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Degree of Use of Cloud Artificial Intelligence in Improving Academic Guidance Systems in Virtual Learning Environments from the Perspective of Faculty Members

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ABSTRACT

The study aimed to assess the extent to which cloud artificial intelligence is used to improve academic guidance systems in virtual learning environments from the perspective of faculty members. It also sought to examine differences in the average scores of the study sample on the questionnaire regarding the use of cloud AI in enhancing academic guidance, based on factors such as gender, years of experience, and the number of AI-related courses taken. The study used the descriptive approach, with the researcher's tool as the study instrument. The sample consisted of 130 faculty members from Al-Baha University, aged between 25 and 40 years, with an average age of 31.76 years and a standard deviation of 3.521 years. The questionnaire was distributed electronically using a secure online data collection platform, making it easily accessible to faculty members across different institutions. This approach facilitated the collection of data from a broad and representative sample, enhancing external validity and the generalizability of the findings. Additionally, participant anonymity was maintained to encourage honest and unbiased responses, contributing to the credibility of the collected data. Results showed that the faculty members' evaluation level was high, with a weighted average of 3.4485 and an arithmetic mean of 137.93. The highest score was for "familiarity with cloud AI application basics" (4.056), followed by "solving academic guidance issues using applications" (4.025), and "employing applications in academic guidance tasks" (3.825). The lowest score was for "security and data protection in cloud AI usage" (1.888). No statistically significant differences were found between faculty scores based on gender. However, significant differences were found based on years of experience and the number of AI-related courses taken. The study recommended promoting cloud AI culture among students and faculty, as well as providing training courses on AI applications and their role in enhancing academic guidance.

Keywords: Cloud Artificial Intelligence, Academic Guidance, Virtual Environments, Faculty Members.

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Introduction

With continuous technological advancements, the need for more efficient and advanced academic guidance systems has increased, particularly in online learning environments. In this context, research in educational technology has increasingly focused on key trends such as artificial intelligence (AI), learning analytics, and adaptive learning to enhance the quality of education and improve the student experience. As the number of students grows and online learning expands, cloud AI has emerged as a ground-breaking innovation that enhances academic guidance by analyzing vast amounts of data and providing personalized recommendations based on students' academic behaviors and needs. Recent research trends in educational technology emphasize the use of intelligent learning systems that leverage AI to provide personalized learning experiences, enhance student-teacher interactions, and offer effective academic support. Within this framework, academic guidance plays a crucial role in supporting students throughout their educational journey, helping them make informed decisions regarding their majors and academic paths while also providing necessary psychological and academic assistance. Advances in AI technology enable the analysis of students' learning patterns and the provision of adaptive solutions tailored to their individual needs, ultimately leading to higher academic success rates, reduced dropout rates, and improved overall educational quality. Furthermore, research in educational technology intersects with the development of smart recommendation systems, big data-driven learning, and AI-powered tutoring. These innovations contribute to advanced academic guidance systems that assist students in making well-informed academic decisions. As a result, cloud AI has become an integral part of the future of academic guidance, offering real-time student data analysis, predicting potential academic challenges, and recommending tailored learning solutions. This integration enhances the effectiveness of academic support services in higher education institutions, ensuring a more efficient and personalized learning experience for students. The progress in AI technology allows for analyzing students' learning patterns, offering tailored solutions that boost academic performance and lower dropout rates (Al-Johary, 2020). By combining AI and cloud computing, students can access guidance services anytime and anywhere, which is especially important in virtual learning environments (Brown and Smith, 2022).

Cloud AI offers several features that support academic guidance, such as the ability to instantly process data and deliver real-time, accurate advice to students. AI-driven systems also provide continuous analytical reports, which help faculty and academic advisors monitor student progress and offer the necessary support (Johnson and White, 2021). However, despite the numerous advantages of cloud AI, some students and faculty may encounter difficulties in adapting to these new technologies, especially in academic environments that are not yet accustomed to utilizing intelligent systems for guidance. Additionally, the cost of developing and implementing these systems may pose a challenge for educational institutions with limited financial resources.

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Study Problem

In light of the rapid digital transformation occurring in higher education, cloud artificial intelligence has become one of the essential tools for improving academic guidance, especially in virtual learning environments. Cloud AI allows for the analysis of students' academic data, providing personalized recommendations and continuous support to help them achieve academic success, as confirmed by several studies, including Wahyuni and Fajarianto (2024). A study by Johnson and White (2021) highlighted that 65% of students in remote learning environments struggle with weak interaction with academic advisors, leading to poorly informed decisions regarding their academic majors and plans. Moreover, Li and Wang (2023) confirmed that the implementation of cloud AI technologies enhances the effectiveness of academic guidance.

The International Conference on Educational Technology and Artificial Intelligence (ICETA, 2022) recommended the development of intelligent academic guidance platforms relying on AI, which offer real-time, personalized consultations for students based on their academic data and learning behaviors. Furthermore, the Global Conference on Cloud Computing in Education (GCCE, 2023) emphasized the importance of cloud computing in improving access to academic guidance services. The Artificial Intelligence and the Future of Education Conference (AIEdu, 2023) recommended the development of policies and regulations to protect student data while using AI technologies in academic guidance to ensure the maximum benefit without compromising student privacy and security. Finally, the Digital Learning Technology Conference (DLT, 2022) called for intensive training for faculty members and academic advisors on how to use smart tools in academic guidance, ensuring effective integration between AI and traditional educational practices.

In light of the above, the urgent need to develop academic guidance systems by employing cloud-based artificial intelligence becomes clear. Current academic guidance systems often rely on traditional, manual approaches that can be time-consuming and less personalized, leading to challenges in meeting the diverse needs of students in virtual learning environments. These systems may struggle with providing timely feedback, accurate progress tracking, and customized learning paths, especially when catering to large numbers of students. Cloud-based AI has the potential to address these limitations by offering scalable, data-driven solutions that enhance personalization, efficiency, and accessibility. By leveraging advanced analytics and machine learning, cloud AI can provide real-time recommendations, adaptive learning resources, and more effective communication between students and advisors. This makes it a promising tool for modernizing academic guidance systems and better supporting student success in dynamic virtual educational settings. This is to ensure the provision of more efficient and flexible advisory services that meet the needs of students in virtual learning environments. The main research question can be stated as follow: **'What is the extent of cloud-based AI use in improving academic guidance systems in virtual learning environments from the perspective of faculty members?'**

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The following sub-questions arise from this main question:

1. Is there a statistically significant difference between the mean scores of the study sample on the questionnaire regarding the use of cloud-based AI applications and their impact on improving academic guidance systems in virtual learning environments, according to the gender variable (male, female)?
2. Is there a statistically significant difference between the mean scores of the study sample on the questionnaire regarding the use of cloud-based AI applications and their impact on improving academic guidance systems in virtual learning environments, according to the years of experience variable (0 to 5 years, 6 to 10 years, 11 years or more)?
3. Is there a statistically significant difference between the mean scores of the study sample on the questionnaire regarding the use of cloud-based AI applications and their impact on improving academic guidance systems in virtual learning environments, according to the number of training courses taken in the field of artificial intelligence (0 to 5 courses, 6 to 10 courses, 11 courses or more).

Study Aims

1. To identify the extent of cloud-based artificial intelligence (AI) use in improving academic guidance systems in virtual learning environments from the perspective of faculty members.
2. To uncover the differences in the mean scores of the study sample on the questionnaire regarding the use of cloud-based AI applications and their impact on improving academic guidance systems in virtual learning environments, according to the gender variable (male, female).
3. To uncover the differences in the mean scores of the study sample on the questionnaire regarding the use of cloud-based AI applications and their impact on improving academic guidance systems in virtual learning environments, according to the years of experience variable (0 to 5 years, 6 to 10 years, 11+ years).
4. To uncover the differences in the mean scores of the study sample on the questionnaire regarding the use of cloud-based AI applications and their impact on improving academic guidance systems in virtual learning environments, according to the number of AI-related training courses taken (0 to 5 courses, 6 to 10 courses, 11+ courses).

These objectives aim to provide a comprehensive understanding of how AI tools can be used effectively to improve academic guidance in online learning settings and whether certain variables, such as gender, experience, and training, influence this impact.

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Research Method of the Study

The research method of the study on was designed to systematically gather data and analyze the extent to which cloud-based AI is utilized in academic guidance. The study employed a quantitative research approach, utilizing a well-structured questionnaire as the primary data collection tool.The questionnaire was developed to capture the perceptions, experiences, and attitudes of faculty members regarding the integration of cloud AI in academic guidance systems. It included both closed-ended and Likert-scale questions to measure faculty members' agreement or disagreement with various statements about the effectiveness, benefits, challenges, and overall impact of AI technologies in enhancing academic guidance within virtual learning environments.The research was conducted in a cross-sectional manner, targeting a diverse sample of faculty members from various academic institutions. Data were collected electronically through an online survey platform to ensure accessibility and convenience for the participants. The collected data were then analyzed using statistical methods, including descriptive statistics and inferential analysis, to determine trends, correlations, and significant factors influencing the use of cloud AI in academic guidance.

The study also incorporated a validation process for the research tool. Experts in educational technology reviewed the questionnaire to ensure its reliability and validity. A pilot test was conducted prior to the full-scale survey to refine the tool and ensure its clarity and relevance. The results of this study aim to provide valuable insights into the role of cloud AI in academic guidance, offering recommendations for enhancing its implementation in virtual learning environments.

Significance of the Study

The "Significance of the Study" highlights the critical role of understanding faculty perspectives on the integration of cloud-based AI in academic guidance. The study addresses a gap in current research by exploring how AI technologies can enhance academic guidance in virtual environments, providing deeper insights into their effectiveness and challenges. The findings could benefit educators, academic institutions, and administrators by offering evidence-based recommendations on how AI can improve personalized learning experiences, increase efficiency in academic advising, and better support students' academic journeys. Additionally, the study can inform policy development and guide future research on the evolving role of AI in education, particularly in virtual learning settings.

Theoretical Importance

1. The current study identifies the challenges faced by traditional academic guidance systems and presents practical solutions using cloud artificial intelligence to overcome these challenges.
2. This study may enhance the confidence of students and faculty in using modern technologies while safeguarding student privacy.
3. This study provides educational institutions with insights on how to effectively integrate cloud AI technologies into academic guidance systems, thereby improving the level of support offered to students.

Theoretical Importance

1. The current study identifies the challenges faced by traditional academic advising systems and presents practical solutions using cloud-based artificial intelligence to overcome these challenges.

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2. The study may enhance the confidence of students and faculty members in using modern technologies while ensuring the protection of student privacy.
3. This study provides educational institutions with an understanding of how to effectively integrate cloud-based AI technologies into academic advising systems, thereby improving the level of support provided to students.

Practical Importance

1. The study may contribute to improving the understanding of the role of cloud-based AI in enhancing the quality of academic advising in virtual learning environments, by analyzing how personalized and immediate academic support can be delivered.
2. This study provides a framework for understanding how cloud-based AI can be integrated into educational systems. Thus, it enhances the ability to keep up with technological transformations in the education sector and meets the growing needs of e-learning platform users.
3. The study contributes to improving the effectiveness of academic advising services in virtual environments by analyzing the role of AI in enhancing the speed of response and the quality of advice and recommendations provided to students.

Study Limitations

Objective Limitations Defined by the variables addressed in the study, which include the degree of use of cloud-based artificial intelligence and the improvement of academic guidance systems in virtual environments.
Human Limitations. The study sample consists of faculty members at Al-Baha University.
Temporal Limitations The study tools were applied during the second semester of the academic year 1446 AH.
Spatial Limitations The study tools were applied at Al-Baha University in the Kingdom of Saudi Arabia.

The Study Terminologies

The "Study Terminologies" section defines key terms and concepts used throughout the research to ensure clarity and consistency. In this study, terms like "cloud artificial intelligence," "academic guidance systems," and "virtual learning environments" are central to understanding the scope and focus. These definitions help readers grasp the specific context of the study, making it easier to comprehend the research objectives and findings related to AI integration in academic advising.

Artificial Intelligence (AI)

Sengamalam, R. (2022, p. 99) defines AI as "a field in computer science focused on creating systems capable of performing tasks that require human intelligence, such as learning, decision-making, and data analysis."

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The researcher defines it operationally as systems that analyze student data and provide academic counseling based on that analysis.

Cloud AI

Schroer, A. (2022, p. 45) defines it as "a combination of AI technologies and cloud computing, enabling the ability to analyze big data, machine learning, natural language processing, and predictive decision-making online without requiring complex technical infrastructure."

The researcher defines it operationally as the use of artificial intelligence services provided by cloud computing, where users can upload data to cloud servers and run machine learning models for analysis using cloud infrastructure, which enables access to advanced computational capabilities without the need for local specialized hardware.

Academic Advising

Vallerand (2020, p. 117) and Paquette define it as "the process of supporting students in making important academic decisions, such as choosing courses, and guiding them in their academic paths."

Academic advising is enhanced in this study through the use of modern technologies such as cloud-based artificial intelligence.

Virtual Environments

Holmes et al. (2019, p. 88) define virtual environments as "digital learning platforms where students interact with educational content and instructors remotely, without the need for physical attendance in classrooms."

Theoretical Concepts and Previous Studies

Concept of Artificial Intelligence

Njoroge (2023, p. 129) and Sisa define it as "the ability of a system to interpret the data entered by the student or instructor, with the capability to learn from that data and use it to achieve specific educational tasks or objectives through flexible adaptation to the learning environment."

Types of Artificial Intelligence

Scholars classify artificial intelligence into four types (Krauss, 2023):

a) **Narrow AI** (Artificial Narrow Intelligence): This is the simplest and most widely used form of AI. It performs a single, pre-programmed task and mimics the human mind within that task. It cannot perform any task beyond its programming.

b) **General AI** (Artificial General Intelligence): In this type, AI has evolved to a level where it equals human thinking and functioning. Such systems work based on learning from data, experiences, and acquired knowledge, allowing them to make independent decisions without human intervention.

c) **Super Intelligent AI** (Artificial Super Intelligence): This is one of the most advanced and potentially dangerous forms of AI, still under experimentation. It aims to design machines that surpass human intelligence and capabilities, employing learning across all areas of human intelligence.

d) **Cloud AI** (Artificial Intelligence in the Cloud): This type provides flexible

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computational resources for universities without requiring large-scale investments. It supports advanced analytics of student academic trends and behaviors and facilitates integration with virtual learning platforms like Blackboard and Moodle. This is the focus of the current study.

Cloud AI and its Effectiveness in Academic Guidance

Cloud-based artificial intelligence (AI) platforms are becoming a vital component of the future of academic guidance in universities. These platforms allow students to receive accurate and personalized academic guidance, enhancing their academic success and reducing academic challenges. According to Gentile et al. (2023), these platforms offer personalized guidance that helps students make better academic decisions by providing precise recommendations, which decrease the likelihood of changing majors or encountering academic struggles. They also support faculty members by offering detailed analytical data on student performance, helping them provide appropriate support. Najmuldeen (2021) emphasizes that to ensure the success of cloud-based AI platforms, universities must develop flexible integration interfaces and provide comprehensive training programs. This approach will align with Saudi Arabia's Vision 2030 goals of developing digital higher education and enhancing virtual learning experiences.

As part of the digital transformation in education in Saudi Arabia, Vision 2030 aims to promote smart education and utilize modern technologies to improve learning quality. With the increasing use of virtual learning environments in Saudi universities, there is a growing need to update and enhance academic guidance systems to meet students' needs. Cloud-based AI is an innovative technological solution that can contribute to improving these systems, as highlighted by Ouyang & Jiao.(2021) Cloud AI has also contributed to the enhancement of academic guidance systems by analyzing student data, providing personalized recommendations based on their academic performance, predicting academic issues, and automating consultations through intelligent chatbots (Al-Shami, 2024). Despite the numerous benefits, challenges remain, such as the lack of technical awareness among faculty, privacy concerns, and difficulties in integrating AI systems with existing virtual learning platforms. Addressing these challenges requires additional training and enhanced cybersecurity measures.

Previous Studies

Al-Johari (2020) explored the role of cloud computing in digital transformation in Arab education and how cloud computing can provide flexible solutions for data storage and distribution of educational content. This contributes to easier access to educational resources from anywhere. It also demonstrated how cloud computing can be used to provide remote academic counseling and facilitate interaction between students and academic advisors. The results indicated that using this technology in virtual learning environments supports personalized learning for students, emphasizing the need to improve digital infrastructure in educational institutions in the Arab world.

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Ahmed (2021) reported on a study aimed to identify the impact of artificial intelligence in personalizing the educational experience for students by providing interactive content that meets their individual needs. It also reviewed the role of AI in improving academic advising services, contributing to effective interaction between students and teachers in remote learning environments. The study emphasized the need for training teachers and academic advisors on using these technologies to enhance the support offered to students.

Al-Baghdadi (2021) examined how AI is used in academic advising within Arab universities. The study explored the impact of this technology on improving academic services for students and clarified that AI could provide personalized academic counseling based on students' personal and academic data. The study's results highlighted the importance of utilizing this technology to enhance academic quality and reduce dropout rates.

Brown and Smith (2022) clarified how cloud-based AI can change the way academic advising is provided in higher education by analyzing student data and offering personalized guidance to improve academic performance and decision-making. The researchers also highlighted challenges faced by universities in applying these technologies, such as privacy and data protection issues, and pointed out that these technologies offer the opportunity to provide individual, flexible academic support that can interact with students 24/7.

Al-Khatib (2022) conducted a study focused on using AI in distance education and reviewed the challenges faced by students and teachers in implementing these technologies. It examined how AI systems benefit from student data to provide personalized academic counseling and track their academic progress. The study also explored the effectiveness of applying AI to provide instant solutions for problems faced by students, such as difficulty in interaction or lack of academic support, and pointed out that AI improvement in these areas would enhance the academic experience in e-learning environments.

Abdullah (2023) explored the use of cloud-based AI in improving the quality of higher education in virtual environments, focusing on how these technologies provide accurate and immediate academic counseling. The study pointed out how AI can analyze student data, such as performance rates, to provide personalized recommendations that help students make more effective academic decisions. It also discussed the benefits of integrating cloud-based AI into academic advising systems, such as improving access to information and providing continuous support to students in remote learning environments.

Li and Wang (2023) explored the role of artificial intelligence and cloud computing in providing personalized support for students in virtual learning environments. It focused on how big data is used to analyze students' needs and provide academic advice that meets their individual needs. The study showed that integrating cloud-based AI into educational systems can enhance communication between students and academic advisors, as well as improve students' academic success through continuous support.

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Comment on Previous Studies

Previous research underscores the increasing potential of integrating AI and cloud computing into educational systems, particularly in academic advising. A recurring theme is the ability of AI to offer personalized academic guidance by analyzing individual student data. This personalized support can lead to more tailored learning experiences, improving student outcomes. Cloud-based AI also facilitates remote academic advising, providing flexible, on-demand support, especially valuable in virtual learning environments. Additionally, the integration of AI with existing e-learning platforms like Blackboard enhances overall learning experiences by enabling seamless support for students.

However, studies also address challenges such as privacy concerns, data security, and the necessity of proper faculty training to ensure successful implementation. Despite these challenges, AI has been shown to positively impact academic success by offering timely interventions and personalized recommendations, which can reduce dropout rates and improve student retention. The current study aligns with prior research, including the works of Brown and Smith (2022), Abdullah (2023), and Li and Wang (2023), which explored AI's role in personalized academic support. Similar to Al-Khatib (2022) and Ahmed (2021), it emphasizes AI's effectiveness in remote education but also highlights the need for careful implementation to address privacy issues and ensure adequate faculty training.

Differences between the Current Study and Previous Studies

Focus on Faculty Views The current study is distinguished by its focus on the views of faculty members regarding the use of cloud-based artificial intelligence in academic advising. In contrast, most previous studies focused on the impact of these technologies from the perspective of students or analyzed their role in a more general context.

Broader Focus in Previous Studies Some previous studies, such as Al-Baghdadi and Ahmed (2021), addressed academic advising within broader topics such as personalized education and student-teacher interaction, whereas the current study specifically focuses on improving academic advising systems using cloud-based AI.

Integration of AI and Cloud Computing The current study integrates artificial intelligence and cloud computing in the context of academic advising systems, which differentiates it from studies that have not sufficiently explored this integration.

Study Methodology and Procedures

The study employs a quantitative research approach, using a structured questionnaire to gather faculty members' perspectives on the use of cloud AI in academic guidance systems. The questionnaire includes Likert-scale, multiple-choice, and open-ended questions to capture both quantitative and qualitative data. Data collection was conducted electronically through an online survey platform, ensuring broad accessibility. A pilot test was performed to refine the questionnaire for clarity and relevance. The collected data were analyzed using statistical methods to identify trends and correlations related to faculty views on AI's role in academic guidance.

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Study Method

The researcher used a descriptive approach to suit the objectives of the current study, aiming to determine the extent of the use of cloud-based AI applications in improving academic advising systems in virtual learning environments. The study also seeks to examine the nature of differences in the responses to the questionnaire regarding the use of cloud-based AI applications and their impact on improving academic advising systems in virtual learning environments, with an analysis of differences based on:
Gender Male, Female.
Years of Experience 0 to 5 years, 6 to 10 years, 11 years and above.
Number of AI Cloud Training Courses Taken 0 to 5 courses, 6 to 10 courses, 11 or more courses.

1. Study Sample

Sample for Psychometric Tool Validation This sample consisted of 70 faculty members from the University of Al-Baha, aged between 25 and 40 years, with an average age of 30.84 years and a standard deviation of 3.170 years.
Table 1 shows the descriptive statistical indicators for the sample used in validating the psychometric properties of the study tool.

Table 1:
Descriptive Statistics for the Sample Based on Demographic Variables

Categorical Variable	Groups	N	Average Age	Standard Deviation of Age	Percentage (%)
Gender	Males	33	30.61	3.122	47.14%
	Females	37	31.05	3.24	52.86%
Years of Experience	0 to 5 years	28	27.93	1.783	40%
	6 to 10 years	29	31.48	0.829	41.43%
	11 years or more	13	35.69	1.653	18.57%
Number of Training Courses	0 to 5 courses	16	34.25	2.817	22.86%
	6 to 10 courses	29	31.48	1.724	41.43%
	11 courses or more	25	27.92	1.824	35.71%
Total Sample		70	30.84	3.17	100%

2. The Primary Sample:

The primary sample consisted of 130 faculty members at the University of Al-Baha, with ages ranging from 25 to 40 years, an average age of 31.76 years, and a standard deviation of 3.521 years. Table (2) below shows the descriptive statistics for the primary sample.

Table (2):
Descriptive Statistics for the Primary Sample

Categorical Variable	Groups	N	Average Age	Standard Deviation of Age	Percentage (%)
Gender	Males	65	32.2	3.48	50%
	Females	65	31.32	3.62	50%

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Years of Experience	0-5 years	50	29.6	3.11	38.46%
	6-10 years	55	32.8	3.23	42.31%
	11+ years	25	36.5	3.01	19.23%
Training Courses	0-5 courses	30	28.4	2.91	23.08%
	6-10 courses	50	32.2	3.5	38.46%
	11+ courses	50	34.5	3.62	38.46%

*Total Sample: 130/ Average Age: 31.76/ Standard Deviation of Age: 3.521

Study Tool

The tool for this study was a questionnaire on the use of cloud-based artificial intelligence applications and their impact on improving academic guidance systems in virtual learning environments, from the perspective of faculty members (prepared by the researcher).

The Objective of the Questionnaire

This questionnaire aims to determine the degree of use of cloud-based artificial intelligence applications and their effect on improving academic guidance systems in virtual learning environments from the perspective of faculty members.

Description of the Initial Form of the Questionnaire and Scoring Method

The questionnaire consists of 24 items distributed across four main dimensions:

1. Familiarity with the basics of operating cloud-based AI applications.
2. Employing applications in completing academic guidance tasks.
3. Solving academic guidance problems using applications.
4. Data security and protection in using cloud-based AI.

Verification of the Psychometric Properties of the Questionnaire on the Use of Cloud-Based AI Applications and Their Impact on Improving Academic Guidance Systems in Virtual Learning Environments from the Perspective of Faculty Members

First: Validity of the Questionnaire

The researcher calculated the validity of the questionnaire through several methods to ensure it measures what it is intended to measure. These methods include: face validity, concurrent validity, and construct validity. The following results were obtained:

A- Face Validity (Judgmental Validity) The questionnaire was presented to a group of 10 experts in the field of educational technology to determine the validity, clarity, relevance, and appropriateness of the items for the study sample. Some items were modified based on their feedback, specifically items (2, 15, 18, 20, 22, and 24). A 90% agreement rate was considered acceptable among the experts.

B- Concurrent Validity The researcher calculated the concurrent validity on a sample of 70 faculty members, selecting the highest 27% and lowest 27%. The high-performance group consisted of 19 participants, and the low-performance group was

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also selected. The researcher then calculated a T-test (parametric test) to verify the significance of the differences between the two independent samples, as shown in the following table.

Table 3:
Results of Concurrent Validity of the Questionnaire

Survey and Its Sub-Dimensions	Group	N	Mean (M)	Standard Deviation (SD)	Degrees of Freedom (df)	t-Value	Statistical Significance
Dimension 1: Familiarity with the Basics of Operating Cloud AI Applications	Lower	19	28.68	4.41	36	-9.025	(0.000) Significant at 0.001
	Upper	19	40.53	3.642			
Dimension 2: Utilizing Applications in Academic Advising Tasks	Lower	19	26.63	3.947	36	-9.577	(0.000) Significant at 0.001
	Upper	19	39.11	4.081			
Dimension 3: Solving Academic Advising Problems Using Applications	Lower	19	25.84	2.167	36	-3.633	(0.000) Significant at 0.001
	Upper	19	32.47	7.655			
Dimension 4: Security and Data Protection in Cloud AI Usage	Lower	19	28	3.399	36	-5.75	(0.000) Significant at 0.001
	Upper	19	36.37	5.356			
Overall Survey	Lower	19	109.16	7.784	36	-10.348	(0.000) Significant at 0.001
	Upper	19	148.47	14.619			

The Critical t-Value at the 0.05 Significance Level with 36 Degrees of Freedom = 2.000
The Critical t-Value at the 0.01 Significance Level with 36 Degrees of Freedom = 2.660
It is evident from Table (3) that the calculated t-values reached (-9.025, -9.577, -3.633, -5.750, -10.348, -22.639), which are statistically significant at the 0.001 level. This indicates significant differences at the 0.001 level between the mean scores of individuals in the lower and upper-performance groups on the survey dimensions, with differences favoring the higher performance group. This suggests that the survey

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has high discriminative ability.

C. Construct Validity (Internal Consistency of the Survey) the internal consistency of the survey was verified on a sample of 70 faculty members. Then, Pearson correlation coefficients were calculated between the scores of individuals on each item and the overall score for the dimensions to which the items belong. All correlation coefficients were significant at the 0.05 and 0.001 significance levels. The following table shows the results obtained:

Table (4):
Pearson Correlation Coefficients between Scores for Each Item and the Overall Score for Each Dimension, and the Survey as a Whole.

Survey Dimensions and Sub-dimensions	Item	Correlation Coefficient with the Dimension's Total Score	Correlation Coefficient with the Survey's Total Score	Item	Correlation Coefficient with the Dimension's Total Score	Correlation Coefficient with the Survey's Total Score
Dimension 1: Knowledge of Cloud AI Applications	1	0.707**	0.519**	4	0.547**	0.536**
	2	0.664**	0.293*	5	0.621**	0.576**
	3	0.566**	0.538**	6	0.603**	0.415**
Dimension 2: Use of Applications in Academic Counseling	7	0.664**	0.560**	8	0.642**	0.501**
	9	0.661**	0.612**	10	0.689**	0.563**
	11	0.809**	0.655**	12	0.381**	0.501**
Dimension 3: Solving Academic Counseling Problems using Applications	13	0.627**	0.514**	14	0.730**	0.469**
	15	0.683**	0.465**	16	0.774**	0.424**
	17	0.642**	0.349**	18	0.478**	0.318**
Dimension 4: Security and Data Protection in Cloud AI Use	19	0.530**	0.454**	20	0.655**	0.467**
	21	0.633**	0.517**	22	0.706**	0.536**
	23	0.681**	0.544**	24	0.650**	0.438**

(*): Significant at the 0.05 level
(**): Significant at the 0.01 level

It is evident from the previous table that the Pearson correlation coefficients range from (0.293 to 0.809). Thus, all the Pearson correlation coefficients between each item and the total score for the sub-dimensions and the entire survey are positive and statistically significant at both the 0.05 and 0.01 significance levels. This indicates the internal consistency and homogeneity of the survey items.

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The researcher then calculated the Pearson correlation coefficients between the sub-dimensions of the survey. Table (5) shows the results of the correlation coefficients:

Table (5):
Internal Consistency Correlations for the Sub-Dimensions of the Survey (N=70).

Sub-Dimensions	Overall Axis 1
First Dimension (Familiarity with the Basics of Operating Cloud AI Applications)	0.778
Second Dimension (Using Applications to Accomplish Academic Advising Tasks)	0.876
Third Dimension (Solving Academic Advising Problems Using Applications)	0.637
Fourth Dimension (Security and Data Protection in Using Cloud AI)	0.783

(*): Significant at the 0.05 level
(**): Significant at the 0.01 level

It is clear from Table (5) that there are positive and statistically significant correlation coefficients at the 0.01 level between the sub-dimensions and the total score of the questionnaire among faculty members. These correlation coefficients are positive and good, indicating the homogeneity of the sub-dimensions of the questionnaire.

Third: Reliability of the Questionnaire: The researcher verified the reliability of the questionnaire using the following methods: split-half (using the Guttman formula and the Spearman-Brown correction) and Cronbach's Alpha coefficient on a sample of faculty members at the University of Al-Baha. The results were as follows:

A. Cronbach's Alpha Method

The researcher administered the questionnaire to a sample of 70 faculty members and then calculated the reliability coefficients using Cronbach's Alpha method. The results were as follows:

Table (6):
Reliability Coefficients of the Questionnaire (Cronbach's Alpha).

The questionnaire and its sub-dimensions, number of items		Number of Items	Cronbach's alpha coefficient
Dimensions	The first dimension (familiarity with the basics of operating cloud artificial intelligence applications)	6	0.809
	The second dimension (using applications to accomplish academic guidance and counseling tasks)	6	0.833
	The third dimension (solving academic advising problems using applications)	6	0.857

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The fourth dimension (security and data protection in using cloud artificial intelligence)	6	0.764
The questionnaire as a whole	24	0.911

It is evident from the previous table that Cronbach's Alpha coefficients are high and greater than 0.60, which indicates that the sub-dimensions of the questionnaire have a high level of reliability and stability.

a) Split-Half Method

The correlation coefficient (Half-Split Reliability Coefficient) was calculated between the two halves of the test for each sub-dimension and the entire questionnaire using Guttman's method and the Spearman-Brown correction on a sample of 70 faculty members.

Table (7):
Reliability Coefficients for Sub-Dimensions of the Questionnaire (Half-Split Method)

Sub-Dimension and Questionnaire	Number of Items	Spearman-Brown Correlation Coefficient		Guttman Coefficient
		Before correction:	After correction:	
Dimension 1: Familiarity with the Basics of Operating Cloud AI Applications	6	0.675	0.806	0.805
Dimension 2: Employing Applications in Academic Guidance and Counseling	6	0.741	0.851	0.841
Dimension 3: Solving Academic Guidance Issues Using Applications	6	0.792	0.884	0.881
Dimension 4: Security and Data Protection in Using Cloud AI	6	0.753	0.859	0.858
Total Questionnaire	24	0.884	0.938	0.936

It is evident from the previous table that the split-half reliability coefficients, using the Spearman-Brown and Guttman formulas, are acceptable and greater than 0.60. This indicates that the dimensions of the questionnaire have a high degree of reliability and stability.

Description of the Questionnaire in its Final Form and Response Method.

The final version of the questionnaire consists of (24) items. In the instructions of the questionnaire, faculty members are asked to choose one response from five alternatives on a Likert scale (Strongly Agree, Agree to a Large Extent, Agree to a Moderate Extent, Disagree to Some Extent, Strongly Disagree). The scores are assigned as (5-4-3-2-1) respectively. Therefore, the maximum score for the questionnaire is ($24 \times 5 = 120$), representing the highest possible score and the minimum score is ($24 \times 1 = 24$).

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Table (8):
Distribution of Items across the Sub-Dimensions of the Questionnaire

Survey Dimensions and Sub-dimensions		Number of Items	Item Numbers
Dimension1	Knowledge of Cloud AI Applications	6	1 – 6
Dimension 2	Use of Applications in Academic Counseling	6	7 – 12
Dimension 3	Solving Academic Counseling Problems Using Applications	6	13 – 18
Dimension 4	Security and Data Protection in Cloud AI Use	6	19 – 24

Statistical Methods Used

The ranking provided in the following table was used to evaluate the degree of use of cloud-based artificial intelligence applications and their impact on improving academic guidance systems in virtual learning environments from the perspective of faculty members, based on the weighted average values for each item:

Table (9):
Degree of Agreement and Extent of Agreement According to the Five-Point Likert Scale.

Response	Code	Range of Agreement	Evaluation Level
Strongly Disagree	1	From 1.00 to 1.80	Very Low
Disagree to Some Extent	2	From 1.81 to 2.60	Low
Agree to a Moderate Extent	3	From 2.61 to 3.40	Moderate
Agree to a Large Extent	4	From 3.41 to 4.20	High
Strongly Agree	5	From 4.21 to 5.00	Very High

To achieve the objectives of the study and analyze the data collected through the questionnaire in the field aspect, the researcher used several statistical methods. These included:

- Arithmetic and weighted averages
- Standard deviations
- "T" test to calculate the significance of differences between the means of independent samples
- One-Way ANOVA
- Least Significant Difference (LSD) test
- Pearson’s linear correlation coefficient
- Cronbach’s alpha coefficient
- Split-half method (Spearman-Brown and Guttman formulas)

Applying the Research Tool

To ensure the realism and reliability of the study, a structured questionnaire was developed and applied to assess the degree of use of cloud artificial intelligence in improving academic guidance systems within virtual learning environments. The

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questionnaire was carefully designed based on existing literature, expert consultations, and the study's objectives. It consisted of multiple sections that measured faculty members' perceptions, experiences, and the effectiveness of AI-driven academic guidance systems. The questions included a mix of Likert-scale items, multiple-choice questions, and open-ended responses to capture both quantitative and qualitative insights. The questionnaire was distributed electronically to faculty members across various higher education institutions that have integrated virtual learning environments. The online format ensured ease of access and higher response rates while maintaining data accuracy. To enhance the validity and credibility of the study, a pilot test was conducted with a small group of faculty members before full-scale distribution. Their feedback was used to refine question clarity, relevance, and alignment with the study's objectives. Additionally, ethical considerations were observed by ensuring participants' anonymity and voluntary participation. Data collected through the questionnaire were analyzed using statistical tools to identify trends, correlations, and patterns in faculty perceptions. The results provided valuable insights into the extent to which cloud AI is being utilized to enhance academic guidance and the challenges that institutions face in implementing such technologies. By applying this research tool systematically, the study ensured that the findings were grounded in actual faculty experiences, contributing to the realism and applicability of the research conclusions.

Results and Discussion

This section presents the findings from the study on the use of cloud artificial intelligence (AI) in enhancing academic guidance systems within virtual learning environments, as perceived by faculty members at Al-Baha University. The analysis is based on the responses from a sample of 130 faculty members, examining their familiarity with cloud AI applications, the utilization of these tools in academic advising, and the associated challenges. Results indicate a high level of overall satisfaction with the application of cloud AI in academic guidance, particularly in terms of familiarity and problem-solving capabilities. However, notable gaps were identified in areas such as data security and protection. This section will delve into these findings, discussing their implications for academic institutions and highlighting areas for future research and development in cloud AI applications in educational contexts.

Results of the First Question and Discussion

To answer the first question, which states, "What is the degree of use of cloud-based artificial intelligence in improving academic guidance systems in virtual learning environments from the perspective of faculty members?" the researcher calculated the arithmetic averages, standard deviations, and weighted averages of the scores of the study sample according to the evaluation level. (The weighted average value is considered very high from 4.21 to 5, high from 3.41 to 4.20, moderate from 2.61 to 3.40, low from 1.81 to 2.60, and very low from 1 to 1.80.) Table (10) shows these

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results:

Table (10):
Arithmetic Means, Standard Deviations, Weighted Averages, and Levels for the Study Sample's Scores on the Survey.

Sub-dimension	Number of Items	Mean	Standard Deviation	Weighted Mean	Evaluation Level	Ranking
Dimension 1 (Familiarity with Basic Operation of Cloud AI Applications)	6	40.56	3.87	4.056	High	1
Dimension 2 (Utilizing Applications in Academic Guidance Tasks)	6	38.25	3.874	3.825	High	3
Dimension 3 (Solving Academic Guidance Problems Using Applications)	6	40.25	4.905	4.025	High	2
Dimension 4 (Security and Data Protection in Using Cloud AI Applications)	6	18.88	3.664	1.888	Low	4
Total Questionnaire	24	137.93	9.202	3.4485	High	

It is evident from Table (10) that the evaluation level of faculty members' responses to the questionnaire was high, with a weighted average of (3.4485) and an arithmetic mean of (137.93). The dimension of "Familiarity with the basics of operating cloud-based AI applications" ranked first with a weighted average of (4.056), followed by "Solving academic guidance problems using applications" with a weighted average of (4.025). The third rank was "Using applications in performing academic guidance tasks" with a weighted average of (3.825), and the last was "Security and data protection in using cloud-based AI" with a weighted average of (1.888). We notice that the weighted average values are close and high, except for the fourth dimension. Furthermore, the performance level on the overall questionnaire was high.

The reasons for this can be analyzed as follows:

Many faculty members lack adequate knowledge about cloud-based AI technologies. This may be due to a lack of appropriate training and qualifications in this area, which leads to their lack of confidence in using these technologies effectively.

The rapid evolution of technology and the absence of continuous training programs to help faculty members keep up with these changes.

There is an urgent need to provide intensive and suitable training programs for faculty members in the field of cloud-based AI.

Results of the Second Question and Discussion

This question states, "Is there a statistically significant difference between the average scores of the study sample members on the questionnaire regarding the use of cloud-

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based AI applications and their impact on improving academic guidance systems in virtual learning environments, according to the gender variable (male, female)?" To answer this question, the Independent Sample T-Test was used to identify the significance of the differences and their direction. The following table shows the differences between the mean scores of faculty members (male, female) on the questionnaire and its sub-dimensions.

Table (11):
T-test results for differences in the questionnaire and its sub-dimensions according to gender.

Sub-dimension	Gender	Sample Size (N)	Mean (M)	Standard Deviation (SD)	Degrees of Freedom (df)	Calculated T-value	Statistical Significance
Dimension 1 (Familiarity with Basic Operation of Cloud AI Applications)	Male	60	40.27	3.804	128	-0.803	(0.423) Not Statistically Significant
	Female	70	40.81	3.935			
Dimension 2 (Utilizing Applications in Academic Guidance Tasks)	Male	60	38.15	3.424	128	-0.261	(0.794) Not Statistically Significant
	Female	70	38.33	4.245			
Dimension 3 (Solving Academic Guidance Problems Using Applications)	Male	60	40.2	4.946	128	-0.099	(0.921) Not Statistically Significant
	Female	70	40.29	4.905			
Dimension 4 (Security and Data Protection in Using Cloud AI Applications)	Male	60	18.93	3.399	128	0.162	(0.872) Not Statistically Significant
	Female	70	18.83	3.901			
Total Questionnaire	Male	60	137.55	10.268	128	-0.435	(0.664) Not Statistically Significant
	Female	70	138.26	8.24			

The calculated value of "T" at a significance level of 0.05 = 1.960
The calculated value of "T" at a significance level of 0.01 = 2.576

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The results from the previous table indicate that the calculated "T" values for the total score of the questionnaire and its sub-dimensions (-0.803, -0.261, -0.099, 0.162, -0.435) were not statistically significant when compared to the tabulated "T" values at significance levels of 0.05 and 0.01, with 128 degrees of freedom. This suggests that there are no significant differences between the mean scores of male and female faculty members in both the total score and its sub-dimensions, indicating that the gender variable (male, female) does not have a substantial impact.

Several factors may explain this lack of gender difference:

1. Homogeneity of experiences and training: Male and female faculty members may have similar levels of training and technical experience, leading to comparable scores.
2. Environmental and professional conditions: Similar working conditions, such as access to technological resources and training opportunities, may reduce gender-based differences.
3. Fair resource distribution: Equal access to resources like technology and training for both genders may contribute to the absence of significant differences.
4. Similar technical challenges: Both male and female faculty members may face similar professional and technical challenges, leading to similar evaluation outcomes.
5. Individual factors: Differences in individual skills and adaptability to technology could explain variations in scores, independent of gender.

Results of the Third Question and Discussion

This question states: "Is there a statistically significant difference between the average scores of the study sample members on the questionnaire regarding the use of cloud-based AI applications and their impact on improving academic guidance systems in virtual learning environments, based on the variable of years of experience (0 to 5 years, 6 to 10 years, 11 years or more)?". To answer this question, One-Way ANOVA was used to detect the differences in the questionnaire and its sub-dimensions based on years of experience (0 to 5 years, 6 to 10 years, 11 years and above).

Table (12):
The results obtained.

Sub-dimension	Years of Experience	Sample Size (N)	Mean (M)	Standard Deviation (SD)
Dimension 1 (Familiarity with Basic Operation of Cloud AI Applications)	0 to 5 years	40	38.13	3.818
	6 to 10 years	51	41.33	3.548
	11 years or more	39	42.05	3.162
	Overall	130	40.56	3.87
Dimension 2 (Utilizing Applications in Academic Guidance Tasks)	0 to 5 years	40	35.55	2.65
	6 to 10 years	51	38.76	3.766
	11 years or more	39	40.33	3.549
	Overall	130	38.25	3.874
Dimension 3 (Solving Academic	0 to 5 years	40	37.7	5.341

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Guidance Problems Using Applications)		6 to 10 years	51	40.14	4.104
		11 years or more	39	43	3.954
		Overall	130	40.25	4.905
Dimension 4 (Security and Data Protection in Using Cloud AI Applications)		0 to 5 years	40	16.98	2.646
		6 to 10 years	51	18.78	3.568
		11 years or more	39	20.95	3.663
		Overall	130	18.88	3.664
Total Questionnaire		0 to 5 years	40	128.35	6.129
		6 to 10 years	51	139.02	6.95
		11 years or more	39	146.33	3.827
		Overall	130	137.93	9.202

Table (13):
One-Way ANOVA Results for the Questionnaire and Its Sub-Dimensions Based on Differences in Years of Experience.

Dimension	Source of Variance	Sum of Squares	Degrees of Freedom	Mean Squares	F Value	Statistical Significance	
Dimension 1 (Familiarity with the Basics of Operating Cloud-Based AI Applications)	Between Groups	354.402	2	177.201	14.265	(0.000) Significant at 0.001	
	Within Groups	1577.606	127	12.422			
	Total	1932.008	129				
Dimension 2 (Using Applications to Perform Academic Guidance and Counseling Tasks)	Between Groups	474.38	2	237.19	20.608	(0.000) Significant at 0.001	
	Within Groups	1461.743	127	11.51			
	Total	1936.123	129				
Dimension 3 (Solving Academic Counseling Problems Using Applications)	Between Groups	555.684	2	277.842	13.846	(0.000) Significant at 0.001	
	Within Groups	2548.439	127	20.066			
	Total	3104.123	129				
Dimension 4 (Security and Data Protection in Using Cloud-Based AI)	Between Groups	312.531	2	156.265	13.981	(0.000) Significant at 0.001	
	Within Groups	1419.5	127	11.177			
	Total	1732.031	129				
Overall Questionnaire	Between Groups	6485.63	2	3242.815	92.824	(0.000) Significant	at

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	Within Groups	4436.747	127	34.935	0.001
	Total	10922.38	129		

It is clear from the previous table that the calculated "F" values for the overall score of the questionnaire and its sub-dimensions were (14.265, 20.608, 13.846, 13.981, 92.824), which are statistically significant at the 0.001 level. This indicates that there are statistically significant differences at the 0.001 level between the mean scores of the study sample in the overall score of the questionnaire and its sub-dimensions based on differences in years of experience (0 to 5 years, 6 to 10 years, 11 years and above).

To determine the direction and nature of these differences, the researcher used the Least Significant Difference (L.S.D) test for post-hoc comparisons. The following are the results:

Table (14):

Results of the Least Significant Difference (L.S.D) Test for Post-hoc Comparisons Based on the Effect of Years of Experience.

Sub-Dimension	Years of Experience	N	Mean	Compared Years of Experience	Mean Difference	Standard Error	Statistical Significance
Dimension 1 (Familiarity with the Basics of Operating Cloud-Based AI Applications)	0-5 years	40	38.13	6-10 years	*3.208-	0.744	(0.000) Significant at 0.001
				11 years and above	*3.926-	0.793	(0.000) Significant at 0.001
	6-10 years	51	41.33	0-5 years	*3.208	0.744	(0.000) Significant at 0.001
				11 years and above	0.718-	0.750	(0.340) Not Significant
	11 years and above	39	42.05	0-5 years	*3.926	0.793	(0.000) Significant at 0.001
				6-10 years	0.718	0.750	(0.340) Not Significant
Dimension 2 (Using Applications to Perform Academic Guidance and Counseling Tasks)	0-5 years	40	35.55	6-10 years	*3.215-	0.717	(0.000) Significant at 0.001
				11 years and above	*4.783-	0.763	(0.000) Significant at 0.001
	6-10 years	51	38.76	0-5 years	*3.215	0.717	(0.000) Significant at 0.001
				11 years and above	*1.569-	0.722	(0.032) Significant at 0.05

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	11 years and above	39	40.33	0-5 years	*4.783	0.763	(0.000) at 0.001	Significant
				6-10 years	*1.569	0.722	(0.032) at 0.05	Significant
Dimension 3 (Solving Academic Counseling Problems Using Applications)	0-5 years	40	37.7	6-10 years	*2.437-	0.946	(0.011) at 0.05	Significant
				11 years and above	*5.300-	1.008	(0.000) at 0.001	Significant
	6-10 years	51	40.14	0-5 years	*2.437	0.946	(0.011) at 0.05	Significant
				11 years and above	*2.863-	0.953	(0.003) at 0.01	Significant
	11 years and above	39	43	0-5 years	*5.300	1.008	(0.000) at 0.001	Significant
				6-10 years	*2.863	0.953	(0.003) at 0.01	Significant
Dimension 4 (Security and Data Protection in Using Cloud-Based AI)	0-5 years	40	16.98	6-10 years	*1.809-	0.706	(0.012) at 0.05	Significant
				11 years and above	*3.974-	0.752	(0.000) at 0.001	Significant
	6-10 years	51	18.78	0-5 years	*1.809	0.706	(0.012) at 0.05	Significant
				11 years and above	*2.164-	0.711	(0.003) at 0.01	Significant
	11 years and above	39	20.95	0-5 years	*3.974	0.752	(0.000) at 0.001	Significant
				6-10 years	*2.164	0.711	(0.003) at 0.01	Significant
Overall Questionnaire	0-5 years	40	128.35	6-10 years	-*10.670	1.248	(0.000) at 0.001	Significant
				11 years and above	-*17.983	1.330	(0.000) at 0.001	Significant
	6-10 years	51	139.02	0-5 years	*10.670	1.248	(0.000) at 0.001	Significant
				11 years and above	*7.314-	1.257	(0.000) at 0.001	Significant
	11 years and above	39	146.33	0-5 years	*17.983	1.330	(0.000) at 0.001	Significant
				6-10 years	*7.314	1.257	(0.000) at 0.001	Significant

(*) Denotes a significance level of 0.05

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The results of the analysis indicate that the calculated "T" values for the total score of the questionnaire and its sub-dimensions (-0.803, -0.261, -0.099, 0.162, -0.435) were not statistically significant when compared to the tabulated "T" values at significance levels of 0.05 and 0.01, with 128 degrees of freedom. This suggests that there are no significant differences between male and female faculty members regarding the total score or its sub-dimensions. Several factors may account for this lack of difference:

1. 1.Homogeneity of experiences and training: Male and female faculty members may have similar training and technical experience, resulting in comparable scores.
2. Environmental and professional conditions: Similar work environments and access to technological resources or training opportunities may mitigate gender-based differences.
3. Fair distribution of resources: Equal access to technological and training resources for both genders could lead to similar outcomes.
4. Similar technical challenges: Both male and female faculty may face the same professional challenges, leading to similar results in evaluations.
5. Individual factors: Variations in skills and adaptability to technology between individuals, regardless of gender, may also influence the results.

Results of Question Four and Discussion:

This question asks: "Is there a statistically significant difference between the mean scores of the study sample on the questionnaire regarding the use of cloud-based AI applications and their impact on improving academic guidance systems in virtual learning environments based on the effect of the number of training courses taken in the field of AI (0-5 courses, 6-10 courses, 11 courses or more)?"

To answer this question, One-Way Anova analysis was used to detect differences in the first axis and its sub-dimensions based on the number of training courses taken in the field of cloud-based AI. The following Table (15) shows the results obtained.

Table (15):

Mean scores and standard deviations for the overall questionnaire and its sub-dimensions based on the number of training courses taken in the field of cloud-based AI.

Sub-Dimension	Number of Training Courses	N	Mean	Standard Deviation
Dimension 1 (Familiarity with the Basics of Operating Cloud-Based AI Applications)	0 to 5 courses	36	42.31	3.337
	6 to 10 courses	55	40.95	3.445
	11 courses or more	39	38.41	3.985
	Overall	130	40.56	3.87
Dimension 2 (Using Applications to Perform Academic Guidance and Counseling Tasks)	0 to 5 courses	36	40.33	3.688

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	6 to 10 courses	55	38.75	3.357
	11 courses or more	39	35.62	3.29
	Overall	130	38.25	3.874
Dimension 3 (Solving Academic Counseling Problems Using Applications)	0 to 5 courses	36	43.11	3.686
	6 to 10 courses	55	40.16	4.319
	11 courses or more	39	37.72	5.321
	Overall	130	40.25	4.905
Dimension 4 (Security and Data Protection in Using Cloud-Based AI)	0 to 5 courses	36	20.11	3.446
	6 to 10 courses	55	19.09	3.703
	11 courses or more	39	17.44	3.393
	Overall	130	18.88	3.664
Overall Questionnaire	0 to 5 courses	36	145.86	6.954
	6 to 10 courses	55	138.95	5.506
	11 courses or more	39	129.18	7.756
	Overall	130	137.93	9.202

Table (16):
Results of One-Way ANOVA Analysis for the Questionnaire and its Subdimensions Based on Differences in the Number of Training Courses.

Sub-Dimension	Source of Variance	Sum of Squares	Degrees of Freedom	Mean Square	F-Value	Significance
Dimension 1 (Familiarity with the Basics of Operating Cloud-Based AI Applications)	Between Groups	298.097	2	149.048	11.585	(0.000) Significant at 0.001
	Within Groups	1633.911	127	12.865		
	Total	1932.008	129			
Dimension 2 (Using Applications to Perform	Between Groups	440.456	2	220.228	18.7	(0.000) Significant at 0.001
	Within Groups	1495.667	127	11.777		

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Academic Guidance and Counseling Tasks)	Total	1936.123	129				
Dimension 3 (Solving Academic Counseling Problems Using Applications)	Between Groups	545.143	2	272.571	13.527	(0.000) Significant at 0.001	
	Within Groups	2558.98	127	20.149			
	Total	3104.123	129				
Dimension 4 (Security and Data Protection in Using Cloud-Based AI)	Between Groups	138.34	2	69.17	5.512	(0.005) Significant at 0.01	
	Within Groups	1593.691	127	12.549			
	Total	1732.031	129				
Overall Questionnaire	Between Groups	5307.491	2	2653.746	60.024	(0.000) Significant at 0.001	
	Within Groups	5614.886	127	44.212			
	Total	10922.38	129				

It is clear from the previous table that the calculated F-values for the overall score of the questionnaire and its subdimensions were (11.585, 18.700, 13.527, 5.512, 60.024), which are statistically significant at both significance levels (0.01, 0.001). This indicates that there are statistically significant differences at the (0.01, 0.001) levels between the mean scores of the study sample on the overall questionnaire and its subdimensions, based on the differences in the number of training courses (0 to 5 courses, 6 to 10 courses, 11 or more courses). To determine the direction and nature of these differences, the researcher used the Least Significant Difference (LSD) test for pairwise comparisons. The following are the results:

Table (17):
Results of the Least Significant Difference (LSD) Test for Pairwise Comparisons Based on the Effect of the Number of Training Courses.

Sub-Dimension	Number of Training Courses	N	Mean	Compared to	Mean Difference	Standard Error	Significance
Dimension 1 (Familiarity with the Basics of Operating Cloud-Based AI	0-5 Courses	36	42.31	6-10 Courses	1.36	0.769	(0.079) Not Significant
				11 Courses+	3.895	0.829	(0.000) Significant at 0.001
	6-10 Courses	55	40.95	0-5 Courses	-1.36	0.769	(0.079) Not Significant

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Applications)				11 Courses+	2.535	0.751	(0.001) Significant at 0.01
	11 Courses+	39	38.41	0-5 Courses	-3.895	0.829	(0.000) Significant at 0.001
				6-10 Courses	-2.535	0.751	(0.001) Significant at 0.01
Dimension 2 (Using Applications to Perform Academic Guidance and Counseling Tasks)	0-5 Courses	36	40.33	6-10 Courses	1.588	0.736	(0.033) Significant at 0.05
				11 Courses+	4.718	0.793	(0.000) Significant at 0.001
	6-10 Courses	55	38.75	0-5 Courses	-1.588	0.736	(0.033) Significant at 0.05
				11 Courses+	3.130	0.718	(0.000) Significant at 0.001
	11 Courses+	39	35.62	0-5 Courses	-4.718	0.793	(0.000) Significant at 0.001
				6-10 Courses	-3.130	0.718	(0.000) Significant at 0.001
Dimension 3 (Solving Academic Counseling Problems Using Applications)	0-5 Courses	36	43.11	6-10 Courses	2.947	0.962	(0.003) Significant at 0.01
				11 Courses+	5.393	1.037	(0.000) Significant at 0.001
	6-10 Courses	55	40.16	0-5 Courses	-2.947	0.962	(0.003) Significant at 0.01
				11 Courses+	2.446	0.94	(0.01) Significant at 0.05
	11 Courses+	39	37.72	0-5 Courses	-5.393	1.037	(0.000) Significant at 0.001
				6-10 Courses	-2.446	0.94	(0.01) Significant at 0.05
Dimension 4 (Security and	0-5 Courses	36	20.11	6-10 Courses	1.02	0.759	(0.182) Not Significant

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Data Protection in Using Cloud-Based AI)				11 Courses+	2.675	0.819	(0.001) Significant at 0.01
	6-10 Courses	55	19.09	0-5 Courses	-1.02	0.759	(0.182) Not Significant
				11 Courses+	1.655	0.742	(0.027) Significant at 0.05
	11 Courses+	39	17.44	0-5 Courses	-2.675	0.819	(0.001) Significant at 0.01
				6-10 Courses	-1.655	0.742	(0.027) Significant at 0.05
Overall Questionnaire	0-5 Courses	36	145.86	6-10 Courses	6.916	1.425	(0.000) Significant at 0.001
				11 Courses+	16.682	1.537	(0.000) Significant at 0.001
	6-10 Courses	55	138.95	0-5 Courses	-6.916	1.425	(0.000) Significant at 0.001
				11 Courses+	9.766	1.392	(0.000) Significant at 0.001
	11 Courses+	39	129.18	0-5 Courses	-16.682	1.537	(0.000) Significant at 0.001
				6-10 Courses	-9.766	1.392	(0.000) Significant at 0.001

Significance levels: denotes a significance level of 0.05.

The results from the previous table reveal statistically significant differences at significance levels (0.05, 0.01, 0.001) between the mean scores of the study sample based on the number of cloud-based AI training courses attended (0-5 courses vs. 6-10 courses). The differences favor the group that attended fewer courses (0-5 courses). Several factors may explain this:

1. Quality of training vs. quantity: Fewer courses (0-5) may be more focused, offering deeper and more effective training, whereas attending many courses might result in superficial or repetitive content.
2. Training saturation: Participants attending fewer courses may reach saturation more quickly, feeling confident in their new skills without the fatigue or confusion caused by numerous courses.
3. Practical application of knowledge: Attendees of fewer courses may have more opportunities to apply their learning practically, enhancing retention and

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usefulness of the knowledge.

4. Institutional support: Those attending fewer courses may receive better institutional support or be in environments that promote the immediate application of their learning, increasing the impact of the training.

In conclusion, a limited number of high-quality, practical training courses appears to be more beneficial for enhancing faculty competence than a greater quantity of courses.

Study Recommendations

1. Promote the culture of cloud-based artificial intelligence among students and faculty to familiarize them with the importance of using these systems in improving academic guidance and counseling.
2. Prepare training courses to familiarize faculty members with how to use artificial intelligence applications and their role in enhancing academic guidance and counseling.
3. Encourage universities to use cloud-based artificial intelligence applications to improve academic services and maximize the benefits of modern technology in developing the educational process.
4. Provide an organizational framework outlining how to use cloud-based artificial intelligence applications in university education, ensuring compliance with local and international regulations regarding privacy and data protection.

Proposed Future Studies

1. A study analyzing the legal and regulatory framework for the use of cloud-based artificial intelligence applications in Saudi universities.
2. A study measuring the awareness level of faculty members and students regarding the regulations governing the use of cloud-based artificial intelligence applications in university education.
3. A study examining the impact of cloud-based artificial intelligence on the academic performance of students in virtual learning environments.

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