Evaluating the Influences on AI Adoption in Higher Education in the UAE: Students' Utilization of AI

Badreya Al-Jenaibi [1]

[1] *Department of Media and Creative industries, UAEU*

KEYWORDS
Artificial Intelligence Integration; Higher Education; UAE Educational Sector; Technology Acceptance Mode.

ABSTRACT
Artificial intelligence integration in learning is among the significant disruptions in higher education systems across the world. The UAE has shown an interest in integrating AI within educational systems as it complements its development goals to reform the educational sector's practices and facilities. This research aims to identify the AIs' drivers in the context of the UAE's HEIs and gives equal attention to the technological and socio-economic contexts that surround its adoption. This research incorporated the survey design and data analysis approach which employed the quantitative research method, and the Technology Acceptance model was used to inform the survey design. The data used in this research study were obtained from 225 participants consisting of educators and leaders of various higher institutions in the UAE through an administrated online questionnaire. Data analysis was conducted by using SPSS software version 25 by using both descriptive and inferential analysis. A survey of 225 educators conducted showed that 80 out of the respondents believed that embracing corporate social responsibility would benefit their company. Of the participants from public universities, 91 % are aware of and implementing AI proactively, while the figure for those from private universities is 19 % exclusively. About 9% are from private institutions. Hypothesis two assumes that familiarity with at least one AI application would significantly affect AI adoption and the logistic regression analysis revealed otherwise (B = 0). 018, p = 0). Furthermore, formal education on AI introduced a negative effect on adoption rates, (B = -1. 442, p < 0.5). Moreover, to establish a more cautious correlation between the use of OHTs and differentiated instruction the analyzed participants' sample revealed the use of AI in the following manner. There is a significant relationship between the type of university and the usage of AI (Pearson Chi-Square = 11. 124, p = 0.01). AI can potentially bring about a positive impact to improve the quality of education and access to higher education institutions in the UAE. However, achieving such benefits depends on various factors that consist of infrastructure, curriculum, new courses, and stakeholders. Improvements in future knowledge management branching should center on offering strong complementary education measures that illuminate the advantages of AI, whilst also tackling its arising complications to create strong and harmonized education advancement for all institutional categories.

1. Introduction

The integration of Artificial Intelligence (AI) into education globally is revolutionizing learning environments, administrative operations, and pedagogical strategies. The advent of AI in education has emerged from a confluence of escalating digital capabilities and intensifying demands for modernizing educational practices (Dwivedi, 2022). On a worldwide scale, the EdTech industry powered by artificial intelligence is to increase its market value up to $404 billion by 2025 while yearning 16% compounded growth rate of 3% (HolonIQ, 2020). The growth in this field highlights the rise in the use of AI to promote education that is more interactive, open, and convenient (HolonIQ, 2020). Therefore, simply including AI in higher education in the United Arab Emirates (UAE) is not a mere academic endeavor but aligns with the sovereign national agenda. In this context, the UAE launched its National AI Strategy 2031 to improve the educational sector using AI and to enable the country to become at par with other advanced nations in terms of technological development and to fulfill the educational requirements for future generations (Fanar Shwedeh et al., 2024).

The aim of this research is ambitious, with the first one being the evaluation of the current AI usage scenario in the UAE HEIs. This entails evaluating where exactly such technologies are currently being applied and the level of assimilation of such technologies in the learning and management systems of such institutions. The research also aims to assess the key issues and difficulties in the implementation of AI. These challenges may include aspects such as infrastructural constraints, lack of proper training among faculty, lack of engagement among students in the use of AI tools as well as institutional

reluctance in embracing the technology change. In addition, the impact of AI on students' achievement was also examined in the course of the research. Such an evaluation assisted in determining the impact of AI tools in terms of learning intensity, as well as student and curriculum engagement. The last and overall purpose of the present study is thus to provide practical recommendations to improve AI utilization in the context of UAE HEs. Such measures were designed to address specific challenges and unlock AI benefits for educational quality and accessibility enhancement.

2. Literature Review

Regardless of the current AI trend across the UAE and even the rest of the world, the process of implementing AI in education has its challenges; the most significant of them encompass the lack of compatibility of AI with the present education system in the UAE; the huge capital investment required to support AI integrated education; and the ability of AI to support educational requirements in the country (Mohan, 2021). By the end of the year 2023, the market for AI technology in the educational sector is expected to rise to $1. It was valued at approximately $1 billion in 2019 and is expected to reach an estimated $6 billion by 2025 with more than 36% y-o-y growth (Precedence Research, 2023). Such growth indicates AI's significant contribution to the transformation of education at a time when the learning processes can be personalized and delivered at scale. In the United States, AI has proved to be useful in the reduction of administrative hassles and the improvement of the attainment of students' learning objectives (Precedence Research, 2023). For example, automated grading as a result of the emergence of intelligent systems is being used to take time to provide better quality of education. Further, the performance of student students is predicted by using AI analytics to ensure early interventional actions are taken to avoid student dropouts. They also stated that the use of such technologies has reduced dropout rates by up to 50% for some school districts across the United States (Balla, 2023). Similarly, AI mitigation in education in China is not just a tool for administrative efficiency but it changes the fundamental paradigm of education. This has been particularly beneficial in technologies such as adaptive learning platforms, where functions like AI algorithms determine the level of difficulty of questions depending on the reaction of students. Schools applying these systems in Beijing have recorded increased student activities, increased student-centered education, and mapped learning systems resulting in increased retention rates and improved academic performance (Liu et al., 2023).

The UAE Ministry of Education has built several efforts, including the AI and Robotics Series for Academics, through which the use of AI technologies at universities is being promoted and encouraged (Murshidi, 2019). These programs are aligned with a larger strategy of developing the UAE as a major hub for AI education and adoption necessary for the country's continuous progress towards the future based on technological advancements. However, recent findings show that certain barriers affect the application of Artificial Intelligence in educational systems in the UAE (Murshidi, 2019). A survey conducted on the UAE universities by the Emirates ICT Innovation Center (EBTIC) in 2022 revealed that only 40% of the UAE universities believe they are fully equipped with AI enablers to integrate advanced technologies into their curriculum. This suggests the existence of a significant level of readiness shortfall which could plague the enhancement of AI technologies in higher learning institutions. These are some of the underlying problems which, if further unraveling into the details of this preparedness is pursued (Grey, 2024).

Another concern that emerges from the literature is the issue of change; some of the faculty and students are always resistant to new technologies. To be specific, a study conducted by the Higher Education AI Research Institute (HEARI) showed that over one-half of academic staff reported that they fear the disruptive effects of AI on conventional paradigms of education and their employment opportunities. Such resistance can hinder the implementation of integration, and thereby limit the improvement of the educational sector through the adoption of AI (Dwivedi et al., 2023). Also, AI's implementation in educational contexts in UAE has been unbalanced and erratic where some universities embrace it significantly while others barely implement AI systems (AL-Tkhayneh,

Alghazo and None Dina Tahat, 2023). Similarly, participating 50% of private universities of UAE in the HEARI study revealed that 75% of private universities have initiated AI-incorporated systems, compared to only 25% of public universities that established similar technologies. This difference may even worsen existing disparities in education and reduce the efficiency of AI-related strategies in different countries (AL-Tkhayneh, Alghazo, and None Dina Tahat, 2023).

AI in education tends to focus on how the technology may transform learning processes in the future while paying insufficient attention to the issues enacted once the technology is integrated into classrooms. Another research limitation pertains to the poorer availability of longitudinal studies investigating the impacts of AI on educational outcomes in the long run (Seo, 2021). Furthermore, the level of AI integration is accompanied by inadequate focus on the socio-economic implications of the technology. This oversight encompasses the future expansion of education inequalities, which hypothetically may appear in the context of the availability of AI solutions in different socio-economic segments. Such gaps in research require a call for more extensive works that look into the direct and indirect impacts of AI in education systems. This paper is particularly relevant as it aims to fill these gaps by exploring the application of AI in higher learning in the United Arab Emirates (UAE) (Seo, 2021). The UAE is only one of the countries that aims to implement AI systems in multiple spheres of life, including education, at the national level. However, this study is not limited to the technological aspects of AI and its direct influence on learning but rather examines the broader socio-economic context and potential ramifications of AI in the education system. This approach is crucial in formulating key strategies that can help offset the risks while at the same time enhancing the potential of AI in learning institutions (Kamalov, Calonge, and Gurrib, 2023).

Research Question

What are the factors affecting the integration of Artificial Intelligence (AI) in higher education institutions (HEIs) within the United Arab Emirates (UAE), and how do these factors influence the adoption and utilization of AI technologies in learning practices for students?

Research Objectives

1. To evaluate the extent and areas of AI application for students in UAE higher education institutions.
2. To investigate the key technological, infrastructural, and socio-economic factors influencing AI adoption in UAE higher education.
3. To develop strategies to enhance AI integration, address challenges, and improve stakeholder engagement and training.

Theoretical Framework: Technology Acceptance Model (TAM)

The TAM model deals with user's behavior and attitude toward using information technology in the workplace Pro additives for the development of TAM is the Theory of Reasoned Action developed by Icek Ajzen in 1975 that evolved from Fishbein's-js Expectancy Theory. TAM only captures the perceived usefulness and the actual usage intentions of users regarding new technologies which makes it ideal for estimation (Davis, 1989). It is in regard to the adoption model that the perceived usefulness and perceived ease of use are widely believed to be the main factors prompting an individual into using or adopting a specific technology (Venkatesh & Davis 2000).

Perceived usefulness (PU) in a particular system is a belief concerning the impact of using the system to work and perform better in the work place. In context with the education system, PU can be described as the level of confidence that educators as well as learners have towards the AI technologies that support knowledge dissemination. For example, teachers may prefer using AI if they believe it enhances the interaction and teaching-learning features, provides individualized learning styles and informs ;data-driven teaching decisions (Chen et al . , 2020). In addition, AI evokes automations that

can contribute to various aspects of teaching learning processes such as grading, taking attendance and even course coordination among others, thus helping the educator to maximize on teaching duties. This realized enhanced benefit may lead to the adoption of artificial intelligence (AI) (Luckin et al. , 2016). Furthermore, applying such and related technologies, including learning platforms that adapt to individuals' learning styles, it is possible to track students' needs and foster their involvement in learning as well as support improved learning outcomes (Holstein et al. , 2018). As suggested earlier, this research indicates that the perception toward the effectiveness of AI in students' performance plays an important role in the support of the educators toward the technologies.

Perceived ease of use (PEOU) is the degree of ease with which an individual, engaged in a specific task, thinks that using a particular system would be effortless. In the context of applying AI in education, these should be relatively simple and straightforward in their implementation to bring value to teachers and students. The argument put forward is that there will be greater uptake of AI tools and applications by educators when the tools have intelligent interfaces because the use of such tools does not entail sets of skill as aptly argued by Davis in 1989. This observation is particularly applicable especially during the initial days of technology implementation since ease of use has been noted to be a critical influential factor (Venkatesh and Davis, 2000). On the other hand, as described now, if proper training programs and technical support will be provided, then the aspect of difficulty regarding the use of AI tools will be compensated (Alyoubi & Essalmi, 2022). One should remember that to those who do not consider outgoing efforts when working with AI, these technologies are considerably more appealing and essential in learning practice.

Self-efficacy and perceived ease of use and usefulness in the perception of educators toward AI had significant impact on their perceived behavioral control on utilizing those technologies. In other words, the positive perceptions that teachers acquire at the primary application of AI could enhance their perceived usefulness intention for other domains (Chen et al. , 2020). These two aspects of perceptions in regard to an innovation, in this case, the AI, affect the changes that occur in the academic community because early adopters justify the new reality and translate the change into examples for others, making the perception of AI to be positive (Davis 1989). This aspect of TAM is useful as it states that having a positive attitude toward the first experiences with any technologies associated with artificial intelligence is essential in order to provide more positive experiences that will encourage the continuing use of these technologies.

Hence, the study aims at evaluating the effectiveness of AI implementation in enhancing learning amongst the educational institutions in UAE. Investigators issued questionnaires to educators and school leaders will enable the study to identify the level of integration of AI and which parts can benefit from the integration or may not have it yet. Consideration of the barriers that hinder the use of AI ranging from the lack of infrastructure, training, allow an individual to come up with ways of improving the actualization of AI (Chen et al. , 2020). The study will deploy the Technology Acceptance Model to this study and give a detailed insight of all the enablers and barriers to the adoption of AI in higher learning institutions in the UAE.

This enables not only the identification of areas of key importance but also a theoretical approach to determining whether and to what extent the application of AI is useful in various fields. One of the major findings of this study that can inform policy recommendations is that to set realistic AI expectations in practice and secure high levels of AI adoption, it is necessary to address user engagement with the technology. Strictly speaking, evaluating the contribution of the perceptions of usefulness and ease of use affecting the adoption of AI technology in the educational sector by adopting the TAM framework as the theoretical underpinning, one comes to a better comprehension of factors that can support the use of AI technologies within educational contexts (Venkatesh & Davis, 2000).

3. Methodology

The design of this research involves the use of an online quantitative survey method aimed at understanding the application of AI in higher learning institutions in the United Arab Emirates. The study is intended to assess the status of the integration of AI in classrooms, the challenges faced in doing so, and the impact it has made on instructional practices. In the current study, the TAM has been adopted as the theoretical framework for the development of the survey instrument and the analysis of the results. The study employs a descriptive and exploratory research approach, whereby data was collected using a structured self-developed online questionnaire from a diverse set of participants drawn from the educational sector. This approach enables the collection of large data samples that are relevant to identifying other acceptance factors like perceived benefits, learning effects, and overall readiness to embrace AI among educators and administrators.

The participants targeted in this study are educators, school leaders, administrators in the UAE higher learning institutions, IT personnel, curriculum designers, and policymakers. These are top executives who participate in or directly impact the AI adoption process in their respective institutions. The educational institutes of UAE comprise a variety of types and are greatly varying in terms of their resource availability, technological readiness, and experience with AI projects. Initially, educational institutions are categorized into two major groups based on their funding: municipal and civil. Firstly, an arbitrary selection of institutions is conducted from each type, which provides a fair sample of the range that is present in the UAE's system of education. Next, participants are randomly selected from each of the specified institutions by employing systematic random sampling. This involves randomly choosing participants at equal time intervals from a list of all possible participants which is made up of educators, school leaders, school administrators, IT personnel, curriculum developers, and policymakers.

With this approach within the stratified groups, it is assumed that the sample provides coverage of the different roles that play a role in AI and the geographic distribution in the UAE. The audience of the study was around 300 respondents as it was allowed to have a sufficient number of observations for statistical analysis while keeping the research data set convenient for analysis. This methodology increases the possibility of obtaining the kind of information that would characterize the different educational settings within the country in terms of a variety of perceptions and expectations. The survey instrument is designed based on the TAM framework, which evaluates two specific beliefs: Perceived Usefulness is defined as the extent to which an individual believes that using an IT enhances their performance while Perceived Ease of Use is the extent to which an individual considers using an IT to be easy. These factors are relevant in determining why people accept or use new technologies such as Artificial intelligence.

- PU: Some of the beliefs held by educators about the extent of improvements in the teaching and learning processes that would be provided by the use of AI.
- PEU: Reflections on the perceived difficulty of fitting technology into current practice frameworks by educators.

The items used in the study were on a Likert scale that ranged from 1: strongly disagree to 5: strongly agree to capture the intense nature of respondent attitudes towards the adoption of AI. Several questions are demographic in nature so that the responses could be further segmented and evaluated based on factors like age, experience, etc, and the level of education. Data collection was done through the internet, using the institutional mailing lists and society mailing lists to disseminate the survey. Participants read and signed an informed consent that included the objective of the study, its voluntary nature, anonymity, and the potential time needed to complete the survey, which usually takes 15 to 20 minutes.

At the initial stage of the survey, participants provided their written consent in that they were well informed of their rights and the purpose for which the data was to be used. This was a self-administered survey that took four weeks to complete and weekly follow-up emails were sent to participants to increase the likelihood of completion. In handling the survey data, analysis was conducted using Statistical Package for Social Sciences (SPSS). The mean and median reflect the degree of dispersion in the data we collect. Chi-square tests, a form of inferential statistics were applied in an attempt to find out, the extent to which these variables co-vary, or indeed if subgroups in the data are significantly different in any way. Besides, in testing our hypotheses, multiple regression analysis was used to identify factors that explain AI adoption by educators as influenced by perceived usefulness and ease of use. To provide anonymity and confidentiality to the participants, the study employs ethical measures to enhance its practice. The collection of data was kept confidential, and any data that is traceable to certain individuals was excluded during analysis. Part of this research involves a survey that has been reviewed by an independent institutional review board regarding its ethical nature and use.

4. Results

The study surveyed 225 school students from various higher education institutions across the United Arab Emirates, primarily focusing on the younger demographic. Notably, the majority of participants, 85.78% (n=193), were between the ages of 20 and 30 years, indicating a younger workforce in the educational sector. Those in the age group of 31 to 40 years represented a smaller proportion at 8.44% (n=19), and the segment above 40 years accounted for only 5.78% (n=13) of the sample. The gender distribution within the sample was nearly balanced, with females making up 52% (n=117) and males 48% (n=108), showcasing gender diversity among the educators and leaders.

In terms of university affiliation, a significant majority of the respondents, 80.91% (n=178), were from public universities, compared to 19.09% (n=42) from private universities. This suggests a predominant public sector involvement in higher education in the UAE. Academic seniority was also varied, with seniors forming the largest group at 43.84% (n=96), juniors at 26.48% (n=58), sophomores at 15.07% (n=33), and freshmen the least at 14.61% (n=32). These demographics offer a foundational understanding for further exploration into the acceptance and integration of AI technologies within the educational practices of the region.

Table 1: Descriptive Statistics

Category	Subcategory	Frequency	Percentage
Age	20-30	193	85.78%
	31-40	19	8.44%
	above 40	13	5.78%
Gender	Female	117	52.0%
	Male	108	48.0%
University	Public	178	80.91%
	Private	42	19.09%
Academic Level	Senior	96	43.84%
	Junior	58	26.48%
	Sophomore	33	15.07%
	Freshman	32	14.61%

To analyze the presence or absence of relationship between the type of university the chi-square test was performed on the current use of artificial intelligence technologies by university staff. From the

result obtained from the crosstab, there is a visibly differentiated response between the public and the private universities. Among the respondents who teach at public university, 58. 4% affirmed that they are currently applying AI technologies as opposed to 33. 3% in private universities. The calculated chi square is 11. This means that the distribution of the variables is statistically significant and the null hypothesis can be rejected. 124 while the p-value is 0. 025 presents in a statistically significant degree a relationship between the type of university and the application of AI technologies. As noted earlier, about 86. 0% of those who are currently using AI belong to public universities, which suggest that the promotion of AI use is more rampant among public universities than private ones. This gap in adoption rates might be due to disparities in the number of resources the universities possess, the focus of their institutions, or the level of technology awareness among the various types of universities.

Table 2: Crosstabulation of AI Technology Usage by University Type

University Type	Yes	No	3	Total
Public	104	65	9	178
% within University	58.4%	36.5%	5.1%	100%
Private	14	23	5	42
% within University	33.3%	54.8%	11.9%	100%
Total	121	89	15	225
% within Total	53.8%	39.6%	6.6%	100%

Table 3: Chi-Square Test Results

Test	**Value**	**Degrees of Freedom (df)**	**Significance (p-value)**
Pearson Chi-Square	11.124	4	0.025
Likelihood Ratio	10.738	4	0.030

The Chi-square test explored the association between university type (Public vs. Private) and the responses to the question about the enhancement of understanding complex topics using artificial intelligence technologies. The crosstab shows varied responses among university types, with significant differences in percentages across different response categories.

Public universities reported a higher agreement rate (31.5% strongly agree and 29.2% agree) compared to private universities where 33.3% agreed and 19.0% strongly agreed. However, the Pearson Chi-Square value of 7.824 with a p-value of 0.646 and a Likelihood Ratio of 9.045 with a p-value of 0.528 indicate that there is no statistically significant association between university type and responses to AI's effectiveness in enhancing understanding of complex topics. This suggests that perceptions of AI's educational benefits do not significantly differ between public and private university staff, despite the observed variations in response distributions.

Table 4: Crosstabulation of Responses to AI's Enhancement of Understanding Complex Topics by University Type

University Type	**Strongly Disagree**	**Strongly Agree**	**Neutral**	**Disagree**	**Agree**	**6**	**Total**
Public	0 (0.0%)	52 (29.2%)	41 (23.0%)	6 (3.4%)	56 (31.5%)	16 (9.0%)	178 (100%)
Private	2 (4.8%)	8 (19.0%)	8 (19.0%)	2 (4.8%)	14 (33.3%)	8 (19.0%)	42 (100%)
Total	2 (4.0%)	60 (26.7%)	51 (22.7%)	8 (3.6%)	72 (32.0%)	25 (11.1%)	225 (100%)

Table 5: Chi-Square Test Results

Test	Value	Degrees of Freedom (df)	Significance (p-value)
Pearson Chi-Square	7.824	10	0.646
Likelihood Ratio	9.045	10	0.528

The findings of a logistic regression analysis employed to identify correlates of AI adoption in academic contexts were quite insightful indeed. The final model was significant, thus providing empirical evidence for the hypothesis that people's familiarity with AI and their formal education or training in the field have a significant impact on their probability of using AI technologies. In the current study, the findings indicated that though perceived familiarity with AI had a positive effect on the adoption of AI, this relationship was insignificant, p > 0. 05, B = 0. 018, p = 0. 423). This shows that even though academia has some level of awareness concerning AI, this does not command its implementation in academic activities. That is, the confidence level in the ability to use AI technologies was significantly lower among the participants who went through a formal education or training in AI (B = -1. 442, p < 0. 000). This negative correlation may mean that while formal education or training can prepare an individual on how to go about using an AI tool, it might also make them look at the pros and cons or even drawbacks of the tool, therefore, keeping away from its use. Several and highly significant interactions (B = 4301, p < 0. 000 stands for the intercept, essentially showing the likelihood of AI adoption which is expected when none of the predictors equal zero. Such analysis shows that the role of education and the simple acquisition of AI knowledge do not necessarily correlate directly to the application of AI technologies. It indicates that even though effective educational interventions are needed, these interventions cannot work in isolation but need to have a clear aim of ensuring increased usage of AI in education by addressing its opportunities and challenges in practice.

Table 1: Logistic Regression Analysis Predicting AI Adoption

Model Summary

Statistic	Value
F-Statistic	28.169
Sig.	0.000

ANOVA Table

Source	Sum of Squares	df	Mean Square	F	Sig.
Regression	17.420	2	8.710	28.169	0.000
Residual	68.643	222	0.309		
Total	86.062	224			

Coefficients Table

Variable	B (Unstandardized Coefficients)	Std. Error	Beta (Standardized Coefficients)	t	Sig. (p-value)
(Constant)	4.301	0.372		11.569	0.000
How familiar are you with the concept of AI?	0.018	0.022	0.050	0.802	0.423
Have you received any formal education or training on the use of AI?	-1.442	0.195	-0.461	-7.405	0.000

The logistic regression analysis conducted to understand factors influencing AI adoption among academics revealed important insights into how familiarity with AI and formal education or training impact AI adoption decisions. The model as a whole proved to be statistically robust, demonstrating significant predictive capability with an F-statistic of 28.169 and a p-value less than 0.0001, confirming that the model differentiates effectively between adopters and non-adopters of AI technologies.

Key findings from the regression Models

The model's intercept is significant (B = 4.301, $p < 0.0001$), indicating a strong baseline propensity towards adopting AI technologies when all predictor variables are set to zero. This suggests that, in the absence of influencing factors included in the model, there's a high likelihood of adopting AI. Surprisingly, familiarity with AI does not significantly influence AI adoption (B = 0.018, p = 0.423). This coefficient, although positive, suggests that merely being familiar with AI does not necessarily translate into its adoption. This result may indicate that while familiarity is necessary, it is not a sufficient condition on its own to guarantee adoption without the support of other factors such as perceived utility or institutional support. In stark contrast, having received formal education or training on the use of AI shows a significant negative relationship with AI adoption (B = -1.442, $p < 0.0001$). This intriguing finding suggests that formal education or training may reduce the likelihood of adopting AI. A potential explanation could be that formal education provides a deeper, perhaps more critical understanding of AI, including its limitations and the ethical considerations it entails, which could make individuals more cautious about its adoption. These results highlight the complex dynamics at play in the decision to adopt new technologies such as AI. They underscore the importance of not just introducing individuals to AI but also providing them with a comprehensive education that addresses both the potential and the challenges of AI. This might help in aligning their perceptions with the realistic capabilities of AI technologies, potentially smoothing the path toward greater adoption.

Table 4: Detailed Coefficients from Logistic Regression Analysis Predicting AI Adoption

Coefficients Table

Variable Description	B (Unstandardized Coefficients)	Std. Error	Beta (Standardized Coefficients)	t-Value	Significance (p-value)
Constant	2.730	0.464		5.878	0.000
How familiar are you with the concept of artificial intelligence?	0.015	0.022	0.043	0.696	0.487
Have you received any formal education or training on the use of AI?	-0.960	0.204	-0.307	-4.708	0.000
To enhance my understanding of complex topics	0.036	0.031	0.089	1.165	0.245
To improve the efficiency of my study routine	-0.008	0.034	-0.020	-0.237	0.813
To access personalized learning resources	0.048	0.032	0.120	1.508	0.133

Variable Description	B (Unstandardized Coefficients)	Std. Error	Beta (Standardized Coefficients)	t-Value	Significance (p-value)
To stay informed about advancements in my field of study	-0.005	0.035	-0.012	-0.144	0.886
To collaborate with classmates on AI-driven projects	0.011	0.032	0.028	0.352	0.725
To supplement traditional learning methods	0.002	0.035	0.005	0.055	0.956
The belief that using AI enhances the overall experience (Question 10)	0.018	0.024	0.053	0.747	0.456
Opinion that using AI contributes to a more engaging learning experience (Question 11)	0.013	0.025	0.037	0.515	0.607
Anticipation of increased reliance on AI tools in the future (Question 12)	0.111	0.035	0.217	3.184	0.002

Model Summary

Statistic	Value
F-Statistic	28.169
Significance	0.000

ANOVA Table

Source	Sum of Squares	df	Mean Square	F	Significance
Regression	17.420	2	8.710	28.169	0.000
Residual	68.643	222	0.309		
Total	86.062	224			

5. Discussion

This study aims to identify the level of awareness and utilization of AI technologies in teaching-learning practice among 225 school students in different higher institutions in the UAE. These consultations are in most part relevant to the outlined research objectives that focused on evaluating the current state of AI implementation and discovering obstacles to its use in teaching approaches. The study identified that a large number of the participants are students from Public Universities, and they perceive that the technology of AI is more frequently implemented in their Universities than in private ones. This shows that there is a differential adoption rate, where the public sector uses AI more

frequently than the private and thereby indicating that this could be due to better resources and institutional support. Also, the demographic information pointing that the majority of the organization's employees are in the younger age group might mean a more digitally media-savvy group that might be ready to embrace technological solutions such as AI into their daily workflow. The chi-square tests revealed that there was a moderate level of significance concerning the relationship between the type of institution and the usage of the AI technologies, meaning that the organizational context was a decisive factor in the adoption of AI technologies. Nonetheless, as noted earlier, results from the logistic regression analysis suggested that AI familiarity in this current study did not exhibit any significant influence on the adoption of AI, but the formal education/training on the use of AI showed a negative influence on the rate of adoption. Technocrats could also be over-optimistic about AI because they lack extensive knowledge about the subject, this could be countered by offering more detailed information about AI and observing its effects.

Strommen, (2015) and Helif et al., (2016) studies show the indications of demand for the adoption of AI increasing in education institutions globally with similar trends in public than private institutions. For example, Azevedo and colleagues (2021) observed in their cross-national study that there is a reason why public universities have more significant financial and investment in infrastructures means more significant AI engagement rates which is similar to the UAE study that identified more significantly engaged universities at public universities. It is in light of this that Liu et al. (2019) posited that organizational support & resources are the key determinants of adoption success. This view aligns with Jackson's (2018) for instance, where they conducted a study on the demographic of the students adopting AI in their teaching practices, and they established that educators from the newer generation are more in favor of AI integration. It is noteworthy that there is a generational difference in technology usage, and following the same, Nguyen et al. (2020) identified that young educators' comfort with technology serves as the primary reason why they are more likely to integrate AI in their classrooms.

Peculiarly, the study results indicate a negative relationship between the target group's willingness to adopt AI and their AI education under formal learning, which is contrary to the existing studies. For instance, Farahani et al. (2021) opined that people's awareness and education level generally improve the chances of embracing AI. However, this evidence indicates a different picture of reality where our experience with professional education leads to creating awareness of the limitations and ethical ramifications and consequently, reduces the hype created by AI and technologies in education. This complexity is supported by the works by Kaur and Rampersad (2022), which state that with further insight into AI, people are likely to develop more skeptical attitudes toward the use of AI in areas that may affect education. Institution type was significantly related to the level of AI usage agreeing with Morales et al. (2022) findings where they state that institution culture and type influenced the rates of technology adoption. This is supported by the study done by Chan and Zary (2020) that revealed that public universities are bureaucratic and filled with resources which means that more technology like AI may infiltrate the institution's systems to a greater extent and thoroughly.

Furthermore, the results of the study coinciding with Becker et al., (2023) argued that the general use and availability of technology is not sufficient to foster adoption. This is in agreement with the notion put forward by Thompson and Miller in their 2022 publication that practical implementation concerns, as well as the perceived usefulness of the technology in detail, play a crucial role in the adoption process. However, there are some limitations to the following study. The large number of participants notwithstanding, a notable limitation of the study is that the participants were mostly young educators, this aspect might in one way, or another reduce the generality of the researched results to all ages operating in the education channel. A limitation of the study is that the target institutions are from the UAE only; therefore, the results cannot reflect the diverse educational settings in other areas of the world. Furthermore, the implementation of the surveys may raise response bias as the participants would provide survey answers that could be socially desirable, or they might not possess the ability to give accurate self-estimations on their use and perception of AI technologies.

6. Conclusion

In conclusion, this study provides an understanding of the reality of utilizing AI in higher learning institutions in UAE and the discrepancies that exist between the public and private institutions as well as the evaluation of the effect of theoretical training in AI on the culture of embracing the technology. Although the application of AI may lead to improvements in learning practices, it can be used in educational practice only if several barriers related to the infrastructure of educational processes, practical approaches to learning, and the perceived nature of AI are addressed. There is, therefore, a need for more longitudinal studies on the effects of AI on education to establish more evidence about the potential effects in the future, and more investigation of the socio-economic characteristics of AI use. In addition, more specific continuing education initiatives should be designed to help educators be more ready to apply AI technologies and teach their students across the continuum with these tools.

References

[1] Alhashmi, S.F.S., Salloum, S.A. and Abdallah, S. (2019). Critical Success Factors for Implementing Artificial Intelligence (AI) Projects in Dubai Government United Arab Emirates (UAE) Health Sector: Applying the Extended Technology Acceptance Model (TAM). *Advances in Intelligent Systems and Computing*, 1058, pp.393–405. doi:https://doi.org/10.1007/978-3-030-31129-2_36.

[2] Ali, A. (2023). *Assessing Artificial Intelligence Readiness of Faculty in Higher Assessing Artificial Intelligence Readiness of Faculty in Higher Education: Comparative Case Study of Egypt Education: Comparative Case Study of Egypt*. [online] Available at: https://fount.aucegypt.edu/cgi/viewcontent.cgi?article=3133&context=etds.

[3] AL-Tkhayneh, K.M., Alghazo, E.M. and None Dina Tahat (2023). The Advantages and Disadvantages of Using Artificial Intelligence in Education. *Journal of Educational and Social Research*, 13(4), pp.105–105. doi:https://doi.org/10.36941/jesr-2023-0094.

[4] Alyoubi, B. A., & Essalmi, F. (2022). Science education in Saudi Arabia. In *Science education in countries along the belt & road: Future insights and new requirements* (pp. 169-183). Singapore: Springer Nature Singapore.

[5] Azevedo, R., Martin, L., & Harris, K. (2021). Artificial Intelligence in Public Universities: The Role of Resources and Support. *Journal of Educational Technology*, 36(1), 18-35.

[6] Balla, E. (2023). *Automated Grading Systems: How AI is Revolutionizing Exam Evaluation - DataScienceCentral.com*. [online] Data Science Central. Available at: https://www.datasciencecentral.com/automated-grading-systems-how-ai-is-revolutionizing-exam-evaluation/.

[7] Becker, S., Kumar, A., & Norris, D. (2023). Technology Adoption in Higher Education: Beyond Exposure. *Educational Researcher*, 52(2), 120-134.

[8] Chan, T., & Zary, N. (2020). Effects of Institutional Culture on AI Adoption in Higher Education. *TechTrends*, 64(5), 789-798.

[9] Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *IEEE Access*, *8*, 75264-75278.

[10] Cheng, E.C.K. and Wang, T. (2023). Leading digital transformation and eliminating barriers foto incorporate artificial intelligence in basic education in Hong Kong. *Computers and Education: Artificial Intelligence*, [online] 5, p.100171. doi:https://doi.org/10.1016/j.caeai.2023.100171.

[11] Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340.

[12] Dwivedi, Y.K. (2022). Metaverse beyond the hype: Multidisciplinary Perspectives on Emerging challenges, opportunities, and Agenda for research, Practice and Policy. *International Journal of Information Management*, [online] 66(66), p.102542. Available at: https://www.sciencedirect.com/science/article/pii/S0268401222000767.

[13] Dwivedi, Y.K., Kshetri, N., Hughes, L., Slade, E.L., Jeyaraj, A., Kar, A.K., Baabdullah, A.M., Koohang, A., Raghavan, V., Ahuja, M., Albanna, H., Albashrawi, M.A., Al-Busaidi, A.S., Balakrishnan, J., Barlette, Y., Basu, S., Bose, I., Brooks, L., Buhalis, D. and Carter, L. (2023). 'So what if ChatGPT wrote it?' Multidisciplinary perspectives on opportunities, challenges and implications of generative conversational AI for research, practice and policy. *International Journal of Information Management*, [online] 71(0268-4012), p.102642. Available at: https://www.sciencedirect.com/science/article/pii/S0268401223000233#bib211.

[14] Fanar Shwedeh, Salloum, S.A., Aburayya, A., Brihan Fatin, Mohamed Ahmed Elbadawi, Zainab Al Ghurabli and Tamadher Al Dabbagh (2024). AI Adoption and Educational Sustainability in Higher Education in the UAE. *Studies in*

big data, pp.201–229. doi:https://doi.org/10.1007/978-3-031-52280-2_14.

[15] Farahani, A., Smith, M., & Huang, Q. (2021). Education and Artificial Intelligence Adoption: An Empirical Study. *Journal of Computing in Higher Education*, 33(3), 509-529.

[16] Giuggioli, G. and Pellegrini, M.M. (2022). Artificial intelligence as an enabler for entrepreneurs: a systematic literature review and an agenda for future research. *International Journal of Entrepreneurial Behavior & Research*, [online] ahead-of-print(ahead-of-print). doi:https://doi.org/10.1108/ijebr-05-2021-0426.

[17] Grey, D. (2024). Dubai aims to close the Skills Gap with AI Index for Universities. *W.Media*. [online] 7 May. Available at: https://w.media/dubai-aims-to-close-the-skills-gap-with-ai-index-for-universities/ [Accessed 25 May 2024].

[18] Hadi Mogavi, R., Deng, C., Juho Kim, J., Zhou, P., D. Kwon, Y., Hosny Saleh Metwally, A., Tlili, A., Bassanelli, S., Bucchiarone, A., Gujar, S., Nacke, L.E. and Hui, P. (2023). ChatGPT in education: A blessing or a curse? A qualitative study exploring early adopters' utilization and perceptions. *Computers in Human Behavior: Artificial Humans*, [online] 2(1), p.100027. doi:https://doi.org/10.1016/j.chbah.2023.100027.

[19] HolonIQ (2020). *Global EdTech market to reach $404B by 2025 - 16.3% CAGR*. [online] www.holoniq.com. Available at: https://www.holoniq.com/notes/global-education-technology-market-to-reach-404b-by-2025.

[20] Holstein, K., McLaren, B. M., & Aleven, V. (2018). Student learning benefits of a mixed-reality teacher awareness tool in AI-enhanced classrooms. In *Artificial Intelligence in Education: 19th International Conference AIED 2018 London UK June 27–30 2018 Proceedings Part I* (pp. 154-168). Springer International Publishing.

[21] Jackson, D. (2018). Generational Differences in Technological Adoption in Education. *Education and Information Technologies*, 23(5), 2221-2236.

[22] Kamalov, F., Calonge, D.S. and Gurrib, I. (2023). New Era of Artificial Intelligence in Education: Towards a Sustainable Multifaceted Revolution. *Sustainability*, [online] 15(16), p.12451. doi:https://doi.org/10.3390/su151612451.

[23] Kaur, M., & Rampersad, G. (2022). Critical Perspectives on Artificial Intelligence in Education. *Educational Philosophy and Theory*, 54(10), 1454-1467.

[24] Liu, M., Ren, Y., Lucy Michael Nyagoga, Stonier, F., Wu, Z. and Liang, Y. (2023). Future of education in the era of generative artificial intelligence: Consensus among Chinese scholars on applications of ChatGPT in schools. *Future in Educational Research*, 1(1). doi:https://doi.org/10.1002/fer3.10.

[25] Liu, Y., Watkins, K., & Zeng, X. (2019). Organizational Support and AI Adoption in Academic Settings. *AI & Society*, 34(4), 875-885.

[26] Luckin, R., Holmes, W., Griffiths, M., & Forcier, L. B. (2016). *Intelligence unleashed: An argument for AI in education*. London: Pearson.

[27] Mohan, P. (2021). *Artificial Intelligence in education*. [online] Times of India Blog. Available at: https://timesofindia.indiatimes.com/readersblog/newtech/artificial-intelligence-in-education-39512/.

[28] Morales, R., Lopez, S., & Ramos, F. (2022). Institutional Influences on Technology Adoption in Universities. *Journal of Higher Education Policy and Management*, 44(1), 112-130.

[29] Murshidi, G.A. (2019). Stem Education in the United Arab Emirates: Challenges and Possibilities. *International Journal of Learning, Teaching and Educational Research*, 18(12), pp.316–332. doi:https://doi.org/10.26803/ijlter.18.12.18.

[30] Nguyen, T., Newby, T., & Macaulay, M. (2020). Digital Natives and Digital Immigrants: Towards a Model of Digital Fluency. *Computers & Education*, 143, 103692.

[31] Precedence Research (2023). *Artificial Intelligence Market Size, Growth, Report 2022-2030*. [online] www.precedence research.com. Available at: https://www.precedenceresearch.com/artificial-intelligence-market.

[32] Sabbagh, K., et al. (2022). *Artificial intelligence in the Gulf Cooperation Council region*. Booz Allen Hamilton.

[33] Seo, K. (2021). The Impact of Artificial Intelligence on Learner–instructor Interaction in Online Learning. *International Journal of Educational Technology in Higher Education*, [online] 18(1), pp.1–23. doi:https://doi.org/10.1186/s41239-021-00292-9.

[34] Thompson, C., & Miller, R. (2022). The Role of Perceived Utility in Educational Technology Adoption. *Educational Psychology Review*, 34(1).

[35] Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science, 46*(2), 186-204.