



International Journal of Theory of Organization and Practice (IJTOP)

Journal homepage: <https://journals.gaftim.com/index.php/ijtop/index>



Impact of Artificial Intelligence on Students' Learning abilities at Universities in the United Arab Emirates

Zeinab Ali¹

¹Researcher, United Arab Emirates

ARTICLE INFO

Keywords:

Artificial Intelligence,
Students, Learning Abilities.

Received: Dec, 27, 2023

Accepted: Jan, 20, 2024

Published: Feb, 12, 2024

ABSTRACT

This research focused to investigate the impact of Artificial Intelligence (AI) on the students' learning abilities. It was stated according to a recent case that the fast growth of AI technology into our world has caused significant changes into the learning abilities of the students. And this study has led to an influence on factors such as assignments, class exercises, and study projects on the Artificial intelligence. Therefore, the AI has caused an unpredictable effect on students' learning abilities. A descriptive study with the sample size of 50 is planned to conduct the research. The results of the research helped to identify the impact of AI on students' learning abilities. In a nutshell, this study investigate the profound influence that artificial intelligence (AI) is having on students' capacity for learning and provide recommendation for better plan and result accordingly.

1. INTRODUCTION

Artificial Intelligence is a hotly debated topic that often divide opinions. "It is composed of computer systems which are assigned to complete instructions or duties that normally needs intelligence of extraordinary humans". "Today, the AI has disrupted the market with its features and qualities" [1]-[4]. "With writing professional emails to getting a complete high-level assessment done in seconds via AI tools such as ChatGPT". "The artificial intelligence has proven to ease the lives of millions". "AI have created a new paradigm shift in the way knowledge can be accessed to students" [5]-[8]. "This issue originates from the idea that hugely relying on AI systems, like ChatGPT, can weaken the critical thinking abilities and self-driven inquiry that are essential to the learning process" [9]. Because we cannot assure if students are using AI systems correctly [10]-[13]. Though AI can be a good help in getting accurate information, but some students are seen to use ChatGPT to complete all their tasks, homework,

assignments etc.

This research focuses to address the existing controversy of the impact of AI on students' learning abilities in UAE [14]-[17]. A sample size of 50 students and a descriptive study methodology will be implemented to conduct the research. With the help of our research, we shall investigate to find if AI enhances or weakens the thinking abilities of students [18]-[21].

"The recommendation is to direct the students towards the correct usage of AI systems in education" [22]-[24]. "This includes defining new restrictions and enhancing features (example adding Mandatory MCQs, Question Answer to be answered by student after asking each question) to make sure that AI is used correctly by students". "By taking these steps, we hope to pave the way for a future in education where technology coexists peacefully with students' natural learning talents and enhances them" [25].

2. LITERATURE REVIEW

The literature review has been conducted on 10 existing research studies and proper reference has been given to the articles/research papers used below [26], [27]–[30]. The reason for not adding more literature review is because the topic “Impact of Artificial Intelligence on the students’ learning abilities” has less existing research papers conducted.

[31]–[33] the authors used flipped classroom approach and AI-enabled personalized video recommendations as independent variable, learning outcomes (performance and engagement of students) as dependent variable, and learning motivation level as mediating variable” [34]. “The research outcome indicates that the implementation of flipped classroom can have positive impact on both learning performance and engagement among students”. “This method contains an innovative teaching method which is empowered by AI”. [35]–[38] conducted the research study in various institutions of China with 30 samples”. “The authors used higher institutes’ Artificial Intelligence Capability (composed of resource, skills, and consciousness) as independent variables and students’ self-efficacy and creativity and students learning performance as dependent variables” [26], [39]. “The outcome of the research indicates that higher institutes’ Artificial Intelligence positively impacts students’ self-efficacy and creativity and students’ learning performance through mediating variables”. [1], [2], [40], [41] conducted the research study in various institutions of Indonesia”. “The authors used blended learning-based AI as independent variable, and students’ science literacy as dependent variable. The outcome of this research shows that blended learning-based AI have a positive effect size of 0.93 on students’ science literacy”. [5], [6], [42], [43] conducted the research study in Malaysia. The authors used applications of AI (adaptive learning, teaching evaluation, virtual classroom) as independent variables and methods of teaching and learning as dependent variables. There is a mediating between impact of teaching and learning [44]. The outcome of the research demonstrates that Artificial intelligence in education have a positive impact on teaching level and student learning quality, while admitting that there are potential challenges that could be faced in the future. [7], [8], [45], [46] conducted the

research study in China. The authors used Construction of a scientific and reasonable teaching quality evaluation system as independent Teaching quality (specifically, the quality of graduates) as dependent variables. The mediating variable used was results-oriented teaching quality evaluation system. “The outcome of the research demonstrates that suggested evaluation system will have a good impact on graduate students’ academic competency, professional competitiveness, and general growth, supporting long-term advancement in higher education”. [10], [13], [47], [48] conducted the research study in India. The authors used Utilization of artificial intelligence (AI) in education as independent variables and Transformation of professions, creation of new vocations, Alteration of the characteristics and division of labor in educational operations as dependent variables [49]. The mediating variable used was the educational process. “The outcome of the research demonstrates that AI becoming widely available in low-cost devices and education being revolutionized”. “This will result in positive impact to professional positions, material, and instructional techniques, ultimately changing the educational environment for the better”. [15], [50]–[52] conducted the research study in Australia. The authors used Utilization of Artificial Intelligence (AI) in education as independent variables and Educational implications on the way students learn, evolution of how institutions teach as dependent variables. The mediating variable used was technological advancements in higher education. “The outcome of the research demonstrates the use of affordable technologies such as artificial intelligence (AI) has a positive impact as it revolutionizes education by adapting learning techniques, creating new jobs, and revolutionizing teaching”. [16], [53]–[55] conducted the research study in New York, NY, and United States. The authors used participation in the early childhood artificial intelligence (AI) platform (PopBots) as independent variables, Children’s understanding of AI concepts (knowledge-based systems, supervised machine learning, generative AI), Children’s perceptions of robots (viewed as toys, viewed as people, and perceived intelligence relative to themselves) as dependent variable, performance on the AI assessments (potentially mediating variable the relationship between

participation in the platform and children's understanding of AI concepts) [18], [20], [54], [56] and the moderating variable used was age of the children. "The outcome of the research demonstrates the PopBots, an early AI teaching tool, led to 70% comprehension; this illustrates the importance of early AI education, with younger children viewing robots as smart toys and older children viewing them as less intelligent". [22]-[24], [57] conducted the research study in Canada. The author has used Curriculum of artificial intelligence at the fundamental education stage as independent variable, and Students' key competencies (composed of knowledge competence, team competence, and learning competence) as dependent variable. The outcome of the research demonstrates that basic education AI courses significantly improve students' knowledge, collaboration, and learning skills, which positively affects how ready they are for the intelligent era. [1]-[4] conducted the research study in India. "The author has used implementation of Artificial Intelligence (AI) in higher education as independent variable and learning capacities of students as dependent variable". [5]-[8] "Moderating variables used are institutional policies, faculty training, technological infrastructure, student readiness". The outcome of the research demonstrates that students' learning capacities are greatly improved when Artificial Intelligence (AI) is incorporated into higher education". It highlights the significant potential that artificial intelligence (AI) has to shape the future of the education sector and offers useful information to institutions and teachers". [10]-[13] Most research studies on the influence of artificial intelligence in education are centered on other countries, with little attention given to the United Arab Emirates. This indicates a clear research gap; This research study will be highlighting the necessity for a specialized investigation in the UAE. "As per the research conducted, we identified a dilemma on whether AI is impacting the students' learning abilities in UAE as it has been observed that students are heavily relying on tools like ChatGPT etc. to complete their tasks, and assignments". [14]-[17] "To the best of our knowledge, this topic has not been thoroughly investigated previously in UAE, and the possible change in learning processes could have significant effects on their overall capacity for learning" [18]-

[21]. "That's why this study attempts to find out if the widespread of AI with respect to UAE in academic assignments, class exercise, projects is indeed improving students' ability to acquire knowledge or if it could reduce their ability to learn on their own".

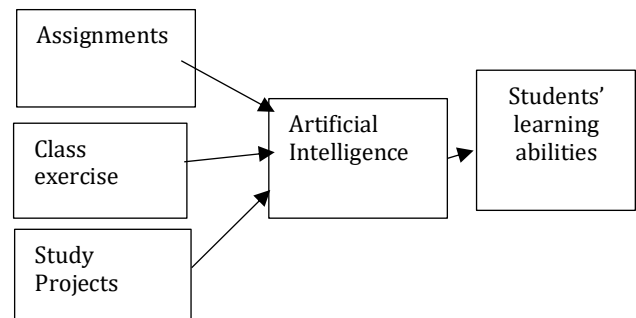
The primary objectives of this research are:

1. "To thoroughly evaluate the extent to which AI tools assist students in successfully completing assignments".
2. "To assess how well AI helps students with their answers to exercises in class".
3. "To examine how artificial intelligence (AI) tools, such as Chat GPT, might improve students' overall learning experience".
4. "To determine the extent to which artificial intelligence influences student's ability for learning".

3. METHODOLOGY

This research will be conducted using explanatory methodology where we will see level of effect of the chosen variables on the management dilemma also answering this question i.e., how, when, why, what and where" [22]-[24], [26]. "Furthermore, a basic statistical analysis will be performed on the data collected by conducting online survey".

Figure 1. Framework Model



Variables	Type	Category
Assignment	Demographic	Independent Variable
Class exercise	Demographic	Independent Variable
Study Projects	Demographic	Independent Variable
Artificial Intelligence	Demographic	Mediating Variable
Students' learning abilities	Demographic	Dependent Variable

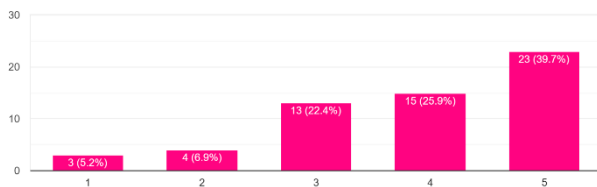
Research Questions:

1. How strongly do you believe that artificial intelligence helps in doing the assignment of a student?
2. How effective do you think artificial intelligence contributes to answering class exercise?
3. How confident are you that artificial intelligence (example Chat GPT) contributes to solving study projects?
4. To what extend do you think artificial intelligence play a role in impacting the students' learning abilities?

4. DATA COLLECTION

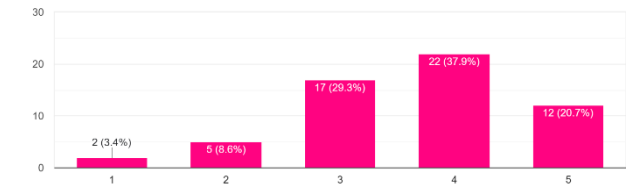
Probability sampling method have been selected because the approach should be done randomly. I have selected the simple random sampling for our online survey because it involves randomly selecting participants from the entire population. Initially, I planned for a sample size of 50, but I was fortunate to receive more than the targeted number. The online survey sample size received is 58. This research is adopting descriptive analysis. An illustration of data analysis to determine the "Impact of Artificial Intelligence on the students' learning abilities".

Q1: How strongly do you believe that artificial intelligence helps in doing the assignment of a student?
58 responses



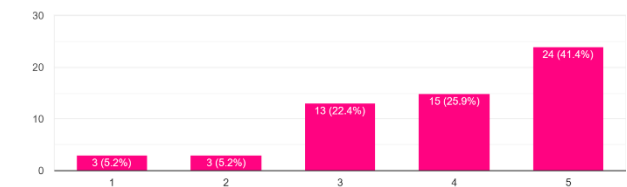
The survey data reveals a predominant positive outlook on the influence of artificial intelligence (AI) in aiding students with their assignments". "A substantial 39.7% of respondents expressed a high level of belief in the positive impact of AI, giving it the highest rating". "Conversely, a small proportion (5.2%) held a contrary view, indicating a lack of belief in AI's positive influence on student assignments". "Notably, a significant 22.4% provided a neutral stance, suggesting a noteworthy portion of respondents may be undecided or have varied opinions on this matter". "Agreement with the statement was expressed by 25.9%, while disagreement was relatively lower at 6.9%".

Q2: How effective do you think artificial intelligence contributes to answering class exercise?
58 responses



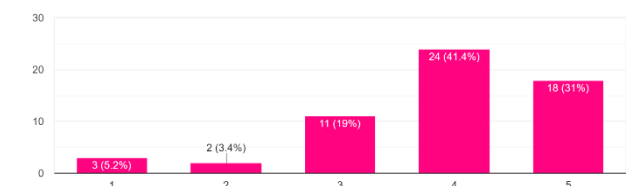
The majority of respondents (37.9%) expressed a moderately positive view by selecting option (4) as the most fitting response". "Conversely, a minimal number (3.4%) held a less optimistic stance, choosing option (1) as the least favored". "Notably, an equal percentage of respondents (37.9%) provided neutral responses (option 3), indicating a significant portion might be undecided or perceive AI's effectiveness in class exercises in a balanced manner". "Additionally, option (2) received no responses from 8.6% of participants, while 20.7% chose not to respond to option (5)". "This distribution signifies a nuanced landscape of opinions, reflecting the varied perceptions of participants regarding the efficacy of AI in contributing to class exercises".

Q3: How confident are you that artificial intelligence (example Chat GPT) contributes to solving Study Projects?
58 responses



The majority of respondents, comprising 41.4%, exhibited high confidence in the contribution of AI, selecting option (5)". "Conversely, the lowest confidence levels were associated with options (1) and (2), each receiving 5.2% of responses". "A significant portion (22.4%) maintained a neutral stance (option 3), while 25.9% expressed confidence in AI's role by choosing option (4)". "This data reflects a diverse range of perspectives on the effectiveness of AI, particularly Chat GPT, in addressing study projects".

Q4: To what extend do you think artificial intelligence play a role in impacting the students' learning abilities?
58 responses



The highest number of responses, at 41.4%, leaned towards acknowledging a significant impact (option 4). "On the other hand, the lowest level of agreement was found with option (2), where only 3.4% of respondents believed in a minimal impact". "A noteworthy 19% maintained a neutral stance (option 3), suggesting a diverse range of perspectives". "Additionally, 5.2% strongly disagreed with AI's role in impacting students' learning abilities (option 1)". "This diverse set of responses underscores the complexity of opinions regarding the extent of AI's influence on students' learning capabilities".

5. DATA ANALYSIS AND DISCUSSION

Mean: "In a set of numbers, the mean is the average or most frequent value".

Standard deviation: "A measure of variation (distribution, spread, and so on) from the mean is called the standard deviation" (Sam, 2020).

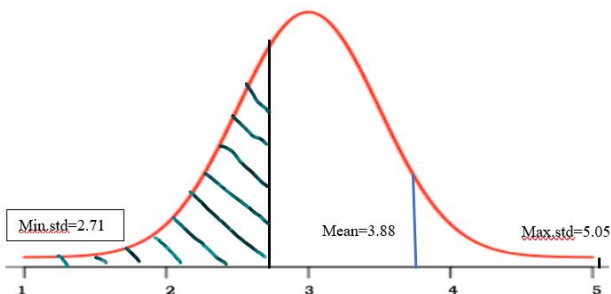
Skewness: "A distribution's asymmetry can be measured using its skewness". (Turney, 2023)

RQ1: How strongly do you believe that artificial intelligence helps in doing the assignment of a student?

assignment	
Mean	3.88
Standard Deviation	1.17
Skewness	-0.84

Max = Mean + Standard Deviation
 $3.88 + 1.17 = 5.05$

Min = Mean - Standard deviation
 $3.88 - 1.17 = 2.71$



The mean of 3.88 suggests a moderate level of perception regarding the extent to which AI helps students in completing assignments". "The maximum standard deviation is 5.05 and minimum standard deviation is 2.71 which shows some

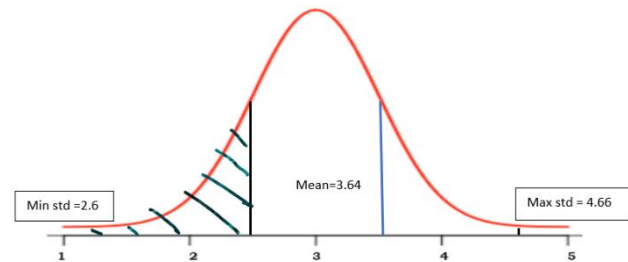
variability in responses, reflecting differing opinions among participants". "The negative skewness of -0.84 suggests that the distribution of responses is slightly skewed towards a more negative assessment in the left". "H0 hypothesis will be accepted as there is no impact of artificial intelligence in helping to do the assignment of a student".

RQ2: How effective do you think artificial intelligence contributes to answering class exercise?

class exercise	
Mean	3.64
Standard Deviation	1.02
Skewness	-0.54

Max = Mean + Standard Deviation
 $3.64 + 1.02 = 4.66$

Min = Mean - Standard deviation
 $3.64 - 1.02 = 2.62$



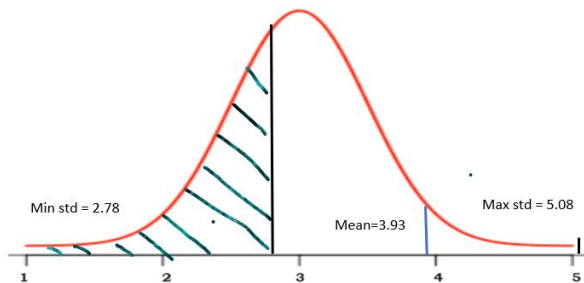
The mean of 3.64 indicates a moderate level of perceived effectiveness in how AI contributes to answering class exercises". "The maximum standard deviation found was 4.66 and minimum standard deviation found was 2.6 which shows some variability in responses, signifying differing opinions among participants". "The negative skewness of -0.54 implies that the distribution of responses is slightly skewed towards a more negative assessment moving to the left in the normal distribution curve". H0 hypothesis will be accepted as there is no impact of artificial intelligence towards answering class exercise.

RQ3: How confident are you that artificial intelligence (example Chat GPT) contributes to solving Study Projects?

Study Projects	
Mean	3.93
Standard Deviation	1.15
Skewness	-0.93

Max = Mean + Standard Deviation
 $3.93 + 1.15 = 5.08$

Min = Mean - Standard deviation
 $3.93 - 1.15 = 2.78$



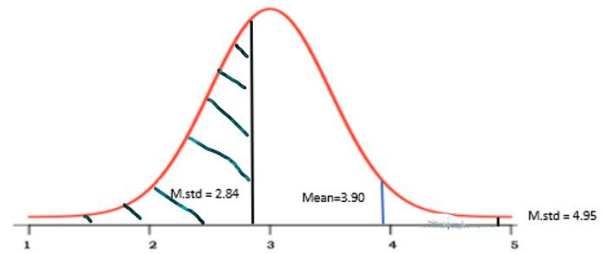
“The mean of 3.93 suggests a moderate to high level of perception that AI tools, like Chat GPT, have been helpful for students in undertaking study projects”. “The maximum standard deviation is 5.08 and minimum standard deviation is 2.78 which shows variability in responses, reflecting differing opinions among participants”. “The negative skewness of -0.93 implies that the distribution of responses is slightly skewed towards a more negative assessment moving to the left in the normal distribution curve”. H0 hypothesis will be accepted as there is no impact of artificial intelligence (example Chat GPT) to solving Study Projects.

RQ4. To what extent do you think artificial intelligence play a role in impacting the students’ learning abilities?

Artificial Intelligence	
Mean	3.90
Standard Deviation	1.05
Skewness	-1.09

Max = Mean + Standard Deviation
 $3.90 + 1.05 = 4.95$

Min = Mean - Standard deviation
 $3.90 - 1.05 = 2.84$



“The mean of 3.90 indicates that, on average, people see a moderate impact of AI on students’ learning abilities”. “The maximum standard deviation is 4.95 and minimum standard deviation is 2.84 which shows difference in opinions”. “The negative skewness of -1.09 suggests that more responses lean towards a negative view and moves to the left in the normal distribution curve, but there’s still diversity in how people perceive the impact of Artificial Intelligence on students’ learning abilities”. H0 hypothesis will be accepted as there is no impact of artificial intelligence in effecting the students’ learning abilities.

6. CONCLUSION

“In conclusion, according to the data analysis, opinions about how artificial intelligence is affecting students’ academic learning are extremely distinct”. “There are differing views, ranging from strong confidence to disagreement, despite the moderate level of belief in the beneficial influence of AI”. “The results emphasise how important it is to have a thorough grasp of the various viewpoints regarding artificial intelligence’s application to education”.

7. RECOMMENDATIONS

The recommendation will be that educational institutions should put their efforts into communicating clearly and offering guidance on how to use AI into academic activities in order to address the various opinions and perceptions that the data analysis revealed”. “A more knowledgeable and cooperative culture can also be fostered by continuing discussions and awareness campaigns, ensuring that AI is used wisely to improve education”. “A deeper comprehension of the advantages and difficulties of AI in education may result from more investigation and study of its usage”.

REFERENCES

- [1] M. Salameh *et al.*, "The Impact of Project Management Office's Role on Knowledge Management: A Systematic Review Study," *Comput. Integr. Manuf. Syst.*, vol. 28, no. 12, pp. 846–863, 2022, doi: 10.24297/j.cims.2022.12.59.
- [2] F. Shwedehe *et al.*, "SMEs' Innovativeness and Technology Adoption as Downsizing Strategies during COVID-19: The Moderating Role of Financial Sustainability in the Tourism Industry Using Structural Equation Modelling," *Sustainability*, vol. 14, no. 23, p. 16044, 2022, doi: <https://doi.org/10.3390/su142316044>.
- [3] S. Salloum *et al.*, "Understanding and Forecasting Chatbot Adoption: An SEM-ANN Methodology," *Migr. Lett.*, vol. 20, no. S11, pp. 652–668, 2023, doi: <https://doi.org/10.59670/ml.v20iS11.5717>.
- [4] F. Shwedehe, "THE IMPACT OF SMART CITY POLICY TIMELINESS AND TECHNOLOGY READINESS ON SMART CITY PERFORMANCE IN DUBAI: THE MODERATING EFFECT OF FINANCIAL AVAILABILITY," 2021.
- [5] R. Ravikumar *et al.*, "The Impact of Big Data Quality Analytics on Knowledge Management in Healthcare Institutions: Lessons Learned from Big Data's Application within The Healthcare Sector," *South East. Eur. J. Public Heal.*, vol. 5, 2023, doi: <https://doi.org/10.56801/seejph.vi.309>.
- [6] F. Shwedehe, A. Aburayya, and M. Mansour, "The Impact of Organizational Digital Transformation on Employee Performance: A Study in the UAE," *Migr. Lett.*, vol. 20, no. S10, pp. 1260–1274, 2023, doi: <https://doi.org/10.59670/ml.v20iS10.5710>.
- [7] B. M. Dahu *et al.*, "The Impact of COVID-19 Lockdowns on Air Quality: A Systematic Review Study," *South East. Eur. J. Public Heal.*, vol. 5, 2022, doi: <https://doi.org/10.11576/seejph-5929>.
- [8] M. Alkashami *et al.*, "AI different approaches and ANFIS data mining: A novel approach to predicting early employment readiness in middle eastern nations," *Int. J. Data Netw. Sci.*, vol. 7, no. 3, pp. 1267–1282, 2023, doi: 10.5267/j.ijdns.2023.4.011.
- [9] F. Bu, H. Wu, H. A. Mahmoud, H. M. Alzoubi, N. K. Ramazanovna, and Y. Gao, "Do financial inclusion, natural resources and urbanization affect the sustainable environment in emerging economies," *Resour. Policy*, vol. 87, p. 104292, 2023, doi: 10.1016/j.resourpol.2023.104292.
- [10] R. Ravikumar *et al.*, "Impact of knowledge sharing on knowledge Acquisition among Higher Education Employees," *Comput. Integr. Manuf. Syst.*, vol. 28, no. 12, pp. 827–845, 2022, doi: 10.24297/j.cims.2022.12.58.
- [11] F. Shwedehe, N. Hami, S. Z. Abu Bakar, F. M. Yamin, and A. Anuar, "The Relationship between Technology Readiness and Smart City Performance in Dubai," *J. Adv. Res. Appl. Sci. Eng. Technol.*, vol. 29, no. 1, pp. 1–12, 2022, doi: <https://doi.org/10.37934/araset.29.1.112>.
- [12] F. Shwedehe, S. Malaka, and B. Rwashdeh, "The Moderation Effect of Artificial Intelligent Hackers on the Relationship between Cyber Security Conducts and the Sustainability of Software Protection: A Comprehensive Review," *Migr. Lett.*, vol. 20, no. S9, pp. 1066–1072, 2023, doi: 10.59670/ml.v20iS9.4947.
- [13] S. A. Alimour *et al.*, "The quality traits of artificial intelligence operations in predicting mental healthcare professionals' perceptions: A case study in the psychotherapy division," *J. Auton. Intell.*, vol. 7, no. 4, 2024, doi: 10.32629/jai.v7i4.1438.
- [14] F. Shwedehe, N. Hami, and S. Z. Abu Bakar, "Effect of leadership style on policy timeliness and performance of smart city in Dubai: a review," in *Proceedings of the International Conference on Industrial Engineering and Operations Management Dubai, UAE, March 10-12, 2020*, 2020, pp. 917–922.
- [15] A. Aburayya *et al.*, "SEM-machine learning-based model for perusing the adoption of metaverse in higher education in UAE.," *Int. J. Data Netw. Sci.*, vol. 7, no. 2, pp. 667–676, 2023, doi: 10.5267/j.ijdns.2023.3.005.
- [16] F. Shwedehe, T. Aldabbagh, A. Aburayya, and H. Uppilappatta, "The Impact of Harnessing Total Quality Management Studies on the Performance of Smart Applications: A Study in Public and Private Sectors in the UAE," *Migr. Lett.*, vol. 20, no. S11, pp. 934–959, 2023, doi: <https://doi.org/10.59670/ml.v20iS11.5892>.
- [17] F. Shwedehe, "Harnessing digital issue in adopting metaverse technology in higher education institutions: Evidence from the United Arab Emirates," *Int. J. Data Netw. Sci.*, vol. 8, no. 1, pp. 489–504, 2024, doi: 10.5267/j.ijdns.2023.9.007.
- [18] S. Khadragey *et al.*, "Predicting Diabetes in United Arab Emirates Healthcare: Artificial Intelligence and Data Mining Case Study," *South East. Eur. J. Public Heal.*, vol. 5, 2022, doi: <https://doi.org/10.56801/seejph.vi.406>.
- [19] N. Yas, M. N. I. Elyat, M. Saeed, F. Shwedehe, and S. Lootah, "The Impact of Intellectual Property Rights and the Work Environment on Information Security in the United Arab Emirates," *Kurd. Stud.*, vol. 12, no. 1, pp. 3931–3948, 2024, doi: 10.58262/ks.v12i1.282.
- [20] S. Abdallah *et al.*, "A COVID19 Quality Prediction Model based on IBM Watson Machine Learning and Artificial Intelligence Experiment," *Comput. Integr. Manuf. Syst.*, vol. 28, no. 11, pp. 499–518, 2022, doi: 10.24297/j.cims.2022.11.037.
- [21] F. Shwedehe, N. Hami, and S. Z. Abu Bakar, "Dubai smart city and residence happiness: A conceptual study," *Ann. Rom. Soc. Cell Biol.*, vol. 25, no. 1, pp. 7214–7222, 2021.
- [22] S. Salloum *et al.*, "Sustainability Model for the Continuous Intention to Use Metaverse Technology in Higher Education: A Case Study from Oman," *Sustainability*, vol. 15, no. 6, p. 5257, 2023, doi: 10.3390/su15065257.
- [23] F. Shwedehe *et al.*, "Entrepreneurial innovation among international students in the UAE: Differential role of entrepreneurial education using SEM analysis," *Int. J. Innov. Res. Sci. Stud.*, vol. 6, no. 2, pp. 266–280, 2023, doi: <https://doi.org/10.53894/ijirss.v6i2.1328>.
- [24] A. El Nokiti, K. Shaalan1, S. Salloum2, A. Aburayya, F. Shwedehe, and B. Shameem3, "Is Blockchain the answer? A qualitative Study on how Blockchain

- Technology Could be used in the Education Sector to Improve the Quality of Education Services and the Overall Student Experience," *Comput. Integr. Manuf. Syst.*, vol. 28, no. 11, pp. 543–556, 2022, doi: 10.24297/j.cims.2022.11.039.
- [25] K. Liu *et al.*, "Exploring the Nexus between Fintech, natural resources, urbanization, and environment sustainability in China: A QARDL study," *Resour. Policy*, vol. 89, p. 104557, 2024, doi: 10.1016/j.resourpol.2023.104557.
- [26] S. Khadragy *et al.*, "Predicting Diabetes in United Arab Emirates Healthcare: Artificial Intelligence and Data Mining Case Study," *South East. Eur. J. Public Heal.*, vol. 5, 2022, doi: <https://doi.org/10.56801/seejph.vi.406>.
- [27] A. A. A. M. A. and *et al.* Al Ayadeh I, "Evolving a hybrid appointment system for patient scheduling in primary healthcare centres in Dubai: Perceptions of patients and healthcare provider.," *Int. J. Emerg. Technol.*, vol. 11, no. 2, pp. 251–260, 2020.
- [28] A. A. Alsharhan A, Salloum SA, "Technology acceptance drivers for AR smart glasses in the middle east: A quantitative study. International Journal of Data and Network Science.: 193-208. doi.," *10.5267/j.ijdns.2021.9.008*, vol. 6, no. 1, 2022, doi: 10.5267/j.ijdns.2021.9.008.
- [29] S. S. Almarzouqi A, Aburayya A, "Determinants predicting the electronic medical record adoption in healthcare: A SEM-Artificial Neural Network approach. Haldorai A, ed. PLOS ONE," vol. 17, no. 8, 2022, doi: 10.1371/journal.pone.0272735y.
- [30] A. A. A. D, and T. M., "Aburayya A, Alawadhi D, Taryam M. A conceptual framework for implementing TQM in the primary healthcare centers and examining its impact on patient satisfaction. Research.," *Int. J. Adv. Res.*, vol. 7, no. 3, pp. 1047–1065, 2019.
- [31] A. Aburayya, D. Alawadhi, and M. Taryam, "A conceptual framework for implementing TQM in the primary healthcare centers and examining its impact on patient satisfaction," *Int. J. Adv. Res.*, vol. 7, no. 3, pp. 1047–1065, 2019, doi: 10.21474/IJAR01/8735.
- [32] H. Yousuf, S. Salloum, A. Aburayya, M. Al-Emran, and K. Shaalan, "A systematic review of CRYPTDB: Implementation, challenges, and future opportunities," *J. Manag. Inf. Decis. Sci.*, vol. 24, no. Special Issue 1, pp. 1–16, 2021.
- [33] R. Abousamra *et al.*, "Predicting the Intention to Use Google Glass in the Educational Projects: A Hybrid SEM-ML Approach," *Acad. Strateg. Manag. J.*, vol. 21, no. S6, pp. 1–13, 2022.
- [34] C. Leng *et al.*, "An empirical assessment of the effect of natural resources and financial technologies on sustainable development in resource abundant developing countries: Evidence using MMQR estimation," *Resour. Policy*, vol. 89, p. 104555, 2024, doi: 10.1016/j.resourpol.2023.104555.
- [35] S. R. AlSuwaidi, M. Alshurideh, B. Al Kurdi, and A. Aburayya, "The main catalysts for collaborate R&D projects in Dubai industrial sector.," in *The International Conference on Artificial Intelligence and Computer Vision*, 2021, pp. 795–806.
- [36] M. Taryam *et al.*, "(2021). The impact of the covid-19 pandemic on the mental health status of healthcare providers in the primary health care sector in Dubai.," *Linguist. Antverp.*, vol. 21, no. 2, pp. 2995–3015, 2021.
- [37] R. S. Al-Marouf, K. Alhumaid, A. Q. Alhamad, A. Aburayya, and S. Salloum, "User acceptance of smart watch for medical purposes: an empirical study.," *Futur. Internet*, vol. 13, no. 5, p. 127, 2021, doi: <https://doi.org/10.3390/fi13050127>.
- [38] M. Alawadhi *et al.*, "Factors affecting medical students' acceptance of the metaverse system in medical training in the United Arab Emirates.," *South East. Eur. J. Public Heal.*, no. Special Volume No. 5, 2022, doi: 10.11576/seejph-5759.
- [39] E. MOUZAEEK, N. ALAALI, S. A. I. D. SALLOUM, and A. ABURAYYA, "An empirical investigation of the impact of service quality dimensions on guests satisfaction: A case study of Dubai Hotels," *J. Contemp. Issues Bus. Gov.*, vol. 27, no. 3, pp. 1186–1199, 2021, doi: 10.47750/cibg.2021.27.03.160.
- [40] S. Aljasmii *et al.*, "The Impact of Hospital Demographic Factors on Total Quality Management Implementation: A Case Study of UAE Hospitals," *South East. Eur. J. Public Heal.*, vol. Special Vo, pp. 1–13, 2022, doi: 10.11576/seejph-5758.
- [41] K. Alaboud *et al.*, "The Quality Application of Deep Learning in Clinical Outcome Predictions Using Electronic Health Record Data: A Systematic Review," *South East. Eur. J. Public Heal.*, vol. Volume XXI, pp. 09–23, 2023.
- [42] A. Almarzouqi, A. Aburayya, and S. A. Salloum, "Determinants predicting the electronic medical record adoption in healthcare: A SEM-Artificial Neural Network approach," *PLoS One*, vol. 17, no. 8, p. e0272735, 2022, doi: 10.1371/journal.pone.0272735.
- [43] A. Alsharhan, S. A. Salloum, and A. Aburayya, "Using e-learning factors to predict student performance in the practice of precision education," *Pt 2 J. Leg. Ethical Regul. Issues*, vol. 24, no. Special Issue 6, p. 1, 2021.
- [44] Q. Hassan *et al.*, "The renewable energy role in the global energy Transformations," *Renew. Energy Focus*, vol. 48, p. 100545, 2024, doi: <https://doi.org/10.1016/j.ref.2024.100545>.
- [45] S. A. Salloum *et al.*, "Novel machine learning based approach for analysing the adoption of metaverse in medical training: A UAE case study," *Informatics Med. Unlocked*, vol. 42, p. 101354, 2023, doi: 10.1016/j.imu.2023.101354.
- [46] A. Aburayya, A. Marzouqi, I. Iyadeh, A. Albqaen, and S. Mubarak, "Evolving a Hybrid Appointment System for Patient scheduling in Primary Healthcare Centres in Dubai: Perceptions of Patients and Healthcare Providers," *Int. J. Emerg. Technol.*, vol. 11, no. 2, pp. 251–260, 2020, doi: https://d1wqtxts1xzle7.cloudfront.net/63548291/Evolving_a_Hybrid_Appointment_System_for_Patient_Scheduling_in_Primary_Healthcare_Centres_in_Dubai_Perce20200606-109135-jr0twj-libre.pdf?1591473666=&response-content-disposition=inline%3B+filename%3DEvolving_a_Hybrid_Appointment_System_for.pdf&Expires=1706534986&Signature=fseyo0TYWnlSW0FY7G-RRIPvulgk3Nhl4GQy1MX4ui1KaP0gqqbdiXNK3Sr8IR9-

- 4VLiREFosotAVq6iUMrQJR~uTD4SmuHD0HTciDTyJ
ckgxu9fKEGEtEom~kuTiXbsP5sdqvyKot6GYo4cc-
zXYnV8ADfj~fMJH~r9QBmeUoETJKajfuAa.
- [47] I. Shahin, A. B. Nassif, A. Elnagar, S. Gamal, S. A. Salloum, and A. Aburayya, "NEUROFEEDBACK INTERVENTIONS FOR SPEECH AND LANGUAGE IMPAIRMENT: A SYSTEMATIC REVIEW," *J. Manag. Inf. Decis. Sci.*, vol. 24, no. Special Issue 1, pp. 1–30, 2021.
- [48] A. Alsharhan, S. Salloum, and A. Aburayya, "Technology acceptance drivers for AR smart glasses in the middle east: A quantitative study," *Int. J. Data Netw. Sci.*, vol. 6, no. 1, pp. 193–208, 2022, doi: 10.5267/j.ijdns.2021.9.008.
- [49] B. Li, S. Mousa, J. R. R. Reinoso, H. M. Alzoubi, A. Ali, and A. D. Hoang, "The role of technology innovation, customer retention and business continuity on firm performance after post-pandemic era in China's SMEs," *Econ. Anal. Policy*, vol. 78, pp. 1209–1220, 2023, doi: 10.1016/j.eap.2023.05.004.
- [50] I. Al Eideh *et al.*, "Examination of the Effect of TQM Implementation on Innovation Performance: An Assessment Study In the UAE Healthcare Sector," *Acad. Strateg. Manag. J.*, vol. 21, no. Special Issue 4, pp. 1–17, 2022.
- [51] B. M. Dahu, S. Khan, A. A. Salman, Y. M. Andraws, A. Abo Daken, and A. Aburayya, "Epidemiological Analysis of Vaccination Strategies and Demographic Patterns In COVID-19 Cases in The Midwest Region of The United States," *Natl. J. Community Med.*, vol. 14, no. 1, pp. 62–71, 2024, doi: 10.55489/njcm.150120243461.
- [52] S. A. Salloum, N. M. N. AlAhbab, M. Habes, A. Aburayya, and I. Akour, "Predicting the Intention to Use Social Media Sites: A Hybrid SEM-Machine Learning Approach," in *Advanced Machine Learning Technologies and Applications: Proceedings of AMLTA 2021*, Springer International Publishing, 2021, pp. 324–334.
- [53] R. S. Al-Marouf, K. Alhumaid, A. Q. Alhamad, A. Aburayya, and S. Salloum, "User acceptance of smart watch for medical purposes: an empirical study," *Futur. Internet*, vol. 13, no. 5, p. 127, 2021.
- [54] A. Almarzouqi, A. Aburayya, and S. A. Salloum, "Determinants of intention to use medical smartwatch-based dual-stage SEM-ANN analysis," *Informatics Med. Unlocked*, vol. 28, pp. 1–12, 2022, doi: 10.1016/j.imu.2022.100859.
- [55] A. Jasri, S. Aljasmi, and A. Aburayya, "Employing PLS-SEM Analysis to Examine the Mediation Role of Artificial Intelligence in Physician Experience. An Empirical Study of the Effect of the Medical Smartwatch on Physician Satisfaction," *South East. Eur. J. Public Heal.*, vol. Special Vo, 2022, doi: <https://doi.org/10.56801/seejph.vi.407>.
- [56] M. A. Almaiah *et al.*, "Factors affecting the adoption of digital information technologies in higher education: An empirical study," *Electronics*, vol. 11, no. 21, p. 3572, 2022, doi: 10.3390/electronics11213572.
- [57] M. Taryam *et al.*, "Factors Affecting the Uptake of COVID-19 Vaccine among Dubai Airport's Professionals," *South East. Eur. J. Public Heal.*, vol. 17, no. 2, pp. 1–14, 2022, doi: <https://doi.org/10.11576/seejph-5091>.