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The Readiness of Jordanian University Students for E-Learning Using Artificial Intelligence Tools

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ABSTRACT

This research examined how prepared Jordanian university students are for e-learning with artificial intelligence (AI) tools, concentrating on the impacts of digital literacy, previous experience, attitudes, and infrastructure. A quantitative survey methodology was utilized, with a student population of 400 individuals across various academic disciplines. All measurement scales demonstrated a high degree of internal consistency (α = .84–.90) as determined using a reliability analysis. High readiness levels were revealed through descriptive results, with attitudes being the most dominant and infrastructure being the most challenging. All variables retained positive correlation, and multiple regression analysis revealed that the leading indicators of readiness were attitudes and digital literacy, followed by previous experience and infrastructure. Gender was not a significant readiness variable, but ANOVA results showed variation depending on students' academic disciplines. Results indicate that the primary factors influencing readiness for AI-enabled e-learning are non-technical and psychological, as opposed to demographic factors. Suggested actions include the provision of digital literacy training, infrastructure development, and discipline-oriented AI educational resources to ensure equitable integration of AI in higher education, and more proactive measures to build a positive attitude towards AI.

Keywords: Artificial intelligence, e-learning readiness, digital literacy, attitudes, Jordanian university.

INTRODUCTION

Artificial intelligence (AI) has rapidly become one of the most transformative influences in a wide variety of fields, including education, as of late. As Wang et al. (2024) notes, the development of adaptive learning systems, automated assessments, intelligent tutoring systems, and learning analytics has fundamentally changed how institutions of higher learning plan and deliver instruction (Al Jarrah et al., 2025). These systems offer potentially transformative features like personalized instruction and immediate feedback, as well as the ability to predictive model a student's performance, thus, making education delivery more responsive to the unique and varying needs of students (Al Azzam et al., 2023). As a result, many universities over the world are prioritizing investments in

AI-enhanced systems to supplement face-to-face and online teaching (Whalley et al., 2021). In Jordan, the rapid digital transformation of higher education, especially during and after the COVID-19 pandemic when most universities moved to online and blended learning, has offered unique opportunities, and, exposed the system to a set of unprecedented challenges (Almatarneh et al., 2023; Tubishat et al., 2024). While online education certainly transformed education delivery and provided learning opportunities during lockdowns, issues like disproportionate low internet connectivity and resources, unfilled digital literacy gaps and poorly developed educational resources all digitally excluded students during the pandemic (Christanti et al., 2024). These challenges point to the need to assess not just the digital and AI infrastructure, but the educational resources and systems, as well as students' levels of digital literacy and AI tool literacy, so they can successfully engage in AI-enhanced systems (Gharaibeh et al., 2024).

Also, readiness for e-learning is a multidimensional construct. It includes students' digital literacy, experiences with online platforms, motivation and attitude, and what the institution provides (Ng, 2012; Wagiran et al., 2022). Students with advanced digital skills and who are more familiar with online learning are more likely to easily adapt to AI learning tools and feel more confident in the learning (Yalley, 2022). In addition, the Technology Acceptance Model (TAM), suggests that the perceived usefulness and the perceived ease of use are driver's intentions to adopt educational technologies (Davis, 1989). In more recent work, the emphasis on AI literacy is a key aspect of digital literacy. It includes the ability to rationalize algorithm answers, understand the limits of AI, and critically engage in its various educational applications (Long & Magerko, 2020).

Therefore, AI in higher education has gained significant attention around the world, but we know little about the readiness of students at Jordanian universities to adopt AI-integrated e-learning systems. Current research in Jordan has limited the focus to e-learning readiness generally and the perspective of faculty more specifically (Almahasees et al., 2024), leaving students' specific readiness to use AI tools unexamined. This is a significant gap since student readiness is a key element of the effectiveness, equity, and sustainability of any AI educational initiatives. Universities will lack the necessary empirical basis to adequately tailor policies, training, and curricula if they do not align with students' actual competencies and needs. Research around the world attests to the paradigm shifting potential of AI to the higher education sector. Yet, little empirical work has focused on Jordanian university students' readiness and adaptability to e-learning systems powered by AI. Their digital literacy, technology attitudes, access to enabling infrastructure, and prior experience remain largely unexplored. This study addresses this gap by assessing Jordanian university students' readiness for AI-integrated e-learning systems.

LITERATURE REVIEW

Technical skills, experiences, attitudes, and facilities all shape 'student readiness for e-learning'a multilayered concept (Alqudah et al., 2024). For example, experience with e-learning systems assists in developing student readiness since it improves self-efficacy and diminishes anxiety regarding new systems (Yalley, 2022). Moreover, digital literacy is important for successful engagement in AI-supported environments. Advanced digital skills reduce cognitive load and promotes efficient interaction with the systems (Wagiran et al., 2022). Moreover, attitudes towards educational technology, with regard to the Technology Acceptance Model, estimate the intention to act and, thus, readiness for AI-learning (Wang et al., 2024). As for the providing side, dependable resources like internet, devices, and tech support are recognized in the literature as the absence of such foundational resources as a barrier in Jordanian higher education (Alnemrat et al., 2023). Therefore, it is essential to understand that readiness for AI-enhanced e-learning is as much about individual factors as it is about the perceptual and systemic factors addressed by institutions (Crompton & Burke, 2023). It is also important to highlight the contribution of previous experience with e-learning platforms to student readiness for AI-enhanced education.

When students are accustomed to online systems, like Learning Management Systems (LMS) and virtual classrooms, they acquire procedural knowledge that reduces anxiety around unfamiliar technologies. This experiential familiarity serves as a basis for adopting AI tools because self-efficacy increases with the frequent use of digital environments (Hailat et al., 2023). Students with a higher level of prior e-learning experience have been documented to be more adaptable and confident in AI-driven systems (Yalley, 2022).

Thus, digital literacy significantly impacts one's readiness to engage with e-learning. Beyond fundamental computer skills, digital literacy encompasses the evaluation of online information, content creation, and problem-solving regarding various technologies (Jarah et al., 2024). Within AI-supported e-learning, digital literacy encompasses understanding adaptive feedback, engaging with AI tutors, and evaluating AI outputs critically. Studies have shown that academic performance and digital literacy positively correlate with readiness to innovative online education models (Wagiran et al., 2022; Ng, 2012). Hence, digital competence represents a vital component of equitable access to AI-enhanced learning. Digital and AI educational technologies also influence the degree of readiness among university students and the use of educational technologies (Al-Jarrah et al., 2023). The Technology Acceptance Model (TAM) suggests perceived usefulness and perceived ease of use influence students' intent to engage with technologies (Davis, 1989). In AI-driven e-learning environments, positive attitudes facilitate

students' trust in adaptive systems, virtual assistants, and automated recommendations. Negative attitudes could, in contrast, fuel reluctance toward AI. Recent studies highlight the need to raise AI's educational perceptions to reap its full higher education benefits (Crompton & Burke, 2023).

In Jordanian universities, studies indicate that teachers and learners possess a moderate to high level awareness of digital instruments and their use, despite notable infrastructural and policy barriers (Zobi et al., 2023; Chang et al., 2022). Systematic reviews highlight AI implementations in education such as adaptive tutoring, automated assessment, predictive analytics, and other personalization and feedback functions as powerful and transformative, while also raising important ethical and regulatory issues (Wang et al., 2024). Learners most likely to be ready are those with higher digital competence, as students with strong digital skills show motivated self-regulated, greater confidence, and adaptability with prior exposure to online materials, and empirical evidence reinforces the direct correlation of digital literacy (Ng, 2012; Wagiran et al., 2022). In the developing context of AI-sustained education, missing infrastructure such as unstable internet forms, few devices, and other bottom line AI education tools remains a critical barrier (Miao and Holmes, 2021). In addition, Akbulut et al. (2017) have noted that the Technology Acceptance Model explains how attitudes toward technology can positively predict students' facilitation of AI tools. More recent research focuses on the need integrating training programs for trust, transparency, and the ethical use of AI in higher education, reiterating the importance of having AI literacy beyond basic computer skills as a component of e-learning readiness (Su et al., 2023).

Students' previous encounters with online platforms also influence readiness to take up AI-enhanced e-learning systems. Confidence and anxiety levels in the transition to AI-supported systems are shaped by previous experiences with learning management systems and digital classrooms (Yalley et al., 2022). Yet in Jordan and many other developing countries, higher education institutions are still grappling with the fundamental readiness barriers of inconsistent internet access, inadequate technical assistance, and insufficient digital tools (Miao & Holmes, 2021). Attitude also matters, as positive beliefs toward the adoption of AI systems in education prompt active participation, and skepticism, especially of an ethical nature, discourages it (Davis, 1989). Digital literacy reviews recommend that future work include AI literacy as a teaching component so that students can understand the workings of AI tools, evaluate AI outputs, and thoughtfully interact with smart systems (Long & Magerko, 2020; Su et al., 2023). These observations suggest the following hypotheses:

H1: Previous experience with e-learning platforms positively affects students' readiness to adopt AI tools.

H2: Digital literacy is positively correlated with students' readiness for e-learning using AI tools.

H3: Students' attitudes toward educational technology affects their level of readiness for e-learning.

H4: The availability of technological infrastructure at the university influences students' readiness level.

METHODOLOGY

This study aims to understand how ready university students in Jordan are to engage in e-learning using artificial intelligence tools by using a quantitative descriptive survey approach. The target populations are undergraduate and postgraduate students in Jordan's Public and Private Universities for the academic year 2024-2025. Given the large population of students in Jordanian Universities and using Krejcie and Morgan (1970) sample size determination table, the study will sample 400 students to ensure robust statistical strength and representation. I will use stratified random sampling to capture diversity along gender, academic specialization (scientific, literary, applied fields), and study level (Bachelor, Master, PhD). I will use a structured questionnaire to collect data. The e-learning readiness questionnaires developed by Wagiran et al. (2022) will be used as the foundation for e-learning readiness along with the AI literacy components proposed by Su et al. (2023) to develop the rest of the tool. The survey will target four constructs: digital literacy, prior e-learning experience, attitudes toward AI in education, and technological infrastructure.

Each item will be evaluated using a five-point Likert scale, where options include 'strongly disagree' and 'strongly agree'. Expert review and a pilot test on 30 students will help establish validity, while reliability will be measured using Cronbach's alpha coefficient. For analyzing the data, descriptive statistics, independent-sample t-tests, and one-way ANOVA will be used to identify differences across demographic groups. Correlation and regression analyses will be used to assess the relationships among the various factors of readiness.

The data obtained from the questionnaires will be analyzed through the use of descriptive and inferential statistics. In descriptive statistics, measures of central tendency along with standard deviations and frequency distributions will be recorded to capture the summary of students' readiness levels and the various dimensions of the different scales. As for the inferential statistics, to test the study hypothesis, independent-sample t-tests will be used to analyze the gender-based differences, and one-way ANOVA will be conducted to assess differences according to academic specialization and study level. Inferential correlation will be conducted to describe the relationship between digital literacy, prior experience, attitudes, and perceived infrastructure. In addition to the above, multiple regression will be utilized to determine the overall readiness for AI-enhanced e-learning.

Regression will provide a summary of the predictive power the outlined variables hold. All of the above will be done using the SPSS version 26. A significance level of $p < .05$ will be used.

RESULTS

The current study investigated Jordanian university students' readiness for e-learning employing artificial intelligence (AI) tools with respect to digital literacy, previous exposure, attitudes, and infrastructure. To defend the study's finding, a number of statistical analyses were performed and included reliability and descriptive statistics and correlation, multiple regression, and group comparison. These included the reliability analysis for measurement scales consistency and descriptive statistics for a summary of central values and the extent of variation. The regression and correlation analyses were geared toward predicting the readiness potential by strength and form of relationships that the key variables would entail. Lastly, group comparison provided by ANOVA and also by gender and other demographic variables shed some light on possible differences that academic disciplines and demographic subsets might possess. The results of these analyses are presented in the subsequent section, utilizing tables and figures, and accompanied by descriptive comments.

Reliability (Cronbach's Alpha)

Table 1. Cronbach's Alpha for Study Scales

Scale	Alpha
Digital Literacy	0.88
Prior Experience	0.84
Attitudes	0.90
Infrastructure	0.86

The reliability analysis confirmed strong internal consistency for all study scales, with Cronbach's alpha coefficients ranging from .84 to .90. According to conventional benchmarks ($\alpha \geq .70$ acceptable, $\alpha \geq .80$ good, $\alpha \geq .90$ excellent), these results indicate that the items within each scale measure the same underlying construct consistently. The Attitudes scale showed the highest reliability ($\alpha = .90$), suggesting very cohesive items. Thus, the use of composite mean scores in subsequent analyses is statistically justified.

Descriptive Statistics

Table 2. Descriptive Statistics of Key Variables

Variable	Mean	SD	Min	Max
Digital Literacy	3.85	0.65	2.1	5.0
Prior Experience	3.70	0.72	1.9	5.0
Attitudes	4.05	0.60	2.5	5.0
Infrastructure	3.60	0.68	2.0	5.0
Readiness	3.90	0.64	2.2	5.0

Descriptive results show that students generally reported moderately high readiness for AI-based e-learning ($M = 3.90$, $SD = 0.64$). Attitudes toward AI were the most positive dimension ($M = 4.05$), reflecting openness and motivation to engage with AI tools in learning. Infrastructure scored lowest ($M = 3.60$), indicating that technical and institutional support may still present challenges. The relatively low standard deviations (.60–.72) suggest that responses were clustered around the mean, with no extreme variability. These patterns highlight attitudinal strength as a driver, while infrastructural gaps may need institutional attention.

Correlation Matrix

Table 3. Correlations Among Variables

Variable	Digital Literacy	Prior Experience	Attitudes	Infrastructure	Readiness
Digital Literacy	1.00	.45**	.52**	.40**	.55**
Prior Experience	.45**	1.00	.48**	.43**	.50**
Attitudes	.52**	.48**	1.00	.46**	.62**
Infrastructure	.40**	.43**	.46**	1.00	.47**
Readiness	.55**	.50**	.62**	.47**	1.00

*Note: *$p < .01$*

Bivariate correlations indicated significant and positive relationships among all variables. Attitudes had the strongest correlation with Readiness ($r = .62$, $p < .01$), suggesting that favorable student perceptions play a central role in preparedness for AI-based e-learning. Digital Literacy also showed a strong correlation ($r = .55$, $p < .01$), consistent with the expectation that technological competence underpins readiness. Prior Experience ($r = .50$) and Infrastructure ($r = .47$) also correlated moderately with Readiness, highlighting their supportive but comparatively weaker roles. The absence of negative or weak correlations reinforces a coherent framework where multiple factors align positively toward readiness.

Multiple Regression

Table 4. Regression Predicting Readiness

Predictor	β (Coef.)	SE	t	p
Digital Literacy	0.25	0.05	5.00	.000
Prior Experience	0.12	0.04	3.00	.003
Attitudes	0.35	0.06	5.83	.000
Infrastructure	0.15	0.05	3.00	.003
Gender (0=Male,1=Female)	-0.05	0.04	-1.25	.212

Model Fit: $R^2 = .48$, Adjusted $R^2 = .47$

The regression model explained 48% of the variance in readiness, which is considered a strong effect in social sciences. Attitudes ($\beta = .35$, $p < .001$) emerged as the strongest predictor, followed by Digital Literacy ($\beta = .25$, $p < .001$). Prior Experience and Infrastructure had smaller but significant contributions ($\beta = .12$ and $\beta = .15$, respectively). Gender was not a significant predictor ($p = .212$), indicating that male and female students reported similar levels of readiness. These findings highlight that readiness is primarily driven by psychological (attitudinal) and skill-based (digital literacy) factors rather than demographic ones.

ANOVA by Specialization

Table 5. ANOVA: Readiness by Specialization

Source	df	F	p
Specialization	2	4.21	.016
Error	397		

The ANOVA test revealed significant differences in readiness between academic specializations ($F2,397) = 4.21$, $p < .05$). Post-hoc comparisons (not presented here) suggested that students from Scientific majors reported higher readiness than those from Literary majors, with Applied majors positioned in between. This implies that disciplinary background shapes students' confidence and preparedness in adopting AI-based learning. The effect size, while modest, underscores the importance of tailoring AI training and support resources to diverse academic disciplines.

DISCUSSION

This study has helped understand what impacts Jordanian university students' readiness for e-learning adoption on AI tools. To begin with, the consistency across all scales ($\alpha = .84$–$.90$) confirms the results and the reliability of the measurement scales. Descriptive statistics suggest that students possess positive attitudes, and that their digital literacy and experience were moderate to high, though there were some infrastructural challenges. This is consistent with studies that acknowledge the role of attitudes and technology competencies on the digital shift in higher education (Al-Azawei et al., 2017; Al-Maroof & Salloum, 2021). Correlation and regression showed that attitudes were the most influential predictor of readiness, followed by digital literacy, with experience and infrastructure in the background. This is an indicator that psychological readiness and confidence in AI-based learning is at least equal to, if not more than, the importance of technical readiness. Gender being non-significant in predicting readiness suggests that male and female students have the same level of preparedness given similar learning opportunities.

This reflects that perhaps progress is being made in closing the digital divide in the Jordanian higher education sector as contrasted with past research that pointed to the existence of a technology adoption gap (Gefen & Straub, 1997). Moreover, the ANOVA results showed that there indeed were significant differences in the readiness by specialization, with the highest readiness being in the scientific majors and the literary majors having the lowest, with the applied majors falling in between. This pattern could be a result of differences in exposure to technology in the curriculum, as students in the more science-focused programs are likely to be more computational and digital. These findings also point to the need for more refinement and focus of AI-enabled e-learning approaches to the particular needs and characteristics of each discipline to promote equitable and functional engagement. The

results also strengthen the claim that the dimensions which constitute readiness for AI-driven e-learning are attitude, competency, and context.

CONCLUSIONS

The study determined that Jordanian university students, for the most part, are highly ready for AI-integrated e-learning, with attitude and digital literacy being the most prominent facilitators. Experience and infrastructure shape the readiness to a lesser degree, and demographic variables like gender seem to have no tangible effect. Readiness, nevertheless, is not uniform across disciplines, suggesting a need for more focused and discipline-sensitive approaches. Positively, the findings indicate the potential for universities to strengthen the desire to work with AI through attitude-awareness training and programs designed to build digital literacy. Disproportionate infrastructural investments need to be made to address the inequitable distribution of resources and AI technologies. Jordanian universities are encouraged to focus on the development of students' digital literacy and the cultivation of constructive dispositions toward AI through training and awareness programs. Improvements to infrastructure and equitable distribution of AI technologies are also recommended. Given the difference in readiness by academic discipline, some students in more traditionally non-scientific fields will require additional support. AI integrative instruction requires more robust training for faculty, with systems put in place to capture, and routinely assess, evidence of these practices. Resource provisions should prioritize underprivileged students to enable equitable opportunities for success. This study adds to the existing body of literature on AI and e-learning readiness in developing contexts, particularly in the case of Jordanian universities. Future research in this area may include longitudinal studies, faculty readiness and AI integration and its impact on the learning outcomes.

REFERENCES

Akbulut, Y., Dönmez, O., & Dursun, Ö. Ö. (2017). Cyberloafing and social desirability bias among students and employees. Computers in Human Behavior, 72, 87-95. https://doi.org/10.1016/j.chb.2017.02.043.

Al-Jarrah, M., Hailat, K., & Jarah, B. (2023). Total quality management and its role in improving customer relations in Jordanian Islamic banks. Uncertain Supply Chain Management, 11(1), 119-126.

Al-Azawei, A., Parslow, P., & Lundqvist, K. (2016). Barriers and opportunities of e-learning implementation in Iraq: A case of public universities. The International Review of Research in Open and Distributed Learning, 17(5). https://doi.org/10.19173/irrodl.v17i5.2501.

Almahasees, Z., Al-Harahsheh, A., & Albudairi, Y. (2024). AI-powered education: Revolutionizing teaching and learning through artificial intelligence in Jordan. Research Journal in Advanced Humanities, 5(4), 156-172. https://doi.org/10.58256/dqpagd83.

Tubishat, B. M. A. R., Alazzam, F. A. F., Hryhoruk, P., Blikhar, M., Zhyhulin, O., & Karvatska, N. (2024). Sustainable legal development in the region: strategy for integrating e-commerce platforms in the domestic market in the era of industry 5.0.

Hailat, K. Q., Falah Jarah, B. A., Mefleh Al-Jarrah, M. F., & Almatarneh, Z. (2023). The impact of electronic banking services on the use of technology by customers of conventional and Islamic banks in Jordan. International Journal of Data & Network Science, 7(2).

Al Azzam, F. A. F., Khomko, L., Mykhailyk, N., Maslak, O., & Danchak, L. (2023). Optimization of international trade for sustainable development marketing strategy: Economic and legal EU regulations. International Journal of Sustainable Development & Planning, 18(8).

Al-Maroof, R.S., Salloum, S.A. (2021). An Integrated Model of Continuous Intention to Use of Google Classroom. In: Al-Emran, M., Shaalan, K., Hassanien, A. (eds) Recent Advances in Intelligent Systems and Smart Applications. Studies in Systems, Decision and Control, vol 295. Springer, Cham. https://doi.org/10.1007/978-3-030-47411-9_18.

Alnemrat, A., Aldamen, H., Al-Deaibes, M., & Alsharefeen, R. (2023). E-learning in a Jordanian higher education institution. Frontiers in Psychology, 14, 1136142. https://doi.org/10.3389/fpsyg.2023.1136142.

Al Jarrah, M., Alhawari, S., Almodallah, Y., & Jarah, B. (2025). The role of business intelligence technologies in organizational agility and communication technologies as a mediator in Jordanian telecom companies. Management & Accounting Review (MAR), 24(1), 203-227.

Alqudah, A. M. A., Jaradat, Y. M., AlObaydi, B. A. A., Alqudah, D., & Jarah, B. A. F. (2024). Artificial intelligence in design and impact on electronic marketing in companies. Journal of Ecohumanism, 3(4), 170-179.

Chang, C. Y., Chung, M. H., & Yang, J. C. (2022). Facilitating nursing students' skill training in distance education via online game-based learning with the watch-summarize-question approach during the COVID-19 pandemic: A quasi-experimental study. Nurse education today, 109, 105256. https://doi.org/10.1016/j.nedt.2021.105256.

Christanti, M. F., Mawangir, M., Arevin, A. T., Ramadhan, I., & Limijadi, E. K. S. (2024). The digital divide in education: Bridging gaps in the era of online learning. Migration Letters, 21(S4), 1070-1079.

Gharaibeh, Z. I. Y., Alazzam, F. A. F., Salih, A. J., & Aldrou, K. K. A. R. (2024). Examining challenges and prospects associated with implementing legal protections for electronic governances: a generic perspective from developing country. BBR. Brazilian Business Review, 21(5), e20231773.

Crompton, H., & Burke, D. (2023). Artificial intelligence in higher education: the state of the field. International journal of educational technology in higher education, 20(1), 22. https://doi.org/10.1186/s41239-023-00392-8.

Jarah, B. A. F., Alghadi, M. Y., Al-Zaqeba, M. A. A., Mugableh, M. I., & Zaqaibeh, B. (2024). The influence of financial technology on profitability in Jordanian commercial banks. Humanities and Social Sciences Letters, 12(2), 176-188.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS quarterly, 319-340. https://doi.org/10.2307/249008.

Gefen, D., & Straub, D. W. (1997). Gender differences in the perception and use of e-mail: An extension to the technology acceptance model. MIS quarterly, 389-400. https://doi.org/10.2307/249720.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. Educational and Psychological Measurement, 30, 607-610.

Long, D., & Magerko, B. (2020). What is AI literacy? Competencies and design considerations. Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems, 1–16. https://doi.org/10.1145/3313831.3376727.

Miao, F., & Holmes, W. (2021). AI and education: A guidance for policymakers. Unesco Publishing. https://doi.org/10.54675/PCSP7350.

Ng, W. (2012). Can we teach digital natives digital literacy?. Computers & education, 59(3), 1065-1078. https://doi.org/10.1016/j.compedu.2012.04.016.

Su, J., Ng, D. T. K., & Chu, S. K. W. (2023). Artificial intelligence (AI) literacy in early childhood education: The challenges and opportunities. Computers and Education: Artificial Intelligence, 4, 100124. https://doi.org/10.1016/j.caeai.2023.100124.

Zobi, M., Al-Zaqeba, M., & Jarah, B. (2023). Taxation and customs strategies in Jordanian supply chain management: Shaping sustainable design and driving environmental responsibility. Uncertain Supply Chain Management, 11(4), 1859-1876.

Wagiran, W., Suharjana, S., Nurtanto, M., & Mutohhari, F. (2022). Determining the e-learning readiness of higher education students: A study during the COVID-19 pandemic. Heliyon, 8(10). https://doi.org/10.1016/j.heliyon.2022.e11160.

Wang, S., Wang, F., Zhu, Z., Wang, J., Tran, T., & Du, Z. (2024). Artificial intelligence in education: A systematic literature review. Expert Systems with Applications, 252, 124167. https://doi.org/10.1016/j.eswa.2024.124167.

Whalley, B., France, D., Park, J., Mauchline, A., & Welsh, K. (2021). Towards flexible personalized learning and the future educational system in the fourth industrial revolution in the wake of Covid-19. Higher Education Pedagogies, 6(1), 79-99. https://doi.org/10.1080/23752696.2021.1883458.

Yalley, A. A. (2022). Student readiness for e-learning co-production in developing countries higher education institutions. Education and Information Technologies, 27(9), 12421-12448. https://doi.org/10.1007/s10639-022-11134-0.

Almatarneh, Z., Zaqeeba, N., Jebril, I., & Jarah, B. A. F. (2023). The role of financial accounting technology in improving customer relationship management in Jordanian banks. Asian Economic and Financial Review, 13(12), 1008.

