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UNDERGRADUATE STUDENTS' PERCEPTION OF ARTIFICIAL INTELLIGENCE IN EDUCATION: A CASE STUDY OF A JAMAICAN UNIVERSITY

Tiou Kimar Clarke[1]

Abstract

This study investigated undergraduate students' perceptions of AI in education at the Jamaican Higher Education Institution (HEI). Employing a quantitative case study approach, an online survey was administered to 262 undergraduate students utilizing the Unified Theory of Acceptance and Use of Technology (UTAUT) model as a theoretical framework. The data analysis involved descriptive statistics and adherence to ethical research protocols. The findings revealed that students possess a general awareness of AI but lack practical experience with diverse AI tools. While recognizing AI's potential benefits of AI, concerns regarding originality, privacy, accuracy, and overreliance were identified. Students perceived a need for increased institutional support, including training, resources, and clear guidelines for using AI tools. This study highlights the influence of past experiences, ethical concerns, and media portrayals on AI adoption, emphasizing the need for a multifaceted approach to AI integration in the Jamaican HEIs. This approach should encompass targeted training, user-friendly tools, supportive learning environments, and proactive engagement with ethical considerations. This study contributes valuable insights to inform strategies for promoting the responsible and effective integration of AI technologies within HEIs

Keywords: Artificial Intelligence; Education; Higher Education; Jamaica; Technology Adoption.

Resumo

Este estudo investiga as percepções de estudantes de graduação sobre a IA na educação em uma Instituição de Ensino Superior (IES) Jamaicana. Utilizando uma abordagem quantitativa de estudo de caso, um questionário online foi aplicado a 262 estudantes de graduação, utilizando a Teoria Unificada de Aceitação e Uso da Tecnologia (UTAUT) como estrutura teórica. A análise de dados envolveu estatísticas descritivas e aderência a protocolos éticos de pesquisa. Os resultados revelaram que os estudantes possuem uma consciência geral da IA, mas carecem de experiência prática com diversas ferramentas de IA. Embora reconheçam os benefícios potenciais da IA, foram identificadas preocupações em relação à originalidade, privacidade, precisão e dependência excessiva. Os estudantes perceberam a necessidade de maior apoio institucional, incluindo treinamento, recursos e diretrizes claras para o uso de ferramentas de IA. O estudo destaca a influência de experiências passadas, preocupações éticas e representações da mídia na adoção da IA, enfatizando a necessidade de uma abordagem multifacetada para a integração da IA nas IES jamaicanas. Essa abordagem deve abranger treinamento direcionado, ferramentas fáceis de usar, um ambiente de aprendizado favorável e engajamento proativo com considerações éticas. O estudo contribui com insights valiosos para informar estratégias de promoção da integração responsável e eficaz de tecnologias de IA nas IES.

Palavras-chave: Adoção de Tecnologia; Educação; Ensino Superior; Inteligência Artificial; Jamaica.

[1] Ph.D. candidate in Business Administration at Texila American University (TAU), Guyana. E-mail: tiouclarke@gmail.com

INTRODUCTION

The proliferation of artificial intelligence (AI) and its associated technologies is fundamentally altering educational practices, particularly in HEIs. Given the potential of AI to reshape education today, a key reason for this research is to address the gap in targeted studies within Jamaican HEIs. The lack of context-specific research has hindered the development of culturally relevant AI integration strategies. Therefore, this study aimed to explore the perceptions of undergraduate students at a Jamaican HEI regarding AI's role of AI in their academic experience.

While AI and its associated technologies present significant opportunities to enhance teaching and learning, their integration raises crucial questions regarding their influence on students' critical thinking and academic integrity. This study seeks to assess students' familiarity with AI, explore the perceived benefits and challenges of its educational use, and identify factors influencing their acceptance of AI. Understanding these perspectives is critical for effective AI adoption and implementation in Jamaican HEIs.

To address these objectives, the study utilizes the Unified Theory of Acceptance and Use of Technology (UTAUT) model, which provides a framework for understanding technology adoption. This model examines factors, such as performance expectancy, effort expectancy, social influence, and facilitating conditions, that influence technology acceptance. It provides a structured approach to understanding the factors that influence students' AI acceptance.

Methodologically, the research employed a quantitative case study design using an online survey to collect data from undergraduate students at an HEI in Jamaica. The data will be analyzed using descriptive statistics, including Cronbach's alpha, to assess reliability. This article presents the findings of the investigation, beginning with the theoretical framework, followed by a detailed description of the methodology, presentation of the results, and discussion of the implications for future research and practice.

ARTIFICIAL INTELLIGENCE (AI) IN EDUCATION AND THE UTAUT PERSPECTIVE

The expanding integration of AI within HEIs necessitates a comprehensive understanding of students' perceptions for successful implementation. Globally, HEIs have invested in AI tools to enhance their educational experiences. However, Jamaica faces challenges in AI adoption, including infrastructure and digital literacy (WANG *et al*., 2023; KIM *et al.*, 2024).

To effectively deploy AI, implementers must prioritize student attitudes. This review evaluates the applicability of the Unified Theory of Acceptance and Use of Technology (UTAUT) in the Jamaican HEI context. It synthesizes recent research (2022-2025) to understand AI integration and student behavior. Specifically, this review defines AI based on international standards and examines the core components of UTAUT, namely performance expectancy, effort expectancy, social influence, and facilitating conditions. By focusing on these factors, this literature review aims to provide insights into student behavior patterns within AI-enhanced learning environments.

AI is a multifaceted domain encompassing a variety of technologies and methodologies aimed at simulating human intelligence and automation (JIANG *et al*., 2022). In other words, it is the science of making machines think and act like humans do. This view may stem from how AI is portrayed in the media and culture of a country. AI combines disciplines, such as computer science, mathematics, neuroscience, and cognitive psychology to develop systems capable of performing human-like reasoning, perception, and understanding (WANG *et al*., 2024; JIANG *et al*., 2022; GÖDE; KALKAN, 2023).

Different AI tools are used by students in their education. Many students are familiar with ChatGPT, particularly with its personalized interaction, ease of use, and feedback capability (RAHMAN; WATANOBE, 2023). Gemini, though less documented, is user-friendly (TINTERRI *et al*., 2024). PDF.ai allows for faster interactions with PDF documents through prompts and is user friendly (LIMA FILHO; PAIS; PAIS, 2023). Otter.ai, used for transcribing meeting notes in real-time, focusing particularly on accuracy (SALLAM, 2023). Chatbots can be tailored to the specific needs of the user and context of use (YAN *et al*., 2023).

While many students can identify with AI tools, a significant portion still lack this ability. This gap in knowledge may be due to limited exposure to AI technologies, insufficient integration of AI into academic curricula, or lack of foundational knowledge in the field (POLAK; SCHIAVO; ZANCANARO, 2022). This highlights a critical knowledge gap among tertiary students regarding emerging technologies.

Performance expectations demonstrate that AI enhances educational learning and academic performance (VENKATESH *et al*., 2003). Students' acceptance of AI increases when they notice improvements in their academic performance (USTUN *et al*., 2023). AI-powered evaluation tools improve students' problem-solving capabilities and comprehension scores (MAHAT *et al*., 2024). Students learn complex materials through the graduated instructions provided by intelligent teaching systems. The way people accept AI solutions for education depends heavily on how well they believe AI technologies can boost their educational performance.

The AI completion of educational work produces better learning experiences. AI tools for grading essays and research aid students in enhancing their writing quality at a lower cognitive cost (NASIR *et al*., 2024). Adaptive systems modify the learning materials they deliver for each student by assessing their performance, so that students learn according to their distinct learning preferences. Students can always access continuous academic assistance from AI chatbots. HEIs enhance student retention through modern educational technologies (ALTINAY *et al*., 2024).

Students' understanding of AI directly affects how they expect their performance to unfold and how they choose to adopt it. People with experience using AI adapt to it better when studying academic subjects. Students who lack AI experience difficulties in adapting because they prefer stability and dislike uncertainty (ZHOU; ZHANG; CHAN, 2024). The faculty's perceptions of AI affect how students view its implementation in their educational environment. Student acceptance of AI-driven educational tools will increase when teachers are educated on correctly handling AI systems.

The absence of AI technology in Jamaican educational institutions creates performance challenges for students (MUIRHEAD; O'FAITH, 2021). Limited access to AI-driven technologies in many firms restricts students' practical experience and exposure to these systems, hindering their ability to thrive in technologically advanced workplaces. Furthermore, students with underdeveloped digital skills may struggle to effectively utilize AI (SHAHRANI *et al*., 2024). Concerns regarding AI's potential for misuse and its ethical implications can also lead to resistance within society. A multi-pronged approach is needed, including the development of robust AI educational programs and strong institutional support for AI integration (OPESEMOWO; ADEKOMAYA, 2024).

Learning about AI functions as a bridge to increasing the number of individuals who accept higher education. Planned conferences, training courses, and university-based courses should incorporate AI as an essential component for universities and policymakers. Students who utilize AI resources become more aware of their benefits. Universities can acquire modern AI technological solutions through technological partnerships. Supporting AI involvement enables educational organizations to discover and appropriately apply their benefits (BUSCH *et al*., 2023; SHAHRANI *et al*., 2024).

According to Venkatesh *et al*. (2003), expectations include evaluating students' methods of incorporating AI technology. Student acceptance of AI depends on perceived ease of use because students seek software solutions that are easy to understand and operate. Digital literate students, according to Shaya, Madani and Mohebi (2023), will easily transition to AI technology. Alkhwaldi (2023) explained that usability problems, which include complex interfaces and unclear directions, limit

AI acceptance in developing nations. Implementing AI by the Jamaican HEI depends on easily usable digital systems and training for digital literacy competency.

Users base their acceptance of AI educational technology on their functionality (SHAHRANI *et al*., 2024). Students generally begin using AI whenever they encounter them. However, product adoption might decrease as users avoid learning products that present challenges through complicated interfaces. Owing to technical inexperience, the use of AI technology is restricted in Jamaican HEIs. Implementing consumer-friendly AI tools represents the leading solution to address these challenges (KIM *et al*, 2024; OPESEMOWO; ADEKOMAYA, 2024).

Every college student requires digital literacy training to enable the use of AI. Higher student self-assurance and academic performance can be achieved through educational institutions that provide students with AI tools. AI platforms become accessible to students through these programs, regardless of their background knowledge of technology. These practical lessons, which run on different Internet connections, allow schools to establish unbiased AI usage among all Jamaican students, regardless of their technology experience (BUSCH et al., 2023; SHAHRANI *et al*., 2024).

AI makers and educational institutions should create different types of digital competency solutions that are easily accessible to students. Student resistance to AI decreases when the technology remains simple and intuitive interfaces are provided. Features enabled by ease of access and simpler functions in AI systems drive students to employ them during their educational journey and boost their learning achievements. The accessibility of this technology will make AI highly beneficial for higher-level education (ESLIT, 2023; OPESEMOWO; ADEKOMAYA, 2024).

Students assess the practicality of AI technologies, constituting their expectations of effort (VENKATESH *et al*., 2003). Students tend to accept products that provide a straightforward experience; therefore, the adoption process strongly depends on user friendliness. According to Shaya, Madani, and Mohebi (2023), students with higher digital literacy skills demonstrate better adjustment to AI technology, indicating that technological awareness is critical. According to Alkhwaldi (2023), usability challenges represent the main barrier to AI usage in developing nations. The successful integration of AI into Jamaican HEIs depends on the development of user-friendly systems that receive digital training support.

Both functional AI technologies and user-friendly designs allow students to accept AI systems with minimal training. Advanced technology provides instructions, but complex interface designs can decrease the acceptance rates. In Jamaica, it is essential to consider the population's limited internet access. To accept AI technology, people must quickly understand the system (BUSCH *et al*., 2023; SHAHRANI *et al*., 2024).

Bridging the digital divide through comprehensive digital literacy training is crucial for successful AI adoption (SHAHRANI *et al*., 2024). Student-centered projects focused on fundamental AI concepts can enhance engagement and academic performance (KIM *et al.*, 2024). A tailored instructional approach that accommodates diverse digital literacy levels empowers Jamaican HEI students to effectively utilize AI. Furthermore, user-friendly interface design in AI tools simplifies learning and reduces student apprehension, promoting greater acceptance and utilization of AI in education (WANG *et al*., 2023).

Social influence, particularly from peers and faculty, is crucial for adoption of AI in education. Students are more likely to use AI when they see their peers successfully, highlighting the need for peer-to-peer support and knowledge sharing (ZHOU; ZHANG; CHAN, 2024). Faculty members, who actively use and promote AI in their teaching, can positively influence their perceptions and adoption. However, the low level of AI utilization in Jamaican institutions may limit this influence, emphasizing the need for increased faculty training and support. Institutional policies that encourage AI training and integration can further enhance social dynamics and promote wider AI adoption.

Organizations that create robust policies for AI training have the potential to enhance the public acceptance of these educational technologies. HEIs should provide tools and assistance to instructors who aim to elevate the syllabus for AI implementation (SHAHRANI *et al*., 2024). Owing to such policies, students will have more opportunities to use AI and benefit from the available digital tools. The support provided by governments and institutions creates conditions for improved AI technology adoption and utilization (BARRIENTOS *et al*., 2024).

The combination of infrastructure with training and institutional support ensures that everything functions properly (VENKATESH *et al*., 2003). Implementing AI in education requires devices, Internet connectivity, and technical support per Boca (2023). Unstable Internet access across Jamaica and other developing nations hinders its implementation (CELIK *et al*., 2022). Research on the United Theory Acceptance Model in the Middle East and Africa has demonstrated that institutional backing enhances AI performance (ALKHWALDI, 2023). The educational system of Jamaican universities should focus on AI adoption by enhancing their training programs and school infrastructure.

Adopting AI in your classroom, though it has many benefits, the challenges need to be acknowledged. According to Grassini (2023), students see AI tools as a passive resource rather than as an interactive companion. AI literacy not only looks at AI usage, but also understands its limitations and ethical considerations. Insufficient training in these areas can hinder students' ability to effectively use AI (KIM, 2023). Çela, Fonkam, and Potluri (2024) also discuss the concepts of original and critical thinking. With Generative AI, students might become reliant on these tools and focus less on

themselves. This translates to students not being able to think, lacking originality, and overreliance on AI tools.

Privacy concerns arise from the use of AI technology. Sabharwal, Kabha and Srivastava (2023) argue that AI tools require significant data collection to function effectively. There are concerns regarding the usage, storage, and sharing of data collected from users. KAMENSKIH (2022) highlighted the schools, and other institutions face significant breaches to data where sensitive information is concerned. Regulatory framework, such as the General Data Protection Regulations (GDRP) in Europe and the Data Protection Act 2020 in Jamaica, provisions for regulatory compliance for AI tools should be made (HALAWEH, 2023)

Factors outside the UTAUT model can also influence AI adoption in education. KANONT *et al*., (2024) found that experience with technology whether positive or negative can influence how people accept AI tools. Positive interactions yield higher acceptance, while negative interactions, such as frustration with previous tools, can lead to skepticism and resistance to AI adoption.

Media coverage and public discourse can influence AI acceptance. The portrayal of AI in mainstream media significantly affects public perception and acceptance (PEDERSEN, 2024). Positive media publications highlighting the benefits of AI can foster enthusiasm, while negative publications can incite fear and distrust (PEDERSEN, 2024; MOHSIN *et al*., 2024). Institutions need to figure out the narrative that they will promote surrounding the use of AI within teaching and learning (ASSAD, 2024)

Although the UTAUT model provides a valuable framework for understanding technology adoption, it has certain limitations that should be acknowledged. One limitation is its focus on individual acceptance, potentially overlooking the influence of organizational and contextual factors (ARDIANSAH, AZMI, ANISYKULILLAH, 2024). Additionally, UTAUT may not fully capture the dynamic and evolving nature of technological adoption as perceptions and behaviors can change over time. Critics argue that model constructions, such as performance expectancy and effort expectancy, may overlap or be difficult to distinguish in practice. Furthermore, UTAUT may not be equally applicable across different cultures and contexts because cultural values and norms can influence technological acceptance (LIU *et al*. 2023). Finally, the model primarily focuses on initial adoption and may not fully explain the continued use or discontinuation of technology (HUDA; AMIN, 2023). Despite these limitations, UTAUT remains a valuable tool for understanding the factors influencing AI adoption in education, particularly within the context of Jamaica and its research objectives.

AI is advancing globally, yet limited research exists regarding its application in jamaica. HEIs can use AI to improve accessibility, offer personalized learning, and automate administrative

procedures. However, primary hindrances include limited digital expertise, funding limitations, and insufficient infrastructure (VENKATESH *et al*., 2003; CELIK *et al*., 2022). To overcome these gaps, Jamaican institutions must provide affordable solutions, find answers to data protection concerns, and specialize in AI training (ALASADI; BAIZ, 2023).

This literature review provides a foundation for understanding the factors influencing AI adoption in Jamaican education institutions, directly supporting the study's objectives. By analyzing recent research through the lens of the UTAUT framework, this review explores how performance expectancy, effort expectancy, and social influence shape students' perceptions of AI. Specifically, this review highlights the importance of addressing digital literacy gaps among students to enhance their understanding and acceptance of AI.

Furthermore, this review emphasizes the need for user-friendly AI tools and supportive institutional policies to facilitate AI integration. These findings directly align with the study's objectives of assessing undergraduate students' familiarity with AI, exploring the perceived benefits and challenges of AI in education, and identifying factors influencing undergraduate students' perceptions of AI in their educational experience. The insights gained from this review will inform the methodology and data analysis of the study, enabling a comprehensive exploration of the research objectives.

By addressing these identified factors and challenges, Jamaican HEIs can develop targeted strategies to promote the effective integration of AI. This will help maximize their potential to enhance students' learning experiences. Ultimately, this study aims to contribute to the successful adoption and utilization of AI in Jamaican higher education, fostering a more innovative and technologically advanced learning environment for students.

METHODOLOGY

This study employed a quantitative case study approach, focusing on a single university in Jamaica, to gain an in-depth understanding of undergraduate student perceptions regarding AI integration in education. The case study method is particularly valuable for exploring complex phenomena within a specific context, allowing for rich data collection and analysis (MULYONO; HERNIAWATI; HIDAYAT, 2024; DWIYONO; TANNARONG, 2024; HASANAH; ARBARINI; SUTARTO, 2024). Quantitative case studies, like this one, utilize numerical data and statistical analysis to provide rigorous and generalizable findings (HASANAH; ARBARINI; SUTARTO, 2024). This approach aligns with recent research on technological adoption in educational settings, where

quantitative case studies have been used to investigate the factors influencing the acceptance and use of new technologies (OESTREICH; GUY, 2023; OLIVEIRA et al., 2024).

Primary data were collected using an online survey administered to 262 undergraduate students from a population of 3693 at the selected university. Online surveys offer several advantages for quantitative research, including cost-effectiveness, ease of administration, and the ability to reach a large and diverse sample size (L'ECUYER *et al*., 2023). The use of online surveys in educational research has increased significantly in recent years, particularly for exploring student perceptions and attitudes (AKHMEDJANOVA; KERIMOVA, 2024). The survey instrument contained six parts: collecting basic demographic information, students' perception of AI, perceived benefits and challenges of AI in education, factors influencing perception, factors influencing facilitating conditions, and recommendations (AGUIAR; CORREIA; CAMPOS, 2011). Pilot testing was conducted with 20 students to ensure the reliability of the survey and adjustments were made to achieve a Cronbach's alpha of 0.943.

Simple random sampling was employed to select participants from the university's undergraduate student population to ensure that each student had an equal chance of being included in the study. This method is widely recognized for its ability to minimize sampling bias and enhance the generalizability of the findings (QAMAR *et al*., 2024). Data collection took place over six months (September 2023 to February 2024), with the university administering the survey following ethical clearance procedures.

In addition to the primary data, secondary data were collected from published research papers accessed through Google Scholar. The selection criteria for these papers included relevance to the research topic, recency of publication (primarily 2022-2025), reputation of the source, and number of citations. This approach allowed for the triangulation of findings, comparing primary data with existing literature to enhance the validity of the study and generate new insights.

The collected data were tabulated using Microsoft Excel and analyzed using descriptive statistics (GIL, 2022). Subsequently, the data were organized and tabulated using mathematical calculations based on descriptive statistics. The results of the analysis are presented in the following section. Decisions based on the Likert scale were made using the weighted average formula. That is, the sum of the Mean is divided by the number of statements. The decisions were as follows:

If mean is equal or higher than weighted average (≥ 3.51), "***High Perception***"

If mean is less than the weighted average (< 3.51), "***Low Perception***"

Weighted Average = 122.72/35 = 3.51

Ethical approval for the study was granted by the university's ethics committee and informed consent was obtained from all participants before they completed the online survey. These procedures were in accordance with the Data Protection Act of 2020 in Jamaica, which ensures the protection of participants' rights and privacy.

RESULTS

The questionnaire was carefully crafted to collect information to characterize the profile of the research respondents. The questions collected sociodemographic information such as age, gender, school participation, and year of study.

The majority of participants (66.8%) were female, 29% were male, and 4.2% chose not to identify their gender. In terms of age distribution, 45.8% were–18-22 years old, 22.9% were 23-27 years old, 15.3% were 28-32 years old, and 16% were 33 years and older.

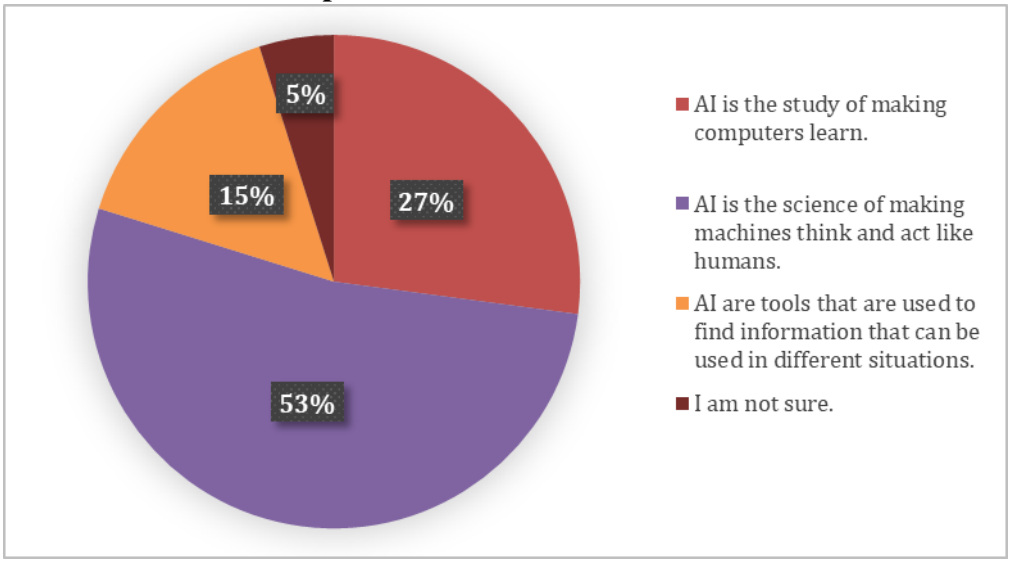
Most respondents (57.6%) were from the School of Business, Entrepreneurship, and Management. The remaining participants were distributed across the School of Humanities and Law (18.3%), College of Applied and Occupational Studies (13.7%), and School of Science and Mathematics (10.3%). Regarding their years of study, 43.1% were in their first year, 22.5% in their second year, 20.2% in their third year, and 14.1% in their fourth year.

The most common programs of study among the participants were Business Administration (30.5%), Human Resource Management (14.1%), and Information Technology (8.4%). Social Work, Operations Management, Allied Health, and Construction Site Management collectively accounted for 13.2% of respondents. Applied Psychology, Innovation and Entrepreneurship, Tourism and Hospitality Management, and Business Processing Outsourcing accounted for 6.5%. All other programs comprised less than 2% of the respondents.

This section presents the findings pertaining to Objective 1, which focuses on assessing undergraduate students' familiarity with AI. The analysis encompasses an examination of students' definitions of AI and their ability to recognize prevalent AI tools, offering insights into their overall comprehension of this burgeoning technological domain.

Graph 1 presents students' definitions of AI. The data revealed that 53% of respondents defined AI as "the science of making machines think and act like humans," 27% defined AI as "the study of making computers learn," 15% defined AI as "tools that are used to find information that can be used in different situations," and 5% stated that they were unsure of the definition.

Graph 1 – Student Definition of AI



Source: Self elaboration.

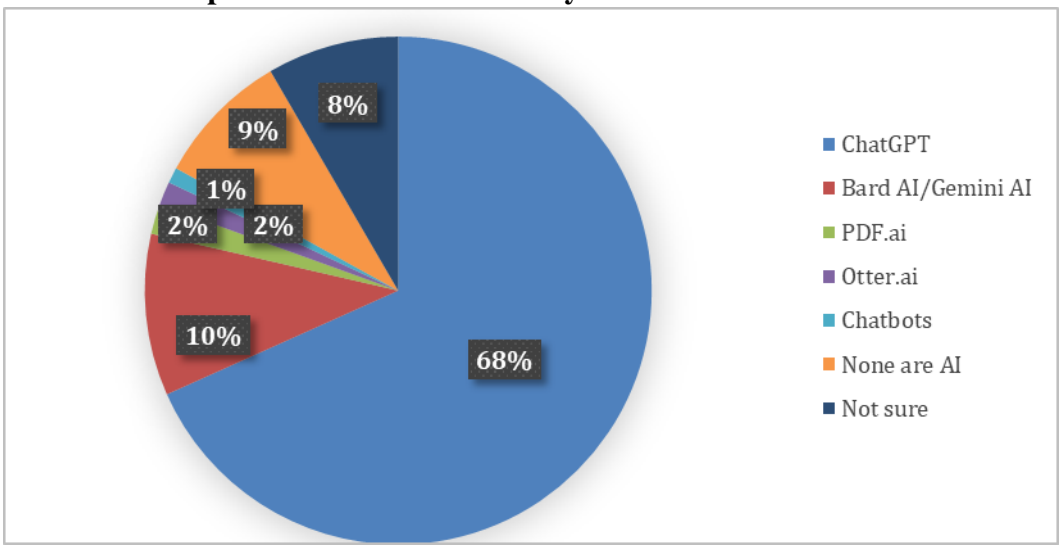
Most students associated AI with computers that mimic human intelligence. This aligns with the definition from JIANG *et al*. (2022), who noted that AI involves computers being trained to carry out human-like activities. This anthropomorphic view may be influenced by cultural factors and media portrayals, which often depict AI as human-like robots and intelligent machines. Although this perspective is not entirely inaccurate, it may lead to a limited understanding of the diverse applications and capabilities of AI technology.

Similarly, a significant proportion of students view AI as the study of making computers learn, aligning with a more technical understanding of the field. This suggests that some students recognized the role of machine learning in AI development and the significance of algorithms and data in AI learning. This finding is supported by several studies highlighting the importance of machine learning in AI education (WANG *et al*., 2024; JIANG *et al*., 2022; GÖDE; KALKAN, 2023).

The relatively low percentage of students who perceived AI as a tool for information retrieval highlights a potential gap in their understanding of AI's practical applications. AI tools are increasingly used in various areas, including education, to facilitate information gathering, analysis, and decision making. This finding suggests a need for educational interventions to broaden students' awareness of the diverse ways in which AI can be utilized to enhance learning and problem-solving (POLAK; SCHIAVO; ZANCANARO, 2022).

Graph 2 shows the students' familiarity with common AI tools. ChatGPT emerged as the most recognized tool, with 68% of students identifying it. Bard AI/Gemini AI was identified by only 10%, whereas PDF.ai, Otter.ai, and Chatbots each gained less than 5% recognition. Notably, 9% of participants indicated that none of the options presented were AI tools.

Graph 2 – Students Familiarity with Common AI Tools



Source: Self elaboration.

The high recognition of the ChatGPT is likely due to widespread media coverage and public accessibility. This aligns with the findings of Rahman and Watanobe (2023), who noted that ChatGPT is popular, particularly for its personalized interaction and feedback capabilities. However, the limited exposure to other AI tools may indicate limited integration within the university curriculum (POLAK; SCHIAVO; ZANCANARO, 2022). This suggests a potential need for increased awareness and educational initiatives regarding the diverse range of AI applications, which could hinder students' ability to fully leverage AI's potential of AI in their academic pursuits.

With reference to the UTAUT framework, unfamiliarity with certain AI tools could influence students' performance and effort expectancies (VENKATESH *et al*., 2003). If students are unaware of the potential benefits and applications of these tools, they may be less likely to perceive them as useful or easy-to-use.

This section presents the findings pertaining to Objective 2 and 3 of the study, which explores the benefits and challenges of AI in education at HEI and to assess the facilitating factors that influences facilitating conditions. The analysis encompasses an analysis of students' perceptions of AI, perceived benefits and challenges, factors influencing perception, and factors influencing facilitating conditions.

Table 1 presents the students' perceptions of AI's impact of AI on education. Overall, students held positive views of AI's potential benefits, reporting high perceptions of its enhancement of their educational journey and academic performance. They believed that AI tools enhance the efficiency, personalization, and understanding of complex topics. This indicates a general receptiveness among students towards the integration of AI in education and recognition of its potential to improve learning outcomes.

Table 1 – Student Perception of AI on the Educational Experience

Perception of AI	Mean	SD	Decision
Using AI technology has enhanced my educational experience at HEI.	3.75	1.02	High Perception
AI tools have positively impacted my academic performance at HEI.	3.61	1	High Perception
AI tools help me learn more efficiently and save time.	3.68	1.05	High Perception
AI-driven educational platforms provide a more personalized learning experience.	3.63	0.99	High Perception
AI tools make learning more engaging and interactive for me.	3.59	1.08	High Perception
AI tools assist me in understanding complex or challenging topics in my courses.	3.76	1.03	High Perception

Source: Self elaboration.

These positive perceptions align with the UTAUT model, particularly the constructs of performance expectancy and effort expectancy, suggesting that users are more likely to accept and utilize technology when they believe it will enhance their performance and require less effort (VENKATESH *et al*., 2003; USTUN *et al*., 2023). Students' views on AI's ability to improve efficiency, personalize learning, and aid in understanding complex topics support this notion. However, the relatively lower perception of AI's impact of AI on engagement and interactivity may indicate that some students perceive AI tools as passive learning resources rather than interactive learning companions. This could potentially affect their motivation and engagement with AI tools in educational settings (GRASSINI, 2023).

Table 2 - Factors Influencing Student Perceptions of AI in Education

Factors Influencing Perception	Mean	SD	Decision
Specific components of my courses at HEI have significantly shaped my perception of AI in education.	3.52	0.01	High Perception
Discussions with instructors about AI have positively influenced my views on its role in education.	3.33	1.03	Low Perception
Societal opinions and trends influence my views on the use of AI in education.	3.4	1.03	Low Perception
Interactions with peers regarding AI have impacted my perception of its importance in education.	3.4	1.01	Low Perception

Source: Self elaboration.

Table 2 presents the factors that influence students' perceptions of AI in education. Notably, students identify specific components of their courses as the most influential factors, suggesting that curriculum design and instructional practices play a key role in shaping their understanding and acceptance of AI. This emphasizes the critical role of thoughtful AI integration in educational settings to foster positive student perceptions.

However, the relatively low influence of social factors, such as discussions with instructors and peers, indicates a potential area for improvement. This finding contrasts with Zhou, Zhang, and Chin (2024), who found that students are more likely to use AI when they observe peers and faculty interacting with the tool. Institutions could prioritize opportunities for student-instructor and peer

discussions about AI, fostering a more collaborative and interactive learning environment, as recommended by Shahrani (SHAHRANI *et al*., 2024) and Barrientos (BARRIENTOS *et al*., 2024).

Overall, these findings suggest that while course content and design are crucial for shaping students' perceptions of AI, there is also a need to strengthen the social aspects of AI education. By promoting active engagement and knowledge sharing around AI, institutions can further enhance students' understanding and acceptance of transformative technology.

Table 3 – Student Perception of the Benefits of AI in Education

Benefits of AI	Mean	SD	Decision
I have frequently encountered AI tools or technologies in my coursework at HEI.	3.37	1.004	Low Perception
I am aware of specific AI-powered applications or platforms used in my courses at HEI.	3.44	1.087	Low Perception
I feel very comfortable using AI-driven educational tools or platforms.	3.44	1.011	Low Perception
I am familiar with the basic concepts of artificial intelligence (AI).	3.69	0.875	High Perception
AI tools have enhanced my learning experience at HEI.	3.45	1.015	Low Perception
I am interested in learning more about how AI can be used in education.	3.92	0.991	High Perception
I trust the accuracy and reliability of AI-driven educational tools.	3.27	1.043	Low Perception

Source: Self elaboration.

Table 3 presents the students' perceptions of the benefits of AI in education. Although students showed a high interest in learning about AI and were familiar with its basic concepts, their perception of specific benefits was lower. Notably, students reported less frequent encounters with AI tools within their coursework and expressed a lack of awareness regarding the specific AI-powered applications used in their courses. This suggests a potential gap between theoretical understanding and practical application of AI in educational settings.

Furthermore, the relatively low perception of comfort using AI-driven educational tools and platforms raises concerns about students' preparedness to actively engage with and utilize AI in their learning processes (SHAHRANI *et al*., 2024). This could be attributed to lack of experience, insufficient training, or concerns regarding the usability and reliability of these tools (ALKHWALDI, 2023). The low level of trust in the accuracy and reliability of AI-driven educational tools further emphasizes the need to address these concerns and build student confidence in the efficacy of AI to enhance their learning experiences (BUSCH *et al*., 2023; SHAHRANI *et al*., 2024).

Connecting these findings to the UTAUT model, lower perceptions of comfort and trust could negatively impact effort expectancy and performance expectancy, potentially hindering the adoption of AI tools in education (VENKATESH *et al*., 2003; CELIK *et al*., 2022). Specifically, students may perceive AI tools as requiring more effort to use, or may not believe that AI can effectively enhance their learning outcomes. To foster greater acceptance and utilization of AI, it is crucial to address these

concerns by providing students with hands-on experience, training, and support in using AI tools while also ensuring the transparency and reliability of these technologies (BUSCH *et al*., 2023; SHAHRANI *et al*., 2024).

Table 4 presents students' perceptions of AI challenges in education. Students are more concerned about originality, privacy, accuracy, and self-reliance than about practical challenges. These concerns align with discussions in the literature, which highlight growing concerns regarding originality, accuracy, and over-reliance on AI tools (KIM, 2023; ÇELA; FONKAM; POTLURI, 2024; SABHARWAL; KABHA; SRIVASTAVA, 2023). Addressing these potential negative implications of AI is crucial to fostering greater trust and acceptance among students.

Table 4 – Student Perception of the Challenges of AI in Education

Challenges of AI	Mean	SD	Decision
I have faced challenges or issues while using AI tools in my courses.	3.36	1.08	Low Perception
AI tools might hinder my originality of thoughts or creativity in assignments and projects.	3.57	1.032	High Perception
I am concerned about the privacy of my data when using AI-driven educational tools.	3.63	1.003	High Perception
I sometimes question the accuracy and reliability of AI-driven educational tools.	3.81	0.948	High Perception
Some AI tools are too complex and not user-friendly.	3.42	0.974	Low Perception
I have ethical concerns about the use of AI in education.	3.53	1.012	High Perception
Relying too much on AI tools might make students less self-reliant in their studies.	4.02	0.941	High Perception

Source: Self elaboration.

Despite these concerns, the relatively low perception of challenges related to complexity and user-friendliness suggests that students generally find AI tools accessible and easy to use (KIM *et al.*, 2024; OPESEMOWO; ADEKOMAYA, 2024). This perception aligns with the UTAUT construct of effort expectancy, as students may find AI tools easy to use and integrate into their learning processes. This may facilitate AI adoption, but it is essential to address concerns regarding performance expectancy and trust to ensure responsible and effective integration of AI in education.

These findings emphasize the need for a balanced approach to AI adoption in education that acknowledges and addresses the potential challenges while promoting the benefits and fostering student trust in AI technologies.

Table 5 presents the students' perceptions of the facilitating conditions for AI use in education. Overall, the perceptions were generally low, indicating that students perceived several areas where the institution could improve its support for AI integration. Students perceive a lack of adequate training, resources, support, and clear guidelines for using AI tools (MUIRHEAD; O'FAITH, 2021).

Table 5 – Student Perceptions of Facilitating Conditions for AI Use in Education

Factors Influencing Facilitating Conditions	Mean	SD	Decision
HEI provides adequate training and resources to help me effectively use AI tools in my coursework.	3.16	1.17	Low Perception
When I face issues with AI tools at HEI, there are easily accessible avenues or platforms where I can seek help or solutions.	3.2	1.08	Low Perception
The instructions and guidelines provided for AI tools at HEI are clear and easy to follow.	3.25	1.04	Low Perception
AI tools are seamlessly integrated into my courses, making it easy to use them in conjunction with the course content.	3.18	1.08	Low Perception
HEI possesses the necessary technical infrastructure (like reliable internet, software, and hardware) to support the effective use of AI in education.	3.28	1.16	Low Perception
The feedback I receive from AI tools at HEI is constructive and helps in my learning process.	3.26	1.03	Low Perception

Source: Self elaboration.

Furthermore, students perceive a lack of seamless integration of AI tools into their courses and a lack of the necessary technical infrastructure to support the effective use of AI in education. The low perception of constructive feedback from AI tools indicates that students may not receive sufficient guidance and support in their learning processes when using AI. Research highlights the importance of providing constructive feedback and support to students using AI tools (SHAHRANI *et al*., 2024; ALKHWALDI, 2023).

These findings directly relate to the UTAUT construct of facilitating conditions, which emphasizes the importance of a supportive environment and resources for technology adoption (BARRIENTOS *et al*., 2024). Low perceptions of facilitating conditions suggest that students may face challenges in using AI tools effectively, potentially hindering their acceptance and adoption of AI in education. Specifically, students may be less likely to adopt AI tools if they perceive a lack of support, resources, and integration in their learning environment.

These findings highlight the need for HEIs to invest in resources, training, and infrastructure in order to create a more supportive environment for AI adoption in education. Addressing these gaps in facilitating conditions can enhance student confidence and competence in using AI tools, ultimately promoting their acceptance and utilization of AI for learning (BARRIENTOS *et al*., 2024).

Table 6 – Student Perceptions of Additional Factors Influencing AI Adoption in Education

Gauging Further Influence	Mean	SD	Decision
I trust the course recommendations made by AI-driven platforms at HEI.	3.42	0.926	Low Perception
News and media reports about AI influence my perception of its role in education.	3.43	0.91	Low Perception
My past experiences with technology in general influenced how I perceive AI in education.	3.66	0.902	High Perception
Ethical concerns about AI play a significant role in shaping my views on its use in education.	3.72	0.952	High Perception

Source: Self elaboration.

Table 6 presents the additional factors that influence students' perceptions of AI adoption in education. Students perceive their past experiences with technology as influential in shaping their current views on AI in education (KANONT *et al*., 2024). This indicates that prior experience with technology may influence expectations and willingness to engage with AI tools.

However, students indicated a low perception of trust in the course recommendations made by AI-driven platforms, potentially reflecting skepticism towards the accuracy and reliability of AI-generated advice. Similarly, news and media reports on AI appear to have a limited influence on student perceptions, which could indicate a need for more critical engagement with media narratives surrounding AI. This finding contrasts with Pedersen (2024), who emphasized the influence of media reports on the acceptance of AI technology.

The high perception of ethical concerns about AI influencing students' views underscores the importance of addressing ethical considerations in AI education. Several studies have highlighted the importance of addressing ethical concerns in AI education (KIM, 2023; ÇELA; FONKAM; POTLURI, 2024). This includes responsible AI development and deployment, data privacy, algorithmic bias, and the potential impacts of AI on human values and autonomy.

While the factors presented in the table are not explicitly included in the original UTAUT model, they can be considered additional contextual factors that influence technology adoption. For instance, past experiences with technology can shape users' expectations and attitudes towards new technologies and influence their willingness to adopt them. Similarly, ethical concerns can act as a barrier to adoption if users perceive the technology as posing risks or violating their values.

DISCUSSION

This study investigated undergraduate students' perceptions of and readiness for the integration of AI in education within Jamaican HEIs. The findings revealed that, while students generally recognized AI's potential benefits of AI, challenges remain.

Students demonstrated a high level of interest in learning AI and were familiar with basic concepts. However, their understanding of AI's practical applications of AI and their experience with AI tools in educational settings is limited. This suggests a potential gap between theoretical understanding and practical application, highlighting the need for the increased integration of AI technologies and training in their use within the curriculum.

Students generally held positive views of AI's potential benefits, believing that AI tools could enhance their learning experiences and improve their academic performance. However, concerns

regarding originality, privacy, accuracy, and overreliance on AI tools have been identified. These concerns underscore the need for a balanced approach to AI adoption that acknowledges and addresses potential challenges while promoting the benefits and fostering student trust in AI technologies.

The study also revealed that students perceived several areas in which institutions could improve their support for AI integration, including providing adequate training, resources, and clear guidelines for using AI tools. Addressing these gaps in facilitating conditions can enhance students' confidence and competence in using AI, ultimately promoting its acceptance and utilization for learning.

Beyond the core constructs of the UTAUT model, this study identified additional factors influencing AI adoption, such as students' past experiences with technology, ethical concerns, and the influence of media portrayals and public discourse. These findings emphasize the need for a multifaceted approach to AI adoption in Jamaican HEIs, encompassing targeted training, user-friendly tools, a supportive learning environment, and a proactive approach to address ethical considerations.

When considering the integration of AI technologies within Jamaican HEIs, businesses, and society, it is crucial to prioritize culturally relevant and contextually appropriate solutions. Recommendations for AI adoption should be tailored to the unique cultural context of Jamaica by considering factors such as local values, norms, and technological infrastructure. This approach ensures that AI implementation aligns with the specific needs and priorities of the Jamaican population, promoting greater acceptance, adoption, and, ultimately, successful integration of AI technologies.

Developing and implementing comprehensive training programs is crucial for promoting AI literacy in Jamaican schools and HEIs (MOHSIN *et al*., 2024). These programmes should be tailored to the unique cultural context of Jamaica to ensure the relevance and engagement of students and educators.

This can be achieved by relating AI concepts to the current issues in Jamaica, highlighting local innovators, and addressing ethical concerns specific to the Jamaican context. The programs should also employ interactive and engaging teaching methods that resonate with the Jamaican learning style, incorporate local language, and provide practical examples relevant to the local context.

It is critical to utilize Jamaica's cultural strengths, such as creativity, innovation, community, collaboration, resilience, and adaptability to foster a positive and engaging learning environment for AI education. Potential barriers to AI adoption, such as the digital divide, fear of technology, and cultural resistance, should be addressed through targeted interventions and support systems. By incorporating these culturally responsive strategies, AI literacy programs can effectively promote the understanding and acceptance of AI technologies in the Jamaican education system.

Jamaican HEIs should embark on pilot programs that integrate AI tools into their learning environments (STRZELECKI; ELARABAWY, 2024). These pilot programs serve as a valuable opportunity to gather firsthand feedback from both students and educators, showcasing how AI can enhance the teaching and learning experience in the Jamaican context.

When designing and implementing these pilot programs, HEIs should prioritize key factors to ensure successful integration and adoption of AI tools. First, it is essential to provide a reliable infrastructure and resources. This includes ensuring consistent Internet access for all participants, as unreliable connectivity can hinder the effective use of AI tools. Furthermore, providing access to appropriate devices such as computers and tablets is necessary for students and educators to effectively engage with AI tools. Offering technical support and troubleshooting assistance can address any technical challenge that may arise during the pilot program.

Ethical considerations and data privacy must be prioritized. HEIs should proactively address concerns regarding data privacy and security and ensure compliance with relevant regulations and ethical guidelines. Educating students and educators about potential biases in AI algorithms and promoting critical thinking skills to evaluate AI-generated outputs are crucial to fostering responsible AI use.

Stakeholder engagement and support are key to a successful implementation. Fostering collaboration among students, educators, administrators, and AI developers ensures that the pilot program aligns with the needs and goals of all the stakeholders. Maintaining open communication channels to address concerns, gathering feedback, and ensuring transparency throughout the pilot program can further strengthen collaboration and support.

Evaluating the effectiveness and sustainability of a pilot program is essential. Establishing clear metrics and evaluation methods to assess the effectiveness of the pilot program in achieving its objectives enables data-driven decision making. Considering the scalability and sustainability of the pilot programme, successful initiatives can be expanded and integrated into a wider educational system. By addressing these factors, Jamaican HEIs can effectively leverage AI pilot programs to enhance teaching and learning, paving the way for informed and impactful adoption of AI in education.

Recognizing the transformative potential of AI in education, policymakers in Jamaica should prioritize the development of comprehensive policies and guidelines tailored to the unique needs of the local context (YU; YU, 2023). These policies should serve as guardrails to ensure responsible and effective AI integration within educational institutions.

Ethical considerations should be considered at the forefront. Clear guidelines that address potential biases, fairness, transparency, and accountability in AI applications are crucial. These

guidelines should be deeply rooted in local values and cultural norms to ensure alignment with Jamaica's educational goals and societal priorities.

Therefore, data privacy and security must be protected. Robust data protection measures aligned with global standards and compliant with regulations such as Jamaica's Data Protection Act 2020 should be implemented. This includes establishing clear protocols for data collection, storage, usage, and sharing, while prioritizing transparency and informed consent.

Equitable access and infrastructure are essential for successful AI adoption. Policymakers should strive to bridge the digital divide by ensuring equitable access to technology and reliable Internet connectivity for all students and educators. This may involve investing in infrastructure development, providing subsidized Internet access, and exploring partnerships with satellite Internet providers such as Starlink.

Comprehensive teacher training and support is crucial. Educators should be equipped with the knowledge and skills required to effectively integrate AI tools into pedagogical and andragogical practices. This can be achieved through AI literacy programs that address pedagogical and agricultural strategies, ethical considerations, and culturally relevant AI applications in education.

Policies should guide curriculum integration and assessment. These should outline the integration of AI concepts and tools into the curriculum, ensuring alignment with the learning objectives and assessment strategies. This may involve incorporating AI-related topics into existing subjects, creating new AI-focused courses, and exploring innovative assessment methods that leverage AI's capabilities.

To effectively promote the benefits of AI in education and foster community engagement within the Jamaican context, a multifaceted approach that incorporates public awareness campaigns and targeted initiatives is recommended (OLIVEIRA *et al*., 2024). This approach should aim to increase the understanding and acceptance of AI technologies by various stakeholders.

Public awareness campaigns should be strategically designed to demystify AI and highlight its practical applications and potential benefits in education. These campaigns can leverage various channels, including social media, workshops, and community events, to reach diverse audiences and encourage active participation. Key topics to cover include explaining basic AI concepts in an accessible manner, showing examples of AI in education, addressing ethical concerns, and highlighting career opportunities in AI.

Furthermore, it is crucial to promote community involvement in AI education initiatives. This can be achieved by organizing workshops and seminars that provide hands-on experience with AI tools, address ethical considerations, and showcase local success stories of AI in education. Engaging families

and community members in these initiatives can foster a supportive environment that encourages students to explore AI technology and its potential benefits.

These community initiatives should focus on providing basic AI literacy training, encouraging critical thinking skills, exploring the creative potential of AI tools, and fostering a sense of community and shared learning about AI. By actively involving communities and raising awareness, HEIs can create a collaborative ecosystem that fosters innovation, promotes digital literacy, and prepares students for the future.

This study had several limitations that should be acknowledged. First, the focus on a single HEI in Jamaica limits the generalizability of the findings to other institutions and to the broader Jamaican context. This narrow focus may not fully capture the diverse perspectives and experiences of students across HEIs.

The study relied on descriptive analysis, which may have limited the depth of the insights derived from the data. Although descriptive statistics provide a valuable overview, they may not reveal the full complexity of the relationships and trends within the data. Incorporating more advanced statistical techniques could potentially provide nuanced insights.

The quantitative nature of the study, while providing objective data, may not fully capture the nuances of students' experiences with AI in education. Students' perceptions, attitudes, and experiences with AI are likely influenced by various factors that are not fully captured through quantitative measures alone.

Future research should expand on the findings of this study to gain a more comprehensive understanding of AI adoption in education. First, exploring the use of AI across all levels of education in Jamaica, from primary schools to tertiary institutions, could provide valuable insights into the varying needs and challenges associated with AI integration. Employing a mixed-method approach that combines quantitative and qualitative data collection would allow for a more nuanced and in-depth analysis of these issues.

Second, a qualitative study focusing specifically on the influence of AI within the HEI studied in this research could provide a deeper understanding of the lived experiences of students and educators engaging with AI technologies. This could involve conducting interviews, focus groups, and observations to gather rich data on perceptions, attitudes, and challenges related to AI adoption in this specific context.

Finally, expanding the research scope to include other industries in Jamaica and the wider Caribbean could provide valuable comparative data. This would allow for an examination of whether perspectives on AI differ across countries and sectors and whether there is regional consensus on AI

usage and its implications. Such comparative studies could inform policy development and promote collaboration on AI adoption strategies across the Caribbean, leading to a more informed and effective integration of AI technologies.

CONCLUSION

This study investigated undergraduate students' perceptions of AI in education at a Jamaican HEI and revealed key insights into their awareness, concerns, and perceived needs regarding AI integration. Students demonstrated a general awareness of AI and its potential benefits but lacked practical experience with diverse AI tools. Concerns regarding originality, privacy, accuracy, and over-reliance on AI tools were evident, highlighting the need for a balanced approach to AI adoption that addresses these challenges while promoting benefits.

Students perceived a need for increased institutional support, including training, resources, and clear guidelines for using AI tools. This underscores the importance of facilitating conditions such as providing adequate infrastructure, training, and support to foster AI adoption in education. The study also highlights the influence of past experiences, ethical concerns, and media portrayals on AI adoption, emphasizing the need for a multifaceted approach to AI integration in Jamaican HEIs.

The findings contribute to the understanding of AI adoption in education and inform strategies for promoting responsible and effective integration of AI technologies within HEIs. This study's insights can guide HEIs in developing comprehensive AI literacy programs, fostering a supportive learning environment, and proactively addressing ethical considerations to promote the successful adoption of AI in education.

However, this study had limitations that should be acknowledged. First, the focus on a single HEI in Jamaica limits the generalizability of the findings to other institutions and to the broader Jamaican context. Second, reliance on descriptive analysis may have limited the depth of the insights derived from the data. Finally, the quantitative nature of this study may not fully capture the nuances of students' experiences with AI in education.

Future research should expand on the findings of this study to gain a more comprehensive understanding of AI adoption in education. This includes exploring AI adoption across different educational levels and industries in Jamaica and the wider Caribbean, employing mixed-methods approaches to gain deeper insights into student and educator experiences with AI.

By addressing the identified challenges and leveraging the potential benefits of AI, HEIs can foster a more innovative and technologically advanced learning environment for students, prepare them for the future workforce, and promote digital literacy within Jamaican society.

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