: perceived benefits of AI, attitude towards AI, and facilitating conditions (Venkatesh et al., 2003).

This research study adopts the Unified Theory of Acceptance and Use of Technology (UTAUT) as its primary theoretical framework, with modifications to align with the study's objectives and context, to better understand predictors associated with faculty members' readiness to adopt AI. The model focuses on three constructs: *Perceived Benefits of AI in Teaching*, *Facilitating Conditions*, and *Attitude Towards AI* — which are hypothesised to positively predict readiness to use new technologies such as AI (Van Schaik, 2009; Venkatesh et al., 2003). In the context of this study, the constructs are defined as follows:

- *Perceived benefits of AI in teaching* incorporates the concept of performance expectancy and signifies the extent to which faculty members believe that using AI would enable them to significantly enhance their job performance in teaching (Sugandini et al., 2018; Venkatesh et al., 2003).
- *Facilitating conditions* encompass the availability and readiness of the organisational and technical infrastructure, such as the necessary resources, technical support, and training opportunities to support AI use (Venkatesh et al., 2003).
- *Attitude towards AI* refers to the degree to which faculty members view a specific behaviour favourably or unfavourably (Ayanwale et al., 2022).
- *Faculty readiness* refers to the degree to which a faculty member exhibits confidence in their capacity to proficiently incorporate AI into their teaching practices.

In addition, the variables sex, age, and years of UWI teaching experience were included as covariates so that the relationship between the main constructs of interest could be more accurately estimated. The conceptual model used is presented in Figure 1.

Figure 1*The Conceptual Framework*

The study was guided by the following research questions:

1. What is faculty members' experience with integrating AI into their teaching practices?
2. Is there a correlation between faculty members' readiness to integrate AI into teaching and their perceived benefits of AI in higher education and teaching, the facilitating conditions regarding AI use, and their attitude towards AI?
3. Do perceived benefits of AI, facilitating conditions regarding AI use, and attitude towards AI predict readiness to integrate AI into their teaching practices, after controlling for gender, age, and teaching experience?
4. What are the primary barriers that significantly impact faculty members readiness to adopt AI?

Methodology

Research Design

A non-experimental quantitative methodology was adopted to investigate the factors influencing faculty adoption of AI in higher education. The research design employed an online survey using SurveyMonkey, a web-based plat-

form. The online survey method was chosen for its efficiency, cost-effectiveness, and ability to reach a large and geographically dispersed sample. Additionally, an online survey allows for anonymity, which may encourage participants to provide candid responses about their attitudes and perceptions regarding their readiness for AI adoption.

Faculty members were contacted using their university email addresses to ensure direct communication with the target population. An initial email was sent to faculty members through official university channels, containing a link to the online survey. This email emphasised the voluntary nature of participation and assured respondents of the confidentiality of their responses. To encourage participation and maximise the response rate, reminders were sent at regular two-week intervals. Prior to the conduct of the survey, Institutional Review Board (IRB) approval was obtained to ensure compliance with ethical guidelines for research; including informed consent, confidentiality, and voluntary participation.

Sample Size and Response Rate

The entire population of 196 full-time faculty members at the Cave Hill Campus was invited to participate in the study. However, as two of the researchers involved in the study are also full-time faculty members, they were excluded from completing the survey. Therefore, the possible

population size for the study was adjusted to 194 eligible participants. Based on a confidence level of 95% and a margin of error of 5%, the minimum required sample size was calculated to be approximately 130 respondents. However, the actual response to the survey yielded 78 faculty members, resulting in a response rate of approximately 61%. This response rate exceeds the average online survey response rate of 44.1% reported by Wu et al. (2022) in their meta-analysis of 1,071 online survey response rates in education-related research.

Instrumentation

The survey instrument was developed in alignment with the Unified Theory of Acceptance and Use of Technology [UTAUT] model (Venkatesh et al., 2003), incorporating key constructs and variables identified in the study objectives. Survey items were adapted from validated scales used in prior research on technology adoption (Alnasib, 2023; Al-Qeisi, 2009; Chatterjee & Bhattacharjee, 2020; Zhang et al., 2023) specifically from Alnasib's (2023) study on faculty readiness for AI integration in higher education, and were tailored to reflect the specific context of AI integration in the Caribbean higher education setting.

Adaptations were made to ensure relevance and applicability, including:

Terminology adjustments to align with regional practices and policies.

- Addition of context-specific examples of AI use in teaching and learning in the Caribbean.
- Simplification and clarification of items to ensure comprehensibility for faculty from diverse disciplines and levels of AI familiarity.

Any revisions made were also subjected to a content validity review by three experts in faculty development and educational technology experts in educational technology and higher education, to ensure that the items accurately captured the intended constructs and aligned with the study's objectives. The final survey comprised 37 items categorised into five key sections:

1. **Demographic information (6 close-ended items).** Participants provided information on sex, age, faculty, academic position, and years of teaching experience at the University of the West Indies (The UWI).
2. **Technological background (4 close-ended items).** This section assessed faculty members' prior exposure to AI tools and their self-perceived level of AI expertise.
 - **AI expertise level.** Participants self-reported their level of expertise with AI tools on a 5-point scale, ranging from beginner (limited or no experience) to expert (extensive knowledge and experience in AI).
 - Experience with AI in instructional practices: Participants indicated whether they had significant experience, limited experience, no experience, or had attended AI-related workshops without direct implementation.
 - **Familiarity and usage of AI tools.** Faculty members identified specific AI tools designed for educational purposes with which they were familiar and/or had used, including chatbots (e.g., ChatGPT), adaptive learning platforms, automated grading systems, and intelligent tutoring systems.
 - **Perception of AI in instructional practices.** Participants selected whether they perceived AI as an opportunity, a threat, both, or were neutral/unsure about its impact on teaching.
3. **UTAUT Constructs (25 close-ended Likert-scale items,** ranging from 1 (Strongly Disagree) to 5 (Strongly Agree), to quantify faculty perceptions).
 - **Perceived Benefits of AI in Teaching (9 items).** Focused on faculty perceptions of AI's impact on

teaching effectiveness (e.g., “I can use AI technology to improve my teaching effectiveness”).

- **Facilitating Conditions (7 items).** Examined institutional support for AI integration (e.g., “Cave Hill has the resources required to develop AI-based smart content”).
 - **Attitude Towards AI (4 items).** Assessed faculty attitudes toward AI adoption (e.g., “I enjoy using AI technology”).
 - **Faculty Readiness (5 items).** Measured faculty members’ confidence in incorporating AI into their instructional practices (e.g., “I am willing to use AI technology in my teaching”).
- 4. Perceived Barriers to AI Adoption (1 close-ended item).** Faculty identified barriers to AI adoption, including lack of institutional support, ethical concerns, and perceived complexity.

- **Additional comments (1 open-ended question).** Allowed participants to provide additional comments on or concerns about their readiness to adopt AI in higher education.

Reliability and Validity

To ensure content validity, the survey instrument was adapted from established scales and reviewed by three experts in faculty development and educational technology to confirm its alignment with the selected constructs. Additionally, a pilot test was conducted with five faculty members to assess clarity, wording, and completion time. Feedback was used to refine the survey instrument before full deployment. For internal consistency reliability, Cronbach’s alpha coefficients were calculated for each construct. When the reliabilities of the four scales were examined, all exceeded the threshold Cronbach’s alpha value of 0.70 (Hair et al., 1998; Nunnally, 1978), indicating adequate internal consistency (See Table 1).

Table 1

Reliability Coefficients and Construct Means

Constructs	No. of Items	Reliability	Mean (/5.00)
Perceived benefits of AI in teaching	9	0.90	3.50
Facilitating Conditions	7	0.88	2.61
Attitude towards AI	4	0.76	3.43
Faculty Readiness	5	0.71	2.85

Findings

Data Analysis

The collected survey data were analysed using SPSS Version 27. Descriptive statistics, including means, standard deviations, and frequency distributions, were used to summarise the demographic characteristics of participants, faculty experience with AI, and their perceptions of their readiness for AI adoption.

To address the research questions:

1. Independent t-tests and ANOVA were conducted to examine differences in AI readiness and perceptions across demographic groups (e.g., age, gender, and teaching experience).
2. Pearson correlation analysis was used to assess the relationships among perceived benefits of AI, facilitating conditions, attitude towards AI, and faculty readiness to integrate AI into teaching.

3. Multiple regression analysis was performed to determine the predictive power of perceived benefits, facilitating conditions, and attitude towards AI on faculty readiness; while controlling for age, gender, and years of teaching experience.
4. Frequency analysis was used to identify the most commonly perceived barriers.
5. Internal consistency reliability was assessed using Cronbach's alpha coefficients.

Results

Sample Demographics

The sample comprised 77 participating faculty members, after excluding one incomplete response, the majority of which were female, constituting 66.7% (n = 52); while males accounted for 33.3% (n = 26) of the sample. Regarding age distribution, the largest proportion of faculty fell within the age brackets of 50–59 years (42.9%, n = 33) and 40–49 years (35.1%, n = 27).

Regarding faculty representation across different academic disciplines, the faculties of Humanities & Education, Social Sciences, and Medical Sciences each contributed 24.4% of the sample, while Science and Technology accounted for 16.7% (n = 13). Smaller numbers of faculty members were affiliated with the Faculties of Law (6.4%, n = 5), Sport (2.6%, n = 2), and Culture, Creative and Performing Arts (1.3%, n = 1). Additionally, the distribution of academic ranks revealed that 3.9% (n = 3) were professors, 24.7% (n = 19) were senior lecturers, 68.8% (n = 53) held the position of lecturer, and 2.6% (n = 2) were assistant lecturers. Furthermore, the experience levels of faculty members as lecturers at the University of the West Indies varied, with 14.1% (n = 11) having 1–5 years of experience, 26.9% (n = 21) having 6–10 years, 20.5% (n = 16) having 11–15 years, and 38.5% (n = 30) having more than 15 years of experience. A detailed overview of the demographic profile of the sample is presented in Table 2.

Table 2

Demographic Profile of the Participants

	<i>Frequency (n)</i>	<i>Percentages (%)</i>
Sex		
Female	52	66.7
Male	26	33.3
Age		
30 – 39 years	10	12.8
40 – 49 years	27	34.6
50 – 59 years	33	42.3
60 years and over	7	9.0
No response	1	1.3
Faculty		
Culture, Creative and Performing Arts	1	1.3
Humanities and Education	19	24.4
Law	5	6.4
Medical Sciences	19	24.4
Science and Technology	13	16.7
Social Sciences	19	24.4
Sport	2	2.6
Position		
Professor	3	3.8
Senior Lecturer	19	24.4
Lecturer	53	67.9
Assistant Lecturer	2	2.6
No Response	1	1.3
UWI Teaching Experience		
1–5 years	11	14.1
6–10 years	21	26.9
11–15 years	16	20.5
More than 15 years	30	38.5

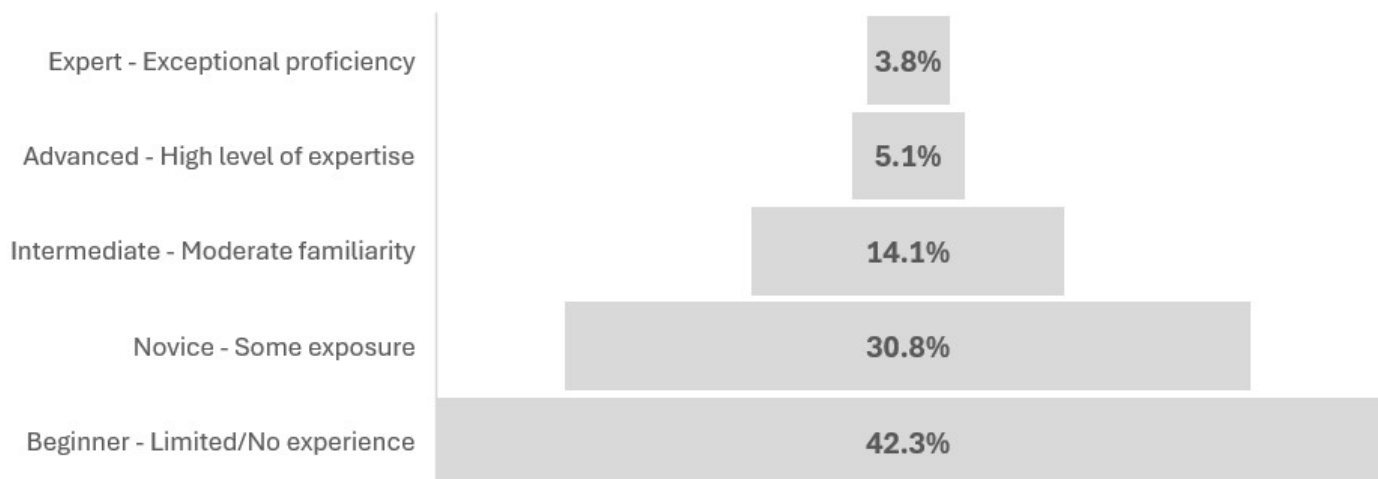
Research Question 1: What is the extent of faculty members' experience with integrating AI into their teaching practices?

AI Competence and Experience

Faculty members' expertise with AI tools was generally low. When asked to rate their level of AI expertise, most identified as novices or beginners (73.1%, $n = 57$), while only 8.9% ($n = 7$) reported advanced or expert levels (see Figure 2).

Figure 2

Chart Showing Faculty Members' AI Experience



Similarly, faculty members' experience with AI tools in instructional practices was limited, with 48.1% ($n = 37$) indicating having some limited experience with AI tools, while 45.5% ($n = 35$) reported having no previous experience with AI tools. Only 6.5% ($n = 5$) acknowledged having significant experience with AI tools. It should be noted that there was no significant difference in any of the demographic variables such as the sex or age of participants.

Given the limited experience levels, it was not surprising that awareness and usage of AI applications were notably low among the

participants. AI academic writing tools had the highest level of familiarity, with 64.1% of participants reporting awareness, yet only a quarter of the participants (25.6%) reported actual usage. Small proportions of participants indicated familiarity with or usage of exam proctoring tools and image generation tools. However, the majority of participants reported unfamiliarity with other AI tools mentioned, including adaptive learning platforms, virtual teaching assistants, and intelligent tutoring systems (see Table 3).

Table 3

Familiarity with and Use of AI Applications

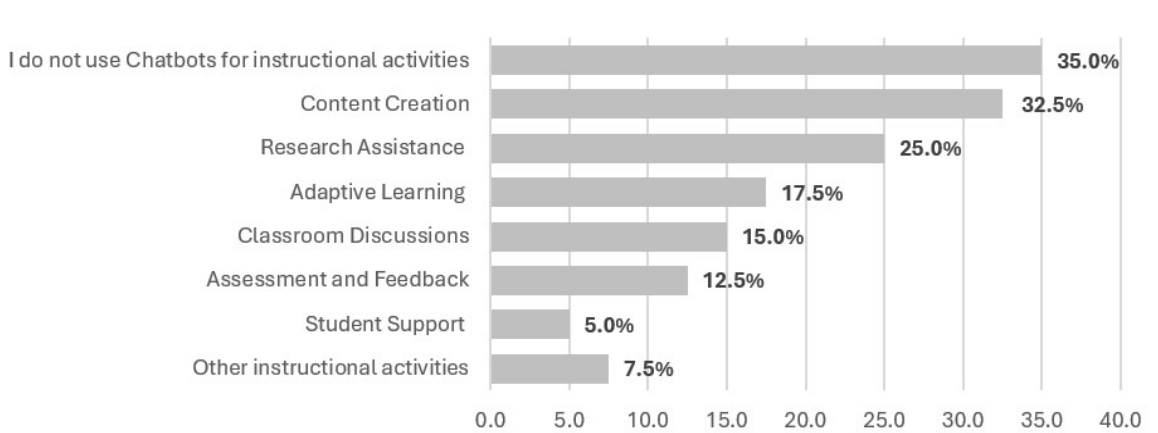
	Familiar With %	Have Used %	Neither %
Academic Writing	64.1	25.6	32.1
Exam Proctoring	28.2	16.7	62.8
Image Generation	21.8	11.5	71.8
Question Creation	12.8	6.4	76.9
Automated Grading Systems	10.2	3.8	78.2
Content Curation	10.2	5.1	78.2
Intelligent Tutoring Systems	8.9	5.1	79.5
Virtual Teaching Assistants	6.4	3.8	82.1
Adaptive Learning Platforms	2.6	1.3	82.1

Faculty members were then asked specifically about their use of specific GenAI chatbots such as ChatGPT, Google BARD/Gemini, and Microsoft Cortana; with usage being relatively high, as just over half of the faculty members (51.3%, n = 40) reported using chatbots. Interestingly, of those using chatbots, 42.5% (n = 17) did not use them for instructional activities. However, for

those incorporating chatbots into instructional activities, the primary uses were content creation (32.5%, n = 13) and research assistance (25.0%, n = 10). Smaller groups reported using chatbots for adaptive learning activities (17.5%, n = 7); classroom discussions (15.0%, n = 6); assessment and feedback (12.5%, n = 5); and student support (5.0%, n = 2) (see Figure 3).

Figure 3

Bar Chart Showing How Faculty Use Gen AI for Instructional Activities

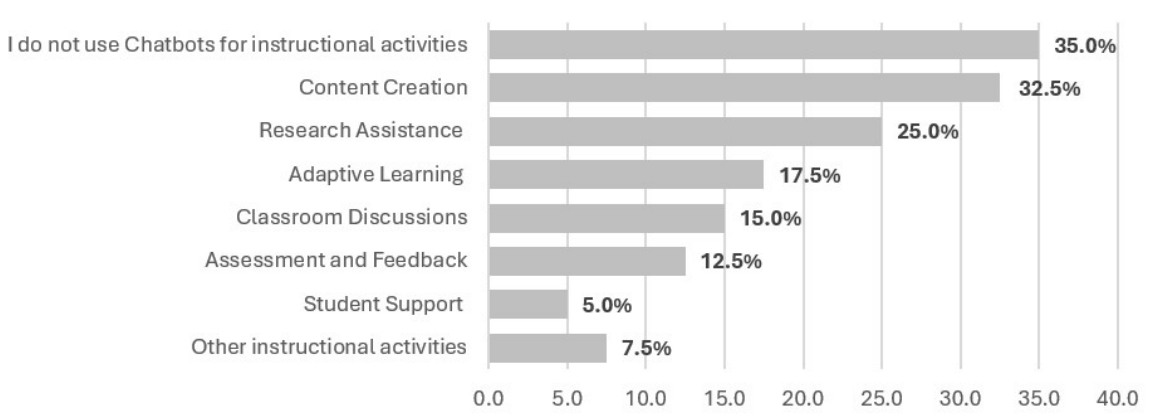


Overall, when asked whether they viewed AI as an opportunity or threat, the majority of faculty members perceived it as both an opportunity and a threat (62.8%, n = 49), with just under

one quarter (23.1%, n = 18) perceiving it as an opportunity, and only a small percentage (2.6%, n = 2) considering it a threat (see Figure 4).

Figure 4

Faculty Members' Perceptions of AI as an Opportunity and a Threat



Research Question 2: Is there a correlation between faculty readiness and perceived benefits, facilitating conditions, and attitude towards AI?

Pearson product moment correlation analysis found the following:

- Facilitating conditions had the strongest correlation with readiness to use AI in teaching ($r = 0.345$, $p < 0.01$), indicating that supportive campus conditions play a crucial role in educators' readiness to adopt AI in teaching, even more so than their perceptions of its benefits or attitudes towards it.
- Perceived benefits of AI in teaching showed a weaker but still significant positive correlation with readiness to use AI in teaching ($r = 0.250$, $p < 0.05$), indicating that educators who perceived greater benefits from AI are more inclined to integrate it into their teaching practices.
- Attitude towards AI was not significantly correlated with readiness to use AI in teaching ($r = 0.130$, $p > 0.05$).

Table 4 presents the correlation results.

Table 4

Correlations between the Four UTAUT constructs

	PB	FC	RU	ATT
PB	1	.125	.250*	.327**
FC		1	.345**	-.092
RU			1	.130
ATT				1

* Correlation is significant at the 0.05 level (2-tailed).

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

Research Question 3: Do perceived benefits, facilitating conditions, and attitude towards AI predict readiness to integrate AI, after controlling for gender, age, and teaching experience?

Multiple Regression

A hierarchical linear multiple regression analysis was conducted to understand the factors influencing educators' readiness to integrate AI in teaching practices (RU). The independent variables included the three constructs: Perceived Benefits of AI in Teaching (PB), Facilitating Conditions (FC), and Attitude to AI (ATT), and the demographic variables of age, gender, and

UWI teaching experience were dummy coded and added as covariates. The analysis showed the following:

- The model explained 33.9% of the variance in faculty readiness ($R^2 = 0.339$, $F(6, 61) = 5.21$, $p < 0.001$).
- Perceived Benefits of AI indicated a significant moderate positive effect ($\beta = 0.319$, $p < 0.05$).
- Facilitating Conditions also had a moderate positive effect ($\beta = 0.233$, $p < 0.05$).
- Attitude towards AI was not a significant predictor ($\beta = 0.054$, $p = 0.641$).

In addition, age and gender were significant predictors:

- Females exhibited lower AI readiness than males ($\beta = -0.321$, $p < 0.05$).
- Faculty aged 50+ had significantly lower AI readiness than those aged 30–39 ($\beta = -0.397$, $p < 0.05$), suggesting that faculty members in the 30–39 age group are relatively more ready to use AI in teaching, particularly when compared to those aged 50 and over, who exhibited the lowest readiness to use AI.

Table 5 presents the regression results.

Table 5

Regression Analysis of Factors Influencing Faculty Members’ Readiness to Use AI in Teaching

Model	Unstandardised Coefficients		Standardised Coefficients		Sig.
	B	Std. Error	Beta	t	
1 (Constant)	3.692	.262		14.114	.000
Sex=Female	-.506	.170	-.342	-2.971	.004
Age1=40 – 49 years	-.405	.265	-.280	-1.528	.131
Age1=50 years and over	-.508	.252	-.370	-2.013	.048
2 (Constant)	1.908	.556		3.433	.001
Sex=Female	-.475	.157	-.321	-3.020	.004
Age1=40 – 49 years	-.333	.243	-.230	-1.369	.176
Age1=50 years and over	-.545	.231	-.397	-2.354	.022
PB	.282	.102	.319	2.773	.007
FC	.232	.106	.233	2.192	.032
ATT1	.050	.107	.054	.469	.641

Research Question 4: What are the primary barriers that significantly impact faculty members readiness to adopt AI?

Among the barriers reported by faculty hindering their use of AI applications and tools in instructional activities, lack of familiarity ranked highest, with 64.1% (n = 50) of participants echoing previous findings of limited AI awareness. Faculty members also cited a lack of necessary resources (52.6%, n = 41); ethical concerns (48.7%, n = 38); and time constraints to learning about and integrating AI (43.6%, n = 34) as significant hindrances. Additional reported barriers are detailed in Figure 5, indicating a multifaceted challenge in AI adoption within instructional contexts.

Additional Comments

The following section discusses the themes that emerged when faculty members were asked to provide additional comments, highlighting both the opportunities and challenges associated with the adoption of AI in their instructional practices.

Opportunities

Some faculty members acknowledged the inevitability of AI's presence in education and emphasised the importance of learning best practices for its use. For instance, one participant suggested that students should submit their AI-generated scripts alongside assignments to enable accurate assessment of their individual contributions. Additionally, faculty members expressed their eagerness to implement AI solutions and noted the time-saving benefits of AI in teaching preparation.

We cannot avoid AI, but as instructors, we must learn the best practice approaches to the use of AI. For example, students should submit their ChatGPT script for all assignments where they use this tool. (Female, 30-39)

I am ready to fully incorporate AI in my teaching and learning. It has been saving me time on prepping content and presentations and coming up with engaging activities, etc. However, I need to learn about the other capabilities of AI such as grading, individualised assistance for students, teaching assistance, etc. (Female, 40-49)

Ethical Concerns

Concerns regarding students' possible unethical use of AI and its potential impact on critical thinking skills were raised. Some faculty members expressed concerns about the ethical implications of AI use in student work and advocated for comprehensive frameworks and penalties for breaches. Others raised concerns about profit-driven motives and the lack of understanding of AI's true potential and risks, particularly in small island states.

Worried about the ethical implications of AI, in terms of student work. Cave Hill needs a comprehensive framework for the use of AI in student submissions, including the penalties for doing so if breached. (Female, 30-39)

The wholesale adoption of AI is driven largely by profit and the belief that we will be left behind. AI has become the newest buzzword and there appears to be a shift in technological direction in the Caribbean, without any understanding of where the current state of AI truly is. (Male, 50-59)

Students' Overdependence on AI

As a related concern, other faculty members expressed the possibility of students' overdependence on AI, prompting calls for ethical considerations and training. Some cautioned against over-reliance on AI and stressed its role as a support tool rather than as a replacement for human learning. Concerns about generative AI programs and their potential negative impact on assessment and plagiarism were also voiced. One faculty member likened AI to a tool (such as a Dremel), capable of great benefit when used correctly but potentially harmful when misused.

I am concerned about the potential to dampen students' critical thinking and comprehension skills, especially for complex concepts. I am concerned that AI can be used as a crutch that stops students from learning to think quickly because instead, they can use AI tools quickly. (Female, 40-49)

I see many uses for AI, but I have many ethical concerns about usage and students' overdependency on it, and therefore instructors' inability to increase their analytical ability, skills, and output!!! (Female, over 60)

Need for Training

Finally, faculty members called for more training opportunities and highlighted the need for training to fully utilise AI's capabilities, such as grading and providing individualised assistance to students.

I need to learn about the other capabilities of AI such as grading, individualised assistance for students, teaching assistance, etc. It would be nice if The UWI offered training and sensitisation in this area for the upcoming academic year. My only concern is students' unethical use of AI, so sensitisation in ethical use would be good for students. (Female, 40–49)

There are so many tools out there, a curated webinar would be ideal. (Female, 40–49)

Teaching staff need to be allocated time to learn about AI use in teaching. There was a very helpful one-day seminar last summer that taught us how to use ChatGPT — more of this would be helpful. (Female, 30–39)

Discussion

Key Findings and Implications

This study provides insights into faculty readiness to adopt AI in higher education. The findings indicate that while faculty members recognise AI's potential benefits for enhancing teaching effectiveness and student engagement, concerns about ethical implications, academic integrity, and diminished human interaction remain prevalent (Uygun, 2024). Faculty perceptions of AI align with Wiggins (2023), who describes AI as both an opportunity and a challenge in educational settings.

Additionally, the study revealed limited AI expertise among faculty members, with most identifying as novices or beginners, and very few considering themselves intermediate or advanced users. A significant proportion of faculty had little to no prior experience with AI tools, and their awareness of specific AI-driven applications for teaching was relatively low (Kitcharoen et al., 2024). This aligns with findings from other technology adoption studies that

emphasise training gaps and limited AI exposure as major barriers to faculty engagement (Moura & Carvalho, 2023).

Among the key determinants of AI readiness, perceived benefits and facilitating conditions emerged as significant predictors, reinforcing previous studies (Ayanwale et al., 2022; Chatterjee & Bhattacharjee, 2020; Salem & Mohammadzadeh, 2018). Faculty who perceived AI as beneficial for teaching and learning and who reported institutional support for AI integration demonstrated greater readiness to adopt AI tools. This underscores the need for structured AI training programs, improved institutional infrastructure, and ongoing technical support to facilitate AI adoption (Sharawy, 2023).

Notably, attitude towards AI was not a significant predictor of AI readiness, contrary to previous research that found positive attitudes to be strong indicators of technology adoption (Becker et al., 2017; Edwards et al., 2018; Sánchez-Prieto et al., 2019). This suggests that while faculty may express openness to AI, other factors, such as access to resources, perceived ease of use, and institutional encouragement, are more influential in determining actual adoption behaviours.

Demographic analysis revealed that older faculty members and female faculty exhibited lower AI readiness, highlighting the need for targeted interventions to support these groups. This finding suggests that universities should prioritise inclusivity in AI adoption efforts, offering tailored training and mentorship programs to bridge the digital divide among faculty (Fahmiyah et al., 2023; Shaouf & Altaqqi, 2018).

Despite the recognized potential of AI in higher education, several barriers to adoption persist. The primary challenges include lack of technical expertise, insufficient training opportunities, limited institutional support, and concerns regarding AI's role in academic assessment. These findings emphasise the importance of clear AI policies, faculty development initiatives, and strategic investments in AI-supportive infrastructure to promote widespread adoption.

Despite the recognised potential of AI to revolutionise teaching and learning, several

obstacles hinder its widespread adoption among faculty. One of the primary challenges reported by faculty members is the lack of technical expertise and training in AI tools and applications. Many faculty members perceived themselves as novices or beginners in terms of AI expertise, with limited experience in using AI tools in instructional settings (Moura & Carvalho, 2023). This lack of proficiency could not only undermine their confidence in utilising AI but also impede their ability to effectively incorporate AI-driven technologies into their teaching practices.

Limitations and Future Research

While this study provides valuable insights into faculty AI adoption, several limitations and areas for future research are outlined below.

1. This study applied the UTAUT model to examine faculty adoption of AI. However, other stakeholders, such as university administrators, IT personnel, and students, play a crucial role in AI adoption. Future research should adopt a multi-stakeholder approach, integrating Hwang et al.'s (2020) AI Role Framework to explore AI's function as a learning partner, tutor, or tool in higher education.
2. The target population was full-time faculty; however, Cave Hill campus employs more adjunct faculty than full-time faculty. Adjunct faculty may experience different challenges, such as limited access to institutional resources, professional development restrictions, and job security concerns, which could affect their readiness to adopt AI. Therefore, future research should include both full-time and adjunct faculty to provide a comprehensive understanding of AI adoption across different faculty categories.
3. This study used a cross-sectional research design, capturing faculty perceptions at a single point in time. Given the rapid evolution of AI technologies, faculty attitudes and adoption behaviours may

shift significantly over time. A longitudinal study tracking AI adoption trends, changes in faculty readiness, and evolving institutional policies would provide a more dynamic perspective on AI integration in higher education.

4. The UTAUT model was originally designed for general technology adoption and may not fully capture Gen AI-specific adoption factors, such as trust in AI-generated content, ethical concerns, and AI transparency. Future research should expand the UTAUT model to incorporate Gen AI-specific constructs, ensuring a more nuanced understanding of AI adoption.
5. The study was conducted before an official institutional AI policy was implemented. As a result, faculty responses reflect individual perceptions rather than adherence to institutional guidelines. A follow-up study after the AI policy's implementation could provide insights into how formalised policies impact faculty adoption and whether institutional AI support structures have improved.

Recommendations

While this study focused on the Cave Hill campus, its findings hold broader implications for higher education institutions worldwide, particularly in developing regions where technological advancements are often hindered by policy limitations, infrastructural challenges, and faculty resistance. As AI continues to evolve, it is essential for universities to take a structured approach to fostering faculty adoption and integration of AI technologies. To achieve this, several key recommendations emerge from the study.

1. HEIs should develop structured AI training programmes that cater to faculty members at different levels of expertise. Many faculty members have limited AI knowledge, which may contribute to resistance or reluctance to engage with

- AI-driven tools. Institutions should offer tiered training programmes, beginning with AI literacy modules that introduce faculty to basic AI concepts, before advancing to hands-on workshops and AI integration strategies. These training programmes should also include pedagogical applications of AI, demonstrating how AI-driven technologies can enhance student engagement, automate administrative tasks, and personalise learning experiences. Furthermore, a strong emphasis on ethical considerations should be embedded in the training to ensure that faculty members are aware of issues such as AI bias, data privacy, and academic integrity concerns.
2. In addition to faculty training, universities must strengthen their institutional AI infrastructure to facilitate seamless AI adoption. A major barrier identified in the study was insufficient institutional support and resources, which prevented faculty from experimenting with AI-driven teaching tools. Institutions should invest in AI-powered learning management systems (LMS), automated assessment tools, and adaptive learning platforms that allow for efficient grading, personalised feedback, and enhanced content delivery. Cloud-based AI resources can further enhance accessibility, allowing faculty to store and analyse student data securely. However, investments in AI infrastructure must be accompanied by a dedicated technical support team that can assist faculty with troubleshooting, best practices, and AI integration strategies to ensure that technology adoption is sustainable and user-friendly.
 3. Beyond infrastructure, universities must establish clear institutional AI policies that provide guidance on both faculty and student AI use. As AI tools become increasingly sophisticated, ethical considerations surrounding AI-generated content, plagiarism, and intellectual property rights will become more critical. Universities should create comprehensive policies that define acceptable AI usage in teaching, assessment, and research while ensuring that students and faculty alike are held accountable for AI-generated outputs. Faculty members should also be actively involved in policy development, to ensure that AI guidelines align with pedagogical objectives and reflect real-world classroom challenges. Institutions should consider forming AI governance committees that oversee policy enforcement, faculty concerns, and AI-related academic misconduct cases.
 4. It is also important to address demographic disparities in AI adoption, to ensure that all faculty members, regardless of age or gender, have equal opportunities to engage with AI technologies. This study found that female faculty and older faculty members exhibited lower AI readiness than their male and younger counterparts, which highlights the need for targeted interventions. Universities should offer specialised AI workshops for these demographic groups, ensuring that training materials resonate with their unique concerns and learning preferences. Additionally, institutions can promote AI peer mentorship programs, pairing faculty members who are more confident in AI use with those who are less experienced, creating a supportive learning community. By providing customised AI training resources, universities can bridge the digital divide, ensuring that faculty of all backgrounds are equipped with the necessary skills and confidence to engage with AI.
 5. Finally, universities should promote cross-disciplinary AI research collaborations to encourage faculty members from diverse academic backgrounds to explore AI applications in their respective fields. While STEM disciplines have traditionally led AI-driven innovations, there is growing interest in AI's potential in the arts, humanities, and social sciences.

Encouraging interdisciplinary research on AI applications in language learning, creative industries, and social sciences can foster innovative teaching and research projects. Institutions should establish research grants and funding opportunities to support faculty-led AI initiatives, allowing educators to experiment with AI-driven methodologies while contributing to the body of knowledge on AI integration in higher education.

Conclusion

This study provides empirical insights into faculty readiness to adopt AI, revealing that perceived benefits and institutional support are key predictors of AI readiness, while attitude toward AI does not have a significant influence. While the study focuses on the Cave Hill campus, its implications extend to HEIs globally, particularly in developing regions facing technological and policy-related challenges. Additionally, faculty perceptions of AI as both an opportunity and a threat play a pivotal role in shaping their readiness to adopt it. This dual perception emphasises the complexity of AI integration, where excitement about its potential benefits must be balanced with concerns about its impact on teaching and ethical implications such as privacy and fairness. Future research should explore longitudinal AI adoption trends, adjunct faculty experiences, and AI-specific adaptations of the UTAUT model. By addressing these gaps, institutions can develop a sustainable and well-supported AI adoption framework, equipping faculty with the knowledge and resources needed to integrate AI into their teaching and research practices in a meaningful and effective way.

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