

## Research Article

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## Artificial Intelligence: Faculty Awareness and Impact on Digital Transformation Skills and Technological Trends

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### Abstract

**Background/purpose.** As artificial intelligence (AI) continues to reshape educational landscapes, understanding faculty awareness and readiness is crucial for effective AI integration in higher education. This study examines AI awareness among faculty members at a university in the United Arab Emirates (UAE) and its relationship with digital transformation skills and technological and scientific trends.

**Materials/methods.** A descriptive-correlational research design was employed, surveying 248 faculty members (62.3% of total staff) using a simple random sampling technique. The study employed the Digital Transformation Skills Scale (DTS) and the Technological and Scientific Trends Scale (TSS) to investigate the associations with AI awareness. Faculty perceptions were assessed using a five-point Likert scale, and statistical analysis included Pearson correlation tests to determine relationships among variables.

**Results.** Findings indicated that faculty members demonstrated moderate AI awareness (mean = 3.06) on the Likert scale. No significant correlation was found between AI awareness and DTS ( $r = 0.142$ ,  $p = 0.195$ ), suggesting that digital transformation skills alone may not predict AI awareness. However, a significant positive correlation was identified between AI awareness and TSS ( $r = 0.598$ ,  $p < 0.01$ ), indicating that faculty with greater awareness of technological and scientific trends are more knowledgeable about AI.

**Conclusion.** The findings highlight the necessity for faculty development focused on AI to improve competency and facilitate digital transformation. Future research should investigate institutional policies, faculty attitudes, and specific factors related to disciplines in AI adoption.

## 1. Introduction

Artificial intelligence (AI) has emerged as a powerful force transforming the educational landscape, reshaping conventional teaching methods and redefining the interaction between learners, information, and knowledge systems (Alenezi, 2023). This research explores the dynamic relationship between AI and education through the lens of faculty practices at Ajman University, shedding light on how educators integrate AI to enhance teaching and learning processes. As technology rapidly evolves and permeates every aspect of life, education is no longer insulated from digital innovations. According to Deslandes (2023), AI—commonly described as the intelligence embedded in machines—has the potential to radically disrupt established educational models. Modern education increasingly demands that both instructors and learners adopt advanced strategies, tools, and instructional frameworks that extend beyond traditional classroom methods (Megahed et al., 2022). The integration of AI has catalyzed a shift from uniform educational delivery toward highly adaptive, learner-specific environments that foster interaction, engagement, and personalization (Rudovic et al., 2018). This study focuses on how AI contributes to the co-evolution of education by supporting three interconnected areas of student development: digital proficiency, scientific awareness, and language communication (Holmes et al., 2021). Digital transformation competencies encompass the effective utilization of emerging technological platforms and digital tools, which have become essential in today's workplace (Smith et al., 2020). Educational systems that once relied on rigid, static models are giving way to flexible learning experiences designed to offer instant feedback and simulations that reflect real-world challenges (Alamri et al., 2021). In the area of language acquisition, AI technologies such as natural language processing (NLP), adaptive language applications, and real-time translation tools offer students personalized feedback and cross-lingual learning opportunities (Pokrivcakova, 2019). These innovations not only enhance learners' linguistic capabilities but also prepare them for communication in multicultural, globalized settings (Li, 2024). Moreover, AI enables students to develop an awareness of emerging scientific disciplines and trends. Ouyang et al. (2022) point to AI's role in improving students' ability to recognize and respond to evolving scientific domains. As the demands of future careers are shaped by scientific and technological advances, learners must be equipped to navigate this complexity with critical and creative thinking (Tolmie, 2020). In line with this, Ng et al. (2023) emphasize that the integration of AI in educational contexts fosters deeper cognitive engagement, innovation, and problem-solving capabilities. Despite the growing global emphasis on AI in education, research on how faculty in Arab higher education institutions apply AI tools in instructional contexts remains scarce. This study addresses this gap by investigating the practices and perceptions of Ajman University faculty members regarding AI integration. The research seeks to uncover how AI influences pedagogical strategies, enhances student development, and contributes to broader educational innovation in the Arab region.

### 1.1. Literature Review

The integration of Artificial Intelligence (AI) into higher education has initiated profound transformations in teaching, learning, and institutional operations. AI technologies are enabling adaptive learning systems, intelligent tutoring, and advanced data analytics that personalize instruction and optimize student engagement (Dwivedi et al., 2021; Holmes et al., 2021; Kochmar et al., 2020). Faculty awareness of AI is therefore critical to ensure effective adoption of these technologies across educational environments (Ng et al., 2023; Holmström, 2022). One of the central themes in the literature is the development of Digital Transformation Skills, where faculty members require advanced competencies in data literacy, coding, algorithmic thinking, and integrating AI into curriculum design (Alanezi, 2023; Alamri et al., 2021). Studies by Cantú-Ortiz et al. (2020) and Sousa and Rocha (2019) emphasized that digital transformation skills are not limited to technical knowledge, but also extend to pedagogical flexibility and institutional readiness for AI-powered

educational reforms. In parallel, several studies have discussed AI's growing influence on scientific trends and how it shapes faculty engagement with emerging technologies. Researchers such as Ouyang et al. (2022), Kolade et al. (2024), and Guo (2020) have indicated that AI enables faculty to access real-time scientific databases, analyze massive datasets, and contribute to cross-disciplinary research initiatives, thereby accelerating innovation across academic fields. This trend reflects the need for faculty to stay informed and actively participate in scientific debates involving AI applications (Stracke et al., 2024). Moreover, recent scholarship emphasizes the importance of institutional support in developing AI-related capacities. As Alsalhi et al. (2024) and Bettayeb et al. (2024) observed, faculty readiness for AI adoption is significantly influenced by organizational policies, administrative support, and tailored professional development programs that promote sustainable AI integration. Finally, the literature also highlights ethical concerns, equity issues, and the need for governance frameworks to ensure responsible AI use in education (Holmes et al., 2021; Sidiropoulos & Anagnostopoulos, 2024; Peters et al., 2024). This underscores the complexity of preparing faculty for AI-driven digital transformation, balancing technical proficiency with ethical responsibility.

### ***1.1.1. Digital Transformation Skills***

Digital transformation in higher education extends far beyond the simple integration of digital tools; it requires the cultivation of advanced competencies among faculty to navigate complex technological landscapes (Holmström, 2022; Alenezi, 2023). Faculty members are now expected to possess not only technical know-how but also pedagogical adaptability, data literacy, and AI integration capabilities that enable them to personalize learning and optimize student outcomes (Katz et al., 2022; Alamri et al., 2021). Research by Cantú-Ortiz et al. (2020) emphasizes that digital transformation competencies encompass three key domains: technical knowledge (such as understanding AI algorithms and machine learning models), technical performance (the ability to utilize digital platforms effectively), and technical productivity (applying digital tools to improve teaching efficiency and innovation). Faculty who master these skills are better prepared to adapt to evolving educational paradigms driven by artificial intelligence. Additionally, gamification and intelligent tutoring systems (ITS) have emerged as powerful AI-based tools that support digital transformation. Chrysafiadi & Virvou (2021) and Kochmar et al. (2020) note that these systems analyze student data in real time, providing adaptive feedback and personalized content delivery. Gamified learning platforms foster student motivation and digital engagement by introducing interactive elements into the learning experience (Alsadoon et al., 2022; Alomair & Hammami, 2020). Furthermore, faculty digital transformation competencies also involve data-driven decision making. Faculty members are increasingly required to analyze educational data to inform curriculum design, track student progress, and enhance academic planning (Sousa & Rocha, 2019; Qasim et al., 2020). Institutions must support this shift through ongoing professional development, technological infrastructure, and policy frameworks that empower faculty to fully leverage AI-driven innovations (Ng et al., 2023; Bettayeb et al., 2024). In sum, developing digital transformation skills among faculty is central to achieving sustainable educational innovation, enhancing instructional quality, and preparing institutions for the future demands of AI-driven learning ecosystems.

### ***1.1.2. AI's Influence on Understanding Scientific Trends***

Artificial intelligence (AI) has revolutionized how faculty engage with scientific knowledge, significantly influencing their ability to track and contribute to emerging scientific trends (Dwivedi et al., 2021; Kolade et al., 2024). AI-powered tools facilitate real-time access to global scientific databases, enabling educators and researchers to process vast datasets, uncover patterns, and generate new insights that would be difficult to achieve using conventional methods (Ouyang et al., 2022; Holmes et al., 2021). The literature highlights how AI applications such as natural language processing (NLP), machine learning, and big data analytics allow faculty to synthesize interdisciplinary

research and monitor rapid advancements across multiple scientific domains (Peters et al., 2024; Deng & Liu, 2018). These technologies support faculty members in staying updated on cutting-edge developments, fostering academic innovation and cross-disciplinary collaboration (Stracke et al., 2024). Additionally, AI's predictive analytics capabilities enable faculty to identify emerging research gaps, forecast technological breakthroughs, and adapt curricula to incorporate the latest scientific advancements (Li, 2024; Yu, 2024). Such proactive engagement empowers faculty to align teaching and research with evolving global scientific priorities. However, engaging with AI-driven scientific trends also requires critical awareness of ethical considerations, data privacy, and responsible AI use, ensuring that technological advancements are applied for the collective benefit of the academic community (Holmes et al., 2021; Sidiropoulos & Anagnostopoulos, 2024). Institutions must therefore equip faculty not only with technical competencies but also with ethical frameworks that govern AI's application in research and education.

### **1.2. Previous Studies**

Several prior studies have addressed the integration of artificial intelligence (AI) in higher education, focusing on faculty awareness, digital competencies, and institutional readiness. For instance, Kokolek et al. (2019) examined how higher levels of digital competence can accelerate digitalization processes, highlighting the importance of leadership, digital skills, and professional development for successful transformation. Similarly, Sousa and Rocha (2019) emphasized the significance of AI and emerging technologies such as nanotechnology and the Internet of Things (IoT) in preparing future teachers to meet technological challenges through curriculum reform. Cantú-Ortiz et al. (2020) proposed an analytical model that demonstrates how AI can be embedded within academic programs to support Industry 4.0 workforce preparation, emphasizing the need for faculty to develop digital transformation competencies through challenge-based learning and integrated teaching methodologies. Holmström (2022) contributed by evaluating institutional readiness for AI-driven digital transformation projects, offering frameworks for higher education institutions to assess their preparedness. Furthermore, Kröll and Burova-Keßler (2021) highlighted the role of AI in corporate education and training, stressing the value of user-friendly learning platforms that provide constructive feedback. Oliveira and De Souza (2022) introduced the TADEO model, emphasizing the development of cognitive and technical skills to address complex global issues, such as climate change, through digitally enhanced educational approaches. In a broader context, Stracke et al. (2024) underscored the necessity for faculty members to possess both pedagogical and technological skills to navigate rapidly evolving technological environments. Alsalhi et al. (2024) further discussed the challenges faced by faculty at Ajman University, identifying gaps in training opportunities related to AI, language communication, digital transformation skills, and scientific trends. These studies collectively emphasize the ongoing need for targeted training programs, policy reforms, and institutional support to equip faculty members with the competencies required for effective AI integration and digital transformation in higher education.

### **1.3. Objective of the Study**

This study intends to investigate faculty awareness of artificial intelligence, its impact on digital transformation skills, and technological and scientific developments in higher education.

### **1.4. Study Question**

The study seeks to answer the following questions:

*RQ1:* How much do professors at Ajman University know about artificial intelligence (AI)?

*RQ2:* How does the awareness of artificial intelligence (AI) correlate with digital transformation skills (DTS) among Ajman University faculty members?

*RQ3:* What is the relationship between the degree of familiarity of faculty members at Ajman University with artificial intelligence (AI) technology and scientific trends (TSSs)?

### **1.5. Significance of Study**

The significance of the study is demonstrated as follows:

Effective integration within teaching, research, and digital transformation efforts across institutions requires faculty knowledge of AI, which this study explores.

- Effective integration within teaching, research, and digital transformation efforts across institutions requires faculty knowledge of AI, which this study aims to explore.
- Through exploring the interconnectivity of AI awareness, digital transformation capabilities, and technology trends, this study offers insights to inform faculty members where additional training and support are needed.
- The results stress the importance of AI-tailored training in staff development programs, which allows institutions to offer bespoke workshops and programs for facilitating faculty knowledge.
- The study provides data-backed information that can potentially assist university administrators and policymakers planning to establish a strategy for AI infusion into undergraduate education curricula and faculty capacity building programs.
- This study adds to the growing body of literature on AI awareness among faculty in academia, providing a basis upon which future work regarding faculty perceptions, institutional policies and AI adoption strategies can build.

## **2. Methodology**

### **2.1. Study Approach**

This research employed a quantitative, descriptive-correlational design using a cross-sectional survey methodology. The purpose was to examine faculty perceptions of artificial intelligence (AI) and its relationship with digital transformation skills and technological scientific trends. Quantitative designs are particularly well-suited for investigating relationships among measurable variables and drawing generalizable conclusions (Creswell & Creswell, 2018). In cross-sectional survey research, data are collected at a single point in time from a specific population, allowing researchers to identify associations between variables without manipulating them (Levin, 2006). This approach enabled the researchers to gather empirical evidence about the extent to which faculty members at Ajman University are aware of and apply AI-related practices in their teaching.

### **2.2. Study Participants**

The study was conducted during the first semester of the academic year 2024/2025. A total of 300 faculty members from Ajman University were selected using a systematic random sampling technique, ensuring equal representation and enhancing the generalizability of results (Fowler, 2014). Of these, 248 faculty members fully completed the survey, yielding a valid response rate of 83%. The 52 incomplete questionnaires (17%) were excluded from analysis. The participants represented various colleges, including Engineering, Business Administration, Information Technology, and Humanities. The sample included 54.8% males ( $n = 136$ ) and 45.2% females ( $n = 112$ ). The majority were between 31 and 50 years of age, and most held doctoral degrees. The inclusion of faculty across academic disciplines and demographic categories allowed for a broad and reliable perspective on AI-related competencies in teaching.

## 2.3. Study Instruments

### 2.3.1. Artificial Intelligence Awareness Scale

Three validated scales were used to collect data:

An Artificial Intelligence Awareness Scale was developed to measure faculty members' understanding of AI-related concepts. The scale construction was guided by a review of relevant educational literature and comprised 12 items assessing two primary dimensions: cognitive awareness and performance awareness. All items were rated using a 5-point Likert scale ranging from Strongly Disagree to Strongly Agree. To ensure content validity, a panel of experts in educational technology reviewed the English version of the instrument, evaluating its clarity, grammatical accuracy, and relevance. Based on their feedback, four items underwent minor linguistic revisions to enhance precision and readability. Higher scores on the scale reflected a stronger understanding and application of AI constructs, while lower scores indicated limited awareness. The internal consistency and reliability of the instrument were examined using Cronbach's alpha coefficients. The results indicated excellent reliability, with coefficients of 0.940 for the performance awareness dimension, 0.915 for cognitive awareness, and 0.952 for the overall scale. The correlation coefficients between each item and its respective dimension were statistically significant at the 0.01 level, demonstrating strong psychometric properties.

**Table 1.** Correlation Coefficients Between Each Item and its Respective Aspects Overall Score.

| Aspect                      | Item No. | Correlation Coefficient | Sig.   |
|-----------------------------|----------|-------------------------|--------|
| Cognitive Awareness of AI   | 1.       | .851**                  | < .001 |
|                             | 2.       | .876**                  | < .001 |
|                             | 3.       | .943**                  | < .001 |
|                             | 4.       | .904**                  | < .001 |
| Performance Awareness of AI | 5.       | .819**                  | < .001 |
|                             | 6.       | .908**                  | < .001 |
|                             | 7.       | .827**                  | < .001 |
|                             | 8.       | .784**                  | < .001 |
|                             | 9.       | .873**                  | < .001 |
|                             | 10.      | .887**                  | < .001 |
|                             | 11.      | .788**                  | < .001 |
|                             | 12.      | .836**                  | < .001 |

**Table 2.** Correlation Coefficients for Aspects and Overall Scaled Scoring.

| Aspect                      | Correlation Coefficient | Sig.   |
|-----------------------------|-------------------------|--------|
| Cognitive Awareness of AI   | .896**                  | < .001 |
| Performance Awareness of AI | .975**                  | < .001 |

$p < 0.01$

### 2.3.2. Digital Transformation Skills Scale (DTS)

The Digital Transformation Skills Scale (DTS) was developed to assess faculty members' proficiency in essential digital transformation competencies. The instrument consisted of 14 items covering three core domains: technical knowledge competencies, technical performance competencies, and technical productivity competencies. Each item was rated on a 5-point Likert scale ranging from Strongly Disagree to Strongly Agree. The scale was constructed based on relevant literature in educational technology and refined through a consensus process involving domain experts to ensure clarity, relevance, and alignment with the study's objectives. To examine the scale's internal consistency and reliability, Cronbach's alpha coefficients were calculated. The results indicated strong psychometric properties, with reliability values ranging from  $\alpha = 0.862$  to  $0.888$  for technical knowledge competencies,  $\alpha = 0.840$  for technical performance competencies, and  $\alpha = 0.938$  for the overall scale. Correlation analyses further confirmed that the relationships between individual items and their corresponding domains were statistically significant at the 0.01 level, demonstrating strong internal coherence and construct validity. These findings confirm the scale's suitability for assessing digital competencies in higher education contexts and support its use in broader studies on faculty digital readiness.

**Table 3.** Correlation Coefficients Between Each Item and its Respective Aspects Overall Scaled Scoring.

| Aspect                              | Item No. | Correlation Coefficient | Sig.   |
|-------------------------------------|----------|-------------------------|--------|
| Technical Knowledge Competencies    | 1.       | .825**                  | < .001 |
|                                     | 2.       | .793**                  | < .001 |
|                                     | 3.       | .879**                  | < .001 |
|                                     | 4.       | .905**                  | < .001 |
| Technical Performance Competencies  | 5.       | .779**                  | < .001 |
|                                     | 6.       | .845**                  | < .001 |
|                                     | 7.       | .829**                  | < .001 |
|                                     | 8.       | .871**                  | < .001 |
|                                     | 9.       | .751**                  | < .001 |
|                                     | 10.      | .804**                  | < .001 |
| Technical Productivity Competencies | 11.      | .785**                  | < .001 |
|                                     | 12.      | .867**                  | < .001 |
|                                     | 13.      | .891**                  | < .001 |
|                                     | 14.      | .826**                  | < .001 |

**Table 4.** Correlation Coefficients Between Aspects and Overall Scaled Scoring.

| Aspect                              | Correlation Coefficient | Sig.   |
|-------------------------------------|-------------------------|--------|
| Technical Knowledge Competencies    | .896**                  | <.001  |
| Technical Performance Competencies  | .924**                  | < .001 |
| Technical Productivity Competencies | .892**                  |        |

### 2.3.3. Technological Scientific Trends Scale (TSS)

The Technological Scientific Trends Scale (TSS) was developed to measure faculty members' perceptions of technology adoption and awareness of AI-related scientific trends. The scale comprised 16 items that assessed three key dimensions: ease of use, expected benefit, and attitudes toward use and satisfaction. Responses were rated on a 5-point Likert scale, with total scores ranging from 16 to 80, where higher scores reflected stronger awareness and more positive attitudes toward technological and scientific trends. The scale items were developed based on prior research in educational technology and refined through expert review to ensure content validity, clarity, and contextual relevance. To evaluate the instrument's psychometric properties, Cronbach's alpha coefficients were calculated for each dimension. The results demonstrated high internal consistency, with values of  $\alpha = 0.814$  for ease of use,  $\alpha = 0.900$  for expected benefit,  $\alpha = 0.895$  for attitudes toward use, and  $\alpha = 0.931$  for the overall scale. Furthermore, correlation analyses revealed that the relationships between items and their respective dimensions were statistically significant at the 0.01 level, confirming the scale's reliability and construct validity. These findings support the TSS scale's effectiveness in capturing faculty members' perceptions of scientific and technological trends and its applicability in future research on AI integration in higher education.

**Table 5.** Correlation Coefficients Between Each Item and its Respective Aspects Overall Scaled Scoring.

| Aspect           | Item No. | Correlation Coefficient | Sig.   |
|------------------|----------|-------------------------|--------|
| Ease of Use      | 1.       | .754**                  | < .001 |
|                  | 2.       | .798**                  | < .001 |
|                  | 3.       | .883**                  | < .001 |
|                  | 4.       | .812**                  | < .001 |
| Expected Benefit | 5.       | .770**                  | < .001 |
|                  | 6.       | .770**                  | < .001 |
|                  | 7.       | .788**                  | < .001 |
|                  | 8.       | .833**                  | < .001 |

**Table 6.** Correlation Coefficients Between Aspects and Overall Scale Score.

| Aspect                               | Correlation Coefficient | Sig.   |
|--------------------------------------|-------------------------|--------|
| Ease of Use                          | .846**                  | < .001 |
| Expected Benefit                     | .938**                  | < .001 |
| Satisfaction and Attitude Toward Use | .799**                  | < .001 |

### 2.4. Data Analysis

The data collected from the study were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics, including means, standard deviations, and percentages, were computed to summarize participants' responses, while inferential statistical techniques were employed to examine differences across demographic variables. Specifically, an independent

samples t-test was used to compare mean scores between two groups (e.g., male and female participants), and one-way analysis of variance (ANOVA) was conducted to assess differences among more than two groups (e.g., academic departments). Where significant differences were detected, Scheffé's post hoc test was applied to identify the specific group differences. To interpret the levels of faculty perceptions and competencies, responses were categorized using the 5-point Likert scale: scores ranging from 4.21 to 5.00 were classified as Very High, 3.41 to 4.20 as High, 2.61 to 3.40 as Moderate, 1.81 to 2.60 as Low, and 1.00 to 1.80 as Very Low. This interpretation framework enabled the researchers to draw nuanced conclusions regarding faculty members' awareness of AI, digital transformation skills, and perceptions of technological scientific trends.

### 3. Results

#### 3.1. Results for Research Question 1

*The first research question aimed to assess the level of AI knowledge among professors at Ajman University.* The responses were analyzed by calculating each survey item's mean and standard deviation. The results are presented in Table 7.

**Table 7.** Descriptive Statistics of Professors' AI Awareness.

| No. | Item                                                                                | Strongly Agree (%) | Agree (%) | Neutral (%) | Disagree (%) | Strongly Disagree (%) | Mean | SD   | Rank |
|-----|-------------------------------------------------------------------------------------|--------------------|-----------|-------------|--------------|-----------------------|------|------|------|
| 1   | As for AI software and applications, I know enough.                                 | 10.1               | 36.7      | 29.8        | 22.6         | 0.8                   | 3.32 | 0.97 | 1    |
| 2   | I know enough about how professors use AI to be dangerous.                          | 11.3               | 36.3      | 26.6        | 22.6         | 3.2                   | 3.30 | 1.03 | 2    |
| 5   | I can create many files with AI software.                                           | 11.7               | 31.9      | 25.8        | 25.8         | 4.8                   | 3.21 | 1.11 | 3    |
| 4   | I am aware of how AI technologies can evaluate student work.                        | 10.9               | 26.6      | 29.8        | 26.6         | 6.0                   | 3.10 | 1.10 | 4    |
| 7   | AI applications allow me to have long documents automatically condensed for my use. | 8.9                | 28.6      | 27.8        | 29.8         | 4.8                   | 3.08 | 1.08 | 5    |
| 11  | I can convert printed images or text into a readable file using AI applications.    | 6.9                | 31.9      | 24.6        | 30.6         | 6.0                   | 3.04 | 1.07 | 6    |

|    |                                                                                                                |      |      |      |      |      |      |      |    |
|----|----------------------------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|----|
| 6  | AI tools allow me to create AI course content.                                                                 | 8.9  | 30.6 | 21.0 | 32.7 | 6.9  | 3.03 | 1.14 | 7  |
| 8  | I can chat with a kids-targeted FAQ using Chatbots.                                                            | 11.7 | 28.6 | 19.0 | 30.6 | 10.1 | 3.03 | 1.23 | 7  |
| 3  | Having worked with software or tools that deploy AI to enable the creation and implementation of lesson plans. | 8.9  | 33.5 | 25.8 | 21.8 | 10.1 | 3.01 | 1.14 | 9  |
| 10 | I can use AI based on tension, difficulty, and scientific hormonal programs.                                   | 6.0  | 30.6 | 24.6 | 25.8 | 12.9 | 2.92 | 1.16 | 10 |
| 9  | I have the course's written words and can use an AI (audio-producing) program.                                 | 8.1  | 24.6 | 23.8 | 33.5 | 10.1 | 2.88 | 1.15 | 11 |
| 12 | The AI software will allow me to turn written texts.                                                           | 4.0  | 21.0 | 22.6 | 41.5 | 10.9 | 2.66 | 1.06 | 12 |

The overall mean score across all items was 3.05, with a standard deviation (SD) of 0.95. These findings suggest that professors at Ajman University perceive themselves to have an average or slightly above-average level of AI awareness. Among the individual survey items, Item 1 ("As for AI software and applications; I know enough") received the highest rating, with a mean of 3.32 (SD = 0.97), indicating a relatively high level of confidence among professors in their knowledge of AI applications. This was followed by Item 2 ("I know enough about how professors use AI to be dangerous"), which had a mean of 3.30 (SD = 1.03). Conversely, the lowest-ranked item was Item 12 ("The AI software will allow me to turn written texts"), which received a mean score of 2.66 (SD = 1.06), suggesting a lower level of familiarity with AI functionalities related to text conversion. These results indicate that while professors demonstrate a moderate understanding of AI tools and applications, there are certain areas, particularly in AI-based content transformation and advanced automation, where knowledge appears to be more limited.

**Table 8.** Overall Results on the Investigated Specimen's Level of AI Knowledge (n = 248)

| Aspect                                       | Mean | Standard Deviation (SD) | Rank |
|----------------------------------------------|------|-------------------------|------|
| Level of cognitive awareness related to AI   | 3.22 | .96                     |      |
| Level of performance awareness related to AI | 2.99 | .97                     |      |
| Overall score                                | 3.06 | .90                     | -    |

Table 8 presents the overall findings on the Investigated Specimen's knowledge of AI. The overall mean score for AI awareness was 3.06 with a standard deviation of 0.90, indicating moderate AI awareness among participants. The cognitive awareness of AI was the highest-rated aspect, with a mean score of 3.22 (SD = 0.96), suggesting that participants demonstrated a relatively higher understanding of AI concepts and principles. On the other hand, the performance awareness of AI received a lower rating, with a mean score of 2.99 (SD = 0.97), indicating that participants were less confident in their practical ability to use AI tools and applications. These findings suggest that while faculty members at Ajman University exhibit a moderate degree of AI awareness, their cognitive understanding surpasses their practical AI implementation skills. This gap highlights the need for further professional development initiatives to effectively enhance faculty members' ability to integrate AI tools into their academic and research activities.

### 3.2. Results for Research Question 2

The second research question examined the correlation between artificial intelligence (AI) awareness and digital transformation skills (DTS) among Ajman University faculty members. The Pearson correlation coefficient was used to measure the strength and direction of the association between the respondents' AI awareness scores and their DTS scores to assess this relationship. The results of this correlation analysis are presented in Table 9.

**Table 9.** Correlation Between AI Awareness and Digital Transformation Skills (DTS).

| Variables    | AI Awareness | DTS |
|--------------|--------------|-----|
| AI Awareness | 1            | -   |
| DTS          | $r = 0.762$  | 1   |

The results in Table 9 indicate a strong positive correlation ( $r = 0.762$ ,  $p < 0.01$ ) between AI awareness and digital transformation skills among faculty members. This suggests that faculty members with higher AI awareness tend to exhibit stronger digital transformation skills. These findings highlight the importance of AI literacy in fostering technological adaptability and digital competency among educators. The strong correlation underscores the necessity of professional development programs integrating AI-related knowledge with digital transformation initiatives to effectively enhance faculty members' ability to leverage AI tools in their academic and administrative roles.

### 3.3. Results for Research Question 3

The third research question investigated the relationship between faculty members' familiarity with artificial intelligence (AI) technology and their awareness of scientific trends (TSSs) at Ajman University. To assess this relationship, the Pearson correlation coefficient was used to measure the strength and direction of the association between AI awareness and TSS scores. The results of this correlation analysis are presented in Table 10.

**Table 10.** Pearson Correlation Coefficient Between AI Awareness and Scientific Trends (TSSs).

| Variables       | TSSs        |
|-----------------|-------------|
| AI Awareness    | $r = 0.598$ |
| Sig.            | $< 0.001$   |
| Sample Size (n) | 248         |

The results in Table 10 indicate a moderate to strong positive correlation ( $r = 0.598$ ,  $p < 0.001$ ) between AI awareness and scientific trends (TSSs) among faculty members. This statistically significant relationship suggests that higher levels of AI awareness are associated with greater familiarity and engagement with scientific and technological trends. These findings highlight the importance of AI literacy in fostering an adaptive and forward-thinking academic environment. Faculty members with greater awareness of AI are more likely to stay informed about emerging technological and scientific advancements, which can influence their teaching, research, and professional development. The results underscore the need for continuous professional training programs to enhance faculty members' understanding of AI and its applications in scientific and educational contexts.

### 3.4. Summary of Results

This study aimed to assess the level of artificial intelligence (AI) awareness among faculty members at Ajman University and examine its relationship with digital transformation skills (DTS) and technological and scientific trends (TSSs). The key findings are summarized as follows:

1. Level of AI Awareness: Faculty members exhibited moderate AI awareness, with an overall mean score of 3.06 (SD = 0.90). The cognitive awareness of AI was rated higher ( $M = 3.22$ ,  $SD = 0.96$ ) than performance awareness ( $M = 2.99$ ,  $SD = 0.97$ ).
2. The highest-rated item was "As for AI software and applications; I know enough" ( $M = 3.32$ ,  $SD = 0.97$ ), indicating relatively higher confidence in AI applications.
3. The lowest-rated item was "The AI software will allow me to turn written texts" ( $M = 2.66$ ,  $SD = 1.06$ ), suggesting limited familiarity with AI-based text processing tools.
4. Relationship Between AI Awareness and Digital Transformation Skills (DTS): Statistical analysis using the Pearson correlation coefficient revealed no significant relationship between AI awareness and digital transformation skills ( $r = 0.142$ ,  $p = 0.195$ ). This suggests that AI awareness does not directly translate into the ability to apply digital transformation skills among faculty members.
5. Relationship Between AI Awareness and Technological and Scientific Trends (TSSs): A significant positive correlation was found between AI awareness and awareness of technological and scientific trends ( $r = 0.598$ ,  $p < 0.001$ ). This indicates that faculty members with higher AI awareness are more likely to stay informed about emerging technological and scientific trends. These findings highlight the need for targeted professional development programs to enhance AI-related knowledge and its practical application in digital transformation processes while fostering faculty members' engagement with emerging technological and scientific advancements.

## 4. Discussion

In conclusion, the results of this study indicate that faculty members at Ajman University have a moderate level of awareness of AI and that cognitive awareness is higher than performance awareness. This resonates with recent literature reports that although teachers are generally familiar with AI technologies, they lack the details needed to effectively deploy such tools in actual teaching contexts (Bettayeb et al., 2024; Rawas, 2024). This moderate level suggests a need for professional development initiatives to bridge this gap between theory and practice. Despite the widespread knowledge of this information, the study did not find a statistically relevant relationship between the DTS and AI awareness ( $r = 0.142$ ,  $p = 0.195$ ). These results differ from other recent studies that illustrate a more integrated AI proficiency and usage of digital tools (Elbanna & Armstrong, 2024; Al-Mughairi & Bhaskar, 2024). It implies that awareness of AI alone does not endow educators with the skills necessary for digital transformation. Such inconsistency may arise due to contextual variations, including the nature of training and support systems provided by institutions.

Effective integration of AI into educational practice often goes beyond mere awareness to entail comprehensive infrastructure and support (Holmström, 2022; Kröll & Burova-Keßler, 2021). Conversely, AI awareness and awareness of technological and scientific trends (TSS) were found to have a significant positive correlation ( $r = 0.598$ ,  $p < 0.001$ ). This trend aligns with the literature highlighting the importance of AI in advancing the engagement in science and technology (Gill et al., 2024; Yu, 2024). Faculty with a heightened awareness of AI technologies will likely be more attuned to emerging scientific trends, meaning AI may be a gateway to broader technological literacy. According to Cantú-Ortiz et al. (2020) and Qasim et al. (2022). Including artificial intelligence in education can improve the experience and an understanding of what is happening now and in the future in the technology landscape. The debate around the integration capability of AI tools in education has been heavily weighted towards adopting conversational AI tools (e.g., ChatGPT) and its demonstrated impact on student engagement and learning outcomes (Bettayeb et al., 2024; Lee, 2024). So, ChatGPT simulates real-world interactions and provides personalized feedback, making it a useful tool for modern education. However, according to Yu (2024) and Hammer (2024), effectively integrating AI means navigating its many opportunities and challenges, starting with how educators adjust to new roles and responsibilities. Data up to October 2023 with a probability distribution for AI awareness and type shows that, although there is a basic level of AI awareness among faculty, there is room for improvement about relevant training and support mechanisms. It would help faculty understand the theoretical aspects of AI and apply it in their teaching practices. A blend of theoretical and practical professional development ensures that faculty can leverage AI to transform better learning experiences (Sidiropoulos & Anagnostopoulos, 2024; Bukar et al., 2024). Ultimately, this reality of educational transformation by using AI is also merely the first move in the ongoing journey toward new technologies in classrooms, and moving the events in different and healthy directions, paving the paths to new learning experiences. AI is constantly evolving, and added research and adaptive measures will be necessary for educational institutions to understand AI's impact on teaching and learning (Kolade et al., 2024; Peters et al., 2024). In recent years, disruptive technology in education has been developed; this is not only artificial intelligence (AI), which has emerged to change many aspects of education. AI can benefit crucial areas, such as developing digital transformation skills, and help students stay updated with scientific developments (Dwivedi et al., 2021).

The discussion highlights the advantages and disadvantages of adopting AI in teaching at Ajman University. Ajman University is a promising target for offering AI-generated educational experiences to the faculty. Strengthening transformational attitudes and interactions with scientific trends has produced well-rounded instructors, where AI might be useful (Ng et al., 2023). Nonetheless, successful integration requires a carefully considered strategy that addresses challenges and leverages the benefits of AI in education (Guo, 2020). This development in AI also has implications for educational institutions, which need to evolve as the capabilities of these tools expand—and realize their potential for students and education more broadly. AI allows students to apply AI in a more accessible and approachable way so that they can explore many technology tools first-hand by simulating real-world circumstances (Karsenti, 2019). For example, AI-driven virtual labs allow faculty to practice teaching in a simulated environment and become proficient with technology deployed in next-gen classrooms. This statement is important for faculty to remain current with scientific advances (Hartman et al., 2019). With the vast amount of scientific material to collate and analyze, AI has a massive role in identifying new trends and summarizing complex ideas. AI research tools also help faculty and staff find necessary articles and papers to provide the latest effective information in their study plans (Eysenbach, 2023). The group speculates that the level of AI awareness among the sample is intermediate—there are few or no platforms or forums as well as seminars about what artificial intelligence is, how it could be inserted into pedagogical practice—and that such forums (initially) do not have sufficient budgeting resources compared with many

initiatives/programs/courses/workshops intended for requalifying teaching staff on issues related to AR.

The cost of many AI applications used in the education sector, which is typically high, may also explain why this information is not widely known (Bogdandy et al., 2020). About the second question, some studies concur with current research results, whereas other previous studies have shown insignificant connections between digital transformation skills (DTS) and AI awareness. Researchers in this particular field typically emphasize the role of organizational readiness for AI implementation, such as Holmström (2022), nevertheless underlining the lack of actual destination between DTS and knowledge among educators on AI, adding further complexity to show that addition of AI is not ensured by installation of a better DTS Kröll and Burova-Keßler (2021), also tentatively establishing a role for AI in corporate education and training while emphasizing constructive feedback rather than the direct relationship between DTS, which also indirectly establishes awareness. This finding is because while AI tools could enable some elements of education, their potential for aiding in digital transformation skills depends upon contextual affordances (user engagement and institutional capability) rather than general awareness of AI. Other studies, on the other hand, contrast with this research, as they tended to suggest that DTS was more related to AI awareness than was discovered by this project. For example, Cantú-Ortiz et al. (2020) reported that successfully incorporating AI into Tec-specific academic programs may help improve DTS through problem-based learning and blended pedagogical methodologies. Similarly, Oliveira and De Souza (2022) introduced the TADEO methodology, which considers that AI directly impacts DTS, as reflected in the aspects of both cognitive skills and technical abilities.

Differences in findings may be affected by contextual and methodological variations, for example, characteristics of the educational environment, including the extent to which AI tools are integrated into a comprehensive system (for instance, components such as learner models might not fully replicate across settings). When we discuss the third question, related studies have revealed a strong positive relationship with this study, especially for those that explore trends in technology and science (TSS) with AI awareness. A good example can be the study by Cantú-Ortiz et al. (2020), which highlights how AI was incorporated successfully into academic curriculums, enhancing the knowledge of AI among students and staff members of an institute; thus, a better comprehension of technology trends enables more utilization. Moreover, the agreement is backed by (Qasim et al., 2020) on AI-based macroscopically predictive models and data analysis, which improve the scientific understanding of students; this finding indicates that with increasing awareness in humans about AI, a greater understanding of actual technological advancements is needed. According to Gillpatrick (2020), the rationale behind this agreement is rooted in an integrative process from these studies, where AI is not just one more tool charging educational and technological developments but also a subliminal contribution source for improving education based on code learning/understanding with TSS. Alternatively, it is not shown consistently across all studies and other research that speaks to a weaker or more differentiated trend concerning TSS — AI awareness than the results presented here. This would essentially be a link between AI awareness and TSS. Still, for example, this is not what Holmström (2022) establishes, as their focus is on organizations' readiness to implement AI, in other words, distinct from whether people are aware of the existence of AI. This finding may be because this study focuses on institutional, rather than individual, cognitive or technical abilities. In a similar vein, Kröll and Burova-Keßler (2021) examine the relationship between AI competence in corporate learning, highlighting its usability or practical value from the users' perspective, and constructive feedback rather than broader impacts related to technological trends, suggesting that such associations may not hold if the focus is on the application of AI instead of awareness/understanding.

The diverging conclusions likely stem from these trends being considered in the context of organization-/practice-oriented rather than techno-scientific processes and hence with AI appearing

as a more independent object, or form. Furthermore, few Arab educational sites are interested in AI education (Martins & Wangenheim, 2022). The research also revealed a link between the influence of science and digital technologies and the awareness of AI. Faculty members also have their doubts about the use of AI technology. Nevertheless, (Deng, 2018) noted the opposite: youth in developing countries are optimistic about their career future and are confident in their professional growth prospects concerning AI and technology skills. Faculty members, therefore, need to understand how new technological developments allow them to leverage AI fully in education.

## 5. Limitation

One significant drawback of this study is the quickly shifting nature of artificial intelligence (AI) and digital transformation trends, which may impact the findings' long-term applicability. As AI technologies progress and educational institutions constantly update their digital strategy, faculty understanding, skill levels, and attitudes regarding AI integration may change over time. This study provides a snapshot of present perspectives and competencies. Still, it may not completely account for future developments, legislative changes, or developing AI-powered tools that could have a substantial impact on faculty positions in digital education. A longitudinal strategy or periodic evaluation is required to trace these evolving dynamics.

## 6. Conclusion

In summary, the integration of AI at Ajman University will not only introduce a revolution but also initiate an era for higher educational sectors. Universities can even use the power of AI as a tool to create new generations of educators with advanced digital, cross-cultural and scientific knowledge. The opportunity is before the university is at the forefront of creating an enriching and engaging learning environment that prepares students for a complex AI-enabled future. Therefore, a commitment to ongoing evolution and innovation is critical for AI to be applied effectively on behalf of individual students and the broader field of education.

## 7. Suggestion

Based on the findings of this study, several recommendations are proposed to enhance the integration of artificial intelligence (AI) in higher education. First, the results suggest variation in AI awareness and digital transformation skills among faculty members across different colleges. Therefore, it is recommended that Ajman University organize targeted AI-focused workshops and seminars tailored to the specific needs of faculty from various academic disciplines. These initiatives would support a more consistent and institution-wide capacity in using AI tools for teaching, learning, and research. Second, the findings indicate a moderate level of familiarity with emerging technological trends among participants. In response, universities should invest in professional development programs that equip faculty with practical experience and hands-on training in AI applications. This will enable educators to adapt effectively to rapid technological changes and incorporate them into pedagogical practice. Third, the study highlights the importance of bridging the gap between theoretical understanding and actual implementation of AI in educational settings. Institutions should consider developing structured support systems and policies that promote AI integration beyond isolated initiatives. Establishing cross-functional teams, incentives for AI-related research, and platforms for sharing best practices could foster a sustainable culture of innovation and readiness for future advancements.

## 8. Delimitations of Study

This study is subject to several delimitations that define its scope and focus. First, the research is limited to examining faculty members' perspectives on artificial intelligence (AI), digital transformation skills (DTS), and technological scientific trends (TSS) within the context of higher education. The views of students, administrative staff, and professionals from other sectors were

intentionally excluded to maintain a focused academic scope. Second, the study was conducted exclusively at Ajman University, which may limit the generalizability of the findings to other institutions or geographical regions. The organizational culture, technological infrastructure, and faculty development strategies unique to the university may not reflect broader trends in higher education across the UAE or internationally. Third, the data were collected during the first semester of the academic year 2024/2025, capturing faculty perceptions within a specific time frame. As such, the results represent a temporal snapshot and may not reflect long-term changes in AI awareness or digital readiness. These delimitations were necessary to ensure a manageable and context-specific investigation; however, they also suggest potential areas for future research involving diverse populations, longitudinal data collection, and cross-institutional comparisons.

## Declarations

**Author Contributions.** A. Alqawasmi: Literature review, conceptualization. N. Alsalhi: methodology, data analysis, B. Alakashee: review-editing and writing, S. Alqatawneh: original manuscript preparation, A. Al-Barakat: review-editing and writing, S. Al Karasneh: original manuscript preparation, All authors have read and approved the published article's final version.

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**Data Availability Statement.** (The corresponding author's data supporting this study's findings are available upon request.)

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