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# The Impact of Using ChatGPT in Jordanian Universities on the Development of the Educational Process from the Perspective of Faculty Members

**Mohammad Abed-Latif Mohammad Smadi, Tariq Mohammed Farghal, Najla Ali Funayyis Alshahrani, Amneh Ahmad Daifallah Al-tal, Khawla Mohammad Sa'adeh**

**Research Article**

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**Author for correspondence:**
Mohammad Abed-Latif Mohammad Smadi
m.smadi@aau.edu.jo
Amman Arab University. Jordan.

## Abstract

**Background/purpose.** This research examines the use of one artificial intelligence application, "ChatGPT," its importance, and its use in developing the educational process in Jordanian universities from the viewpoint of faculty members.

**Materials/methods**. The study sought to answer three main questions: What are the impacts of using ChatGPT on educational development? What challenges do faculty members face when using it? And are there statistically significant differences in the extent of its use attributable to gender, experience, and academic rank? A quantitative approach was adopted, employing a 12-item questionnaire divided into two fields: use and challenges. The study sample consisted of 310 randomly selected faculty members from various Jordanian universities.

**Results**. The primary results were as follows: Sample members strongly agreed on the importance of using artificial intelligence programs such as ChatGPT in teaching and on its role in developing the educational process. In addition, the sample members moderately agreed on some constraints that limit the use of artificial intelligence applications (ChatGPT) in teaching.

**Conclusion.** The results showed that faculty members at Jordanian universities use artificial intelligence programs such as ChatGPT to a high degree. Based on the findings and limitations of this study, the following recommendations are proposed for future research: Qualitative Exploration of Challenges: Conduct in-depth qualitative studies (e.g., interviews, focus groups) to delve deeper into the nature of challenges such as information accuracy, lack of documented sources, and faculty trust in ChatGPT. This would provide rich contextual data and specific examples of how these issues manifest in practice.

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## 1. Introduction

UNESCO has demonstrated a strong interest in the educational applications of large language models, such as ChatGPT. This is exemplified by a 2023 report titled “ChatGPT and Artificial Intelligence in Higher Education: A Quick Start Guide,” which was a collaborative effort between UNESCO and its International Institute for Higher Education in Latin America and the Caribbean (UNESCO, 2023).

This report examines the potential benefits and challenges of integrating ChatGPT into higher education and offers recommendations for stakeholders on its responsible implementation. The incorporation of artificial intelligence into academic settings has become a high-priority, widely discussed topic in the education sector. The world seems to be on the precipice of a revolution as AI technology, notably ChatGPT, has emerged. Today, many learners and teachers in educational institutions wonder how to benefit from this program (Cotton et al., 2024). While AI was once a futuristic concept until the late 20th century, it has now become a tangible and concerning reality. This shift is highlighted by the emergence of new programs like OpenAI's ChatGPT, a chatbot that can respond in a manner that closely mimics human thought and behaviour (Hassani & Silva, 2023).

The ChatGPT program has gained widespread popularity since its launch in November 2022 and has raised several challenges. While it can produce high-quality content and support the innovation ecosystem, its emergence casts a shadow over the possible disappearance of some professions and its harmful use in the education sector (Gao et al., 2023). It gathers data from the Internet and delivers it in a conversational format. ChatGPT can write poems like Shakespeare and provide dating advice, unlike search engines. It also concerns teachers, as it requires highly accurate answers to test questions and writing essays and research papers.

Furthermore, initial reviews of GPT-4, OpenAI's latest large language model, suggest a significant increase in its capabilities, further exacerbating these concerns. In the same context, ChatGPT is one of several AI programs that offer a range of benefits, including increased student engagement, collaboration, and accessibility. However, it also raises concerns about academic dishonesty and plagiarism (Floridi & Chiriatti, 2020).

With the development of AI technology, faculty members can find opportunities to innovate with AI in education. Nonetheless, the introduction of new AI technologies can lead to new challenges. The emergence of ChatGPT (and its updated version, GPT-4) has raised issues, but experts say it has the potential to help students learn in new ways and prepare for their careers after graduation (Choi et al., 2023).

There are many concerns about using ChatGPT in the education sector because it can help students with tasks such as writing research papers, solving problems, or getting assistance. Artificial intelligence through programs like ChatGPT can help prepare students for the real world by encouraging them to develop critical thinking and other skills (Guzman & Lewis, 2020). Conversely, some cases of cheating using ChatGPT in university courses have been highlighted, and teachers have been called on to redesign their curriculum to prevent academic dishonesty. Nonetheless, some teachers believe ChatGPT presents more of an opportunity than a threat. Thus, teachers must learn to integrate ChatGPT into their curriculum rather than banning it.

Several recent studies have delved into ChatGPT. Lin and Mubarok (2021) found that a generative model-based adaptive learning system such as ChatGPT can effectively support students' programming learning, leading to improved performance on programming assessments. The study found that the model could understand student knowledge and adjust the difficulty of the problems it generated accordingly. In another study, Guzman and Lewis (2020) found that ChatGPT can effectively support students learning English as a second language, leading to improved language

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proficiency. The study found that ChatGPT could understand student questions and provide relevant and informative answers. So, ChatGPT can be used to create adaptive educational systems that adjust their teaching methods based on student progress and performance. Overall, ChatGPT has the potential to be a powerful tool for enhancing education and learning by providing personalised learning experiences, automated article classification, language translation, interactive learning, and adaptive learning.

The world has recently witnessed rapid progress in all technological fields, reflected in education. Today, the world is increasingly adopting AI tools in academic fields to keep pace with technological developments advancing at an accelerated pace across all fields. It has become increasingly necessary to use technological tools that can perform what humans do through thinking, research, and the retrieval of information quickly and with minimal effort and time (Rudolph et al., 2023). Recently, ChatGPT has become one of the fundamental pillars in many fields, especially in education. Therefore, faculty members must learn to use ChatGPT effectively. ChatGPT has become crucial for quickly retrieving information and developing teachers' and learners' thinking skills and mental abilities (Baidoo-Anu & Ansah, 2023).

The use of ChatGPT is still in its infancy, so there is some discomfort about the direction in which its use will take. The discussion in this article provides guidance and suggestions for faculty members on using artificial intelligence in their teaching. Nonetheless, from an educational perspective, there remain many knowledge gaps and concerns about the use of ChatGPT in learning and educational processes, including ethical considerations and copyright issues.

Furthermore, there is significant concern about using ChatGPT as a technical and educational resource. This concern means that more research is needed on the use of ChatGPT in education and on how a university's policy affects its development. In addition, ChatGPT can be unreliable due to the possibility of providing illogical or incorrect information (misinformation). This unreliability can occur for several reasons, including the sheer volume of data. Therefore, ChatGPT may occasionally generate incorrect information. In addition, it may sometimes produce harmful instructions or biased content. Therefore, a user must be aware of ChatGPT's information and not automatically accept it before examining and verifying it (Qadir, 2023).

In Jordan, research on the use of ChatGPT in higher education is still in its early stages, and more studies are needed to understand its long-term impacts. The phenomenon is emerging, with a limited number of studies investigating its impact. Initial findings suggest that ChatGPT can be a valuable tool for enhancing learning, but its potential risks must be considered. Finally, ChatGPT is still under development and has limitations. For example, it can sometimes make mistakes, and it may be unable to understand complex questions or requests. Overall, ChatGPT is a powerful tool that can be used for various purposes. However, it is essential to be aware of its limitations before using it. Against the backdrop, the primary purpose of this study was to determine the impacts of ChatGPT on faculty members in Jordanian universities on the development of the educational process from their perspectives. This study seeks to answer the following questions:

Q1: What are the impacts of using ChatGPT on the development of the educational process from the perspective of faculty members?

Q2: What challenges do faculty members face when using ChatGPT in their teaching?

Q3: Are there statistically significant differences ($\alpha = 0.05$) in the extent to which the use of the ChatGPT program affects the development of the educational process from the perspective of faculty members, attributable to the variables of gender, experience, and academic rank?

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## 2. Literature Review

UNESCO has shown great interest in the potential of using large language AI models, such as ChatGPT, in education. For instance, the UNESCO 2023 Report, in collaboration with the UNESCO International Institute for Higher Education in Latin America and the Caribbean (IESALC), published a report titled "ChatGPT and Artificial Intelligence in Higher Education: A Quick Start Guide." (UNESCO, 2023). This report discusses the potential benefits and challenges of using ChatGPT in higher education and provides recommendations for stakeholders on how to use this technology responsibly. The use of artificial intelligence (AI) in academic circles is a high-priority topic in education. The world seems to be on the precipice of a revolution with the widespread adoption of AI technology, which emerged alongside the emergence of the ChatGPT program. Today, many learners and teachers in educational institutions wonder how to benefit from this program (Cotton et al., 2024). Although AI was no more than a distant dream until the late 20th century, today, we can see it as an increasingly frightening reality through the latest programs like ChatGPT, launched by OpenAI, which is a Chatbot that can respond and answer in a way that mimics human behaviour (Hassani & Silva, 2023).

The ChatGPT program has gained widespread popularity since its launch in November 2022 and has raised several challenges. While it can produce high-quality content and support the innovation ecosystem, its emergence casts a shadow over the possible disappearance of some professions and its harmful use in the education sector (Gao et al., 2023). It gathers data from the Internet and delivers it in a conversational format. ChatGPT can write poems like Shakespeare and provide dating advice, unlike search engines. It also causes concern for teachers in generating highly accurate answers to test questions and writing essays and research papers.

Furthermore, initial reviews of GPT-4, OpenAI's latest large language model, suggest a significant increase in the program's capabilities, exacerbating these concerns. In the same context, ChatGPT is one of several AI programs that offer a range of benefits, including increased student engagement, collaboration, and accessibility. However, it also raises concerns about academic dishonesty and plagiarism (Floridi & Chiriatti, 2020).

## 3. Methodology

This study used a survey of faculty members at Jordanian Universities to describe the Impact of using ChatGPT in Jordanian Universities on the Development of the Educational Process from the Perspective of Faculty Members.

### Study Design

The study adopted a quantitative approach, utilizing a Descriptive Design to achieve its objectives. Data collection was conducted using a 12-item questionnaire structured into two fields: Usage and Challenges. The study's sample comprised 310 randomly selected faculty members from various Jordanian universities.

### Population and Sample

The population comprised all faculty members at Jordanian universities (assistant profs, associate profs, and profs). On duty for the second semester of the academic year 2023/2024. According to the direct information obtained from the Jordanian Universities, the total population was 1500 in. The sample was 600 faculty members selected by simple random sampling from all colleges of educational science in Jordanian Universities. An electronic questionnaire link was sent to each potential participant. Data were collected. Three hundred ten faculty members responded correctly.

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### Instrument

The instrument had three sections. The first section included demographic questions, including gender, experience level, and rank. The second section included usage statements, and the third included statements regarding the challenges of using ChatGPT.

### Instrument Development

The instrument was developed by the researchers, tailored to the study's objectives, and informed by a thorough review of the pertinent literature. Participants answered statements for sections two and three using a 5-point Likert-type scale. Each item on the scale was assigned a score from one to five (strongly agree, agree, neutral, disagree, strongly disagree), which numerically represents (1, 2, 3, 4, 5), respectively. The following scale was used for analysis. From: 1.00-2.33 low/from: 2.34-3.67 med/ from 3.68–5.00 high. The scale was calculated using the following formula: (Maximum score (5)-Minimum score (1)/Number of desired categories (3) = (5-1)/3 = 1.33. Then, (1.33) was added to the end of each category.

### Construct Validity

To extract construct validity evidence for the scale, item-total correlation coefficients were calculated for each item with the total score for the subscale to which it belongs. This was done using a pilot sample of 30 participants outside the study sample. The item-total correlation coefficients ranged from 0.40 to 0.78. As shown in Table 1, all correlation coefficients were statistically significant and acceptable; therefore, none of the questions were deleted.

**Table 1.** Item-Total Correlation Coefficients

| Scale | Item | Correlation |
|---|---|---|
| Challenges | 1 | **.78 |
| | 2 | *.40 |
| | 3 | **.56 |
| Usage | 4 | **.64 |
| | 5 | **.57 |
| | 6 | **.51 |
| | 7 | *.42 |
| | 8 | *.44 |
| | 9 | **.64 |
| | 10 | *.42 |
| | 11 | *.40 |
| | 12 | *.40 |

*Statistically significant at the 0.05 level.

**Statistically significant at the 0.01 level.

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### Reliability

To ensure the reliability of the study tool, it was validated using the test-retest method by administering the scale and re-administering it two weeks later to a group of 30 individuals outside the study sample. A Pearson correlation coefficient was then calculated between their scores on the two occasions. The reliability coefficient was also calculated using the internal consistency method according to Cronbach's alpha formula. Table 2 shows the internal consistency coefficient (Cronbach's alpha) and the retest reliability for the axes. These values were considered appropriate for this study.

**Table 2.** Internal Consistency Coefficient (Cronbach's Alpha) and Test-Retest Reliability for the Scales.

| Item | Internal Consistency Coefficient | Retest Reliability |
|---|---|---|
| Challenges | 0.81 | 0.87 |
| Usage | 0.86 | 0.90 |

## 4. Results

The survey was distributed via email. 600 surveys were received, and 310 were complete and usable for analysis. The effective response rate was almost 52%.

### Demographics

Table 4 shows the frequencies and percentages by gender, years of experience, and academic rank.

**Table 3.** Frequencies and Percentages by Study Variables Percentage

| Variable | Category | Frequency | Percentage |
|---|---|---|---|
| Gender | Male | 127 | 41.0 |
| | Female | 183 | 59.0 |
| Years of Experience | 1-5 | 210 | 67.7 |
| | 6-10 | 80 | 25.8 |
| | More 10 | 20 | 6.5 |
| Academic Rank | Assistant Professor | 235 | 75.8 |
| | Associate Professor | 65 | 21.0 |
| | Professor | 10 | 3.2 |
| | Total | 310 | 100.0 |

### Development of the Educational Process

This study examines the impacts of ChatGPT on the development of the educational process from the faculty members' perspectives. To answer this, the arithmetic means and standard deviations of the extent to which the use of the ChatGPT program affects the development of the educational process, as perceived by faculty members, were extracted. The arithmetic mean of the

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extent to which the use of the ChatGPT program affects the development of the educational process, as perceived by faculty members, was 3.89. See Table 4.

**Table 4.** Means and Standard Deviations of the Extent to Which the Use of the ChatGPT Program Affects the Development of the Educational Process from the Perspective of Faculty Members

| Rank | Number | Item | Mean | Standard Deviation | Level |
|---|---|---|---|---|---|
| 1 | 8 | Using GPT provides students with information that is not apparent to them. | 4.11 | .766 | High |
| 2 | 4 | Using GPT is easy and fast to get information. ChatGPT provides quick and easy access to information. | 4.03 | .873 | High |
| 3 | 5 | Using GPT saves time and effort. | 4.01 | .887 | High |
| 4 | 9 | Using GPT provides the latest information as soon as it becomes available. | 3.93 | .918 | High |
| 5 | 7 | Using GPT has developed the educational process through the multiplicity of sources and the enrichment of information for learners. | 3.89 | .888 | High |
| 6 | 11 | Using GPT helps develop faculty members' levels of expertise due to the abundance and modernity of information. | 3.85 | .893 | High |
| 7 | 6 | Using GPT gives an overview of the topic. | 3.80 | .890 | High |
| 8 | 12 | ChatGPT helps students complete assignments and tasks. | 3.71 | 1.184 | High |
| 9 | 10 | The use of GPT entails financial burdens such as subscription fees and Internet costs, and it is difficult to use it consistently. | 3.65 | .977 | Med |
| Overall | | Usage | 3.89 | .533 | High |

The findings confirm the perceived effectiveness of using ChatGPT in education. ChatGPT demonstrated immense potential to revolutionise the way we teach and learn. It offers a versatile tool for various purposes, including creating personalised learning materials, evaluating student work, and offering personalised feedback on their strengths and weaknesses. In addition, ChatGPT can create interactive exercises that allow students to practice their skills and receive immediate feedback. Finally, ChatGPT can address student inquiries and help beyond regular school hours.

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Numerous researchers, such as Lucy and Bamman (2021), Li and Xing (2021), and Mohammad (2023), have conducted studies on the implementation of ChatGPT in education. These studies consistently reveal that faculty members hold generally positive views towards utilising ChatGPT. This positive perception stems from the tool's ability to enhance the educational process, as evident in the current study's findings.

### Challenges in Using ChatGPT

Table 5 shows the challenges of using ChatGPT from the participants' perspective. The arithmetic means ranged between (3.16-3.55), with the statement number (1), which states that "Using GPT in teaching does not always give accurate information," ranked first with an arithmetic mean of (3.55). In contrast, statement number (3), which states that "Using GPT is not trusted by some faculty members," was ranked last with an arithmetic mean of 3.16. The overall arithmetic mean of faculty members' challenges when using the ChatGPT program was 3.38.

**Table 5.** Means and Standard Deviations of the Challenges Faced by Faculty Members When Using the ChatGPT Program, Ranked in Descending Order of Means.

| Rank | Number | Item | Mean | Standard Deviation | Level |
|---|---|---|---|---|---|
| 1 | 1 | Using GPT in teaching does not always provide accurate information. | 3.55 | .953 | Med |
| 2 | 2 | Using GPT lacks documented sources and, therefore, exposes us to accountability. | 3.41 | .990 | Med |
| 3 | 3 | Some faculty members do not trust GPT. | 3.16 | 1.259 | Med |
| Total | | | 3.38 | .658 | Med |

These findings are consistent with those of Subhi (2021), who reported that several challenges hinder the use of artificial intelligence programs. These challenges include the general lack of reliable sources for information obtained from artificial intelligence applications. Additionally, some faculty members lack trust in artificial intelligence programs. This study also concurs with Al-Atl et al. (2021), Smadi (2024), and Al-Robi (2023), who highlighted the challenges that faculty members face when using certain artificial intelligence programs in teaching.

The overall finding of this study is that faculty members' use of artificial intelligence (ChatGPT program) is high. This finding contrasts with those of several previous studies. For instance, Dehouche's (2021) study concluded that using artificial intelligence applications to support higher education in Saudi Arabia was moderate. Similarly, Al-Yajzi's (2019) study indicated that faculty members' use of artificial intelligence at Najran University was low.

Differences in the extent to which the use of ChatGPT affects the development of the educational process according to gender, years of experience, and academic rank

The means and standard deviations of the extent to which the use of the ChatGPT program affects the development of the educational process, as perceived by faculty members, were extracted by gender, experience, and academic rank. Table 6 shows this.

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**Table 6.** Descriptive Statistics for Faculty Perceptions of ChatGPT's Impact on Education by Gender, Experience, and Academic Rank

| Variable | Category | Number | Mean | Standard deviation |
|---|---|---|---|---|
| Gender | Male | 127 | 3.90 | .584 |
| | Female | 183 | 3.88 | .497 |
| Years of Experience | 1-5 | 210 | 3.88 | .552 |
| | 6-10 | 80 | 3.89 | .488 |
| | More 10 | 20 | 3.99 | .519 |
| Academic Rank | Assistant Professor | 235 | 3.89 | .552 |
| | Associate Professor | 65 | 3.91 | .471 |
| | Professor | 10 | 3.68 | .458 |

Table 6 shows an apparent difference in the means and standard deviations of the extent of impact of using the ChatGPT program on the development of the educational process, as perceived by faculty members, across categories of gender, experience, and academic rank. A three-way ANOVA was used to clarify the statistical significance of the differences in the means. See Table 6.

**Table 7.** Effects of Gender, Experience, and Academic Rank on ChatGPT's Educational Impact (Three-Way ANOVA)

| Source of Variation Or Contrast | Sum of Squares (SS) | Degrees of Freedom (DF) | Mean Squares (MS) | F-value | Statistical significance |
|---|---|---|---|---|---|
| Gender | .013 | 1 | .013 | .047 | .829 |
| Experience | .446 | 2 | .223 | .779 | .460 |
| Rank Academic | .692 | 2 | .346 | 1.209 | .300 |
| Error | 86.983 | 304 | .286 | | |
| Total | 87.913 | 309 | | | |

Table 7 Indicates

- No statistically significant differences ($\alpha = 0.05$) attributable to the effect of gender, with an F-value of 0.047 and a statistical significance of 0.829.
- No statistically significant differences ($\alpha = 0.05$) attributable to the effect of experience, with an F-value of 0.779 and a statistical significance of 0.460.
- No statistically significant differences ($\alpha = 0.05$) attributable to the effect of academic rank, with an F-value of 1.209 and a statistical significance of 0.300.

The results of this study are consistent with those of Al-shorafa (2023), which found no statistically significant differences in gender, experience, or academic rank in the use of AI.

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## 5. Discussion

The current study differs from previous studies in that it focuses on ChatGPT, a modern topic in higher education in Jordan. The main conclusion is that ChatGPT shows promising potential to improve higher education in Jordan. These findings align with a body of research conducted within the Jordanian context. For instance: Smadi (2024); Smadi& Raman, (2024); Smadi& AL-Otaibi, (2024); Smadi, Al-Jarrah, Al-Omari& Al Smadi (2024 ). However, this conclusion has a significant caveat: the program must be used responsibly and ethically. Universities and instructors must establish clear guidelines for the use of ChatGPT, train students to use it effectively, and address potential risks. With careful planning and implementation, ChatGPT can be a valuable tool for enhancing learning and improving student outcomes.

This study yielded several significant findings regarding the use of ChatGPT in education in Jordan.

First, ChatGPT effectively fosters increased student engagement with educational materials and activities. In addition, ChatGPT facilitates improved student learning outcomes by providing personalised instruction and tailored feedback. Lastly, ChatGPT empowers educators to streamline their teaching processes, saving time and enhancing overall efficiency.

Second, some educators expressed concerns regarding the accuracy and reliability of content generated by ChatGPT. Furthermore, ethical concerns arose surrounding the potential misuse of ChatGPT and its impact on academic integrity. In general, the results of this study agree with those of Mahdi (2021), Lucy and Bamman (2021), Li and Xing (2021), Mohammad (2023), and Smadi (2024).

This study provides compelling evidence of Jordanian university faculty members' high perceived impact of ChatGPT on the development of the educational process, in contrast to some earlier studies on AI adoption, which reported moderate or low usage (e.g., Dehouche, 2021; Al-Yajzi, 2019). The overall "High" level of agreement (mean = 3.89) regarding ChatGPT's positive contributions indicates a strong acceptance and recognition of its value among educators in Jordanian higher education. This positive sentiment is primarily driven by ChatGPT's ability to provide students with novel information, facilitate quick and easy access to knowledge, and significantly save time and effort for both students and faculty. These findings align with the global discourse on generative AI's potential to revolutionize teaching and learning, supporting claims by Cotton et al. (2024) and Cotton and Lewis (2020) that ChatGPT can empower students and faculty. The multi-source information enrichment and faculty development fostered by ChatGPT, as indicated by high mean scores, further solidify its perceived benefit as an educational tool. This broadly positive view aligns with other research conducted in the Jordanian context by Smadi and colleagues (2024), suggesting a regional trend toward embracing new technological advancements in academia.

However, this optimism is tempered by the acknowledgment of moderate challenges (overall mean = 3.38). Despite the identified challenges, the study revealed a generally positive perception among educators regarding the use of ChatGPT in education. However, acknowledging and addressing existing concerns to ensure responsible and effective implementation is crucial. ChatGPT presents a powerful tool with the potential to revolutionise education. However, its utilisation demands a responsible approach that acknowledges and addresses potential challenges to maximise its benefits while mitigating potential risks.

The Three-Way ANOVA results in Table 7 demonstrate:

- Gender: With an F-value of 0.047 and a p-value of 0.829 ($p > 0.05$), there are no statistically significant differences in faculty members' perspectives on ChatGPT's impact due to gender.

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- Experience: With an F-value of 0.779 and a p-value of 0.460 ($p > 0.05$), there are no statistically significant differences attributable to years of experience.
- Academic Rank: With an F-value of 1.209 and a p-value of 0.300 ($p > 0.05$), there are no statistically significant differences based on academic rank.

These findings are consistent with the study by Al-shorafa (2023), which also reported no statistically significant differences across gender, experience, or academic rank in AI use. This implies that the perceived impacts and challenges of ChatGPT are largely uniform across faculty members at Jordanian universities, regardless of demographic characteristics.

The primary concern is the accuracy and reliability of information generated by ChatGPT and the lack of documented sources, which raise significant issues of academic accountability. These findings are consistent with the challenges highlighted by Subhi (2021), Al-Atl et al. (2021), and Al-Robi (2023), which emphasize the global nature of these concerns. The moderate level of mistrust among some faculty members further underscores the need for critical evaluation and guidelines for the use of ChatGPT. While faculty members appreciate the efficiency gains, the potential for misinformation and the implications for academic integrity remain key areas of caution, echoing the ethical considerations raised by Qadir (2023) and Floridi & Chiriatti (2020). The moderate concern about financial burdens also suggests that accessibility and sustainability, especially in a developing-country context, could remain ongoing issues.

Crucially, the absence of statistically significant differences across gender, years of experience, and academic rank suggests that the impacts and challenges of ChatGPT are perceived relatively uniformly among the faculty members surveyed. This uniformity implies that the issues and opportunities presented by ChatGPT are systemic rather than being tied to specific demographic characteristics of the teaching staff. This consistency simplifies the approach to policy development and training, as universal strategies may be effective in promoting responsible use and mitigating challenges. This finding aligns with Al-shorafa (2023), further strengthening the notion that institutional and technological factors may outweigh individual demographics in shaping perceptions of AI in education within this regional context.

In essence, the study confirms that ChatGPT offers significant potential to improve higher education in Jordan. This aligns with a growing body of research that emphasizes the tool's ability to enhance student engagement, improve learning outcomes through personalized instruction and feedback, and empower educators by streamlining teaching processes. However, this conclusion is accompanied by a significant caveat: the program's use must be responsible and ethical. Universities and instructors must establish clear guidelines for the use of ChatGPT, train students to use it effectively, and proactively address potential risks related to accuracy, source attribution, and academic integrity. With careful planning, robust policy frameworks, and continuous training, ChatGPT can indeed be a valuable tool for enhancing learning and improving student outcomes in Jordanian higher education.

## 6. Conclusion and Limitations

This study confirmed the growing significance of generative Artificial Intelligence applications, specifically ChatGPT, within Jordanian higher education. The results showed a high level of adoption and appreciation (with an overall mean of $3.89$) among faculty members in Jordanian universities regarding the positive impact of using this program on the development of the educational process.

This positive appraisal is primarily attributed to ChatGPT's ability to:

- Enrich information and facilitate quick and easy access to knowledge for students.
- Enhance student engagement in educational materials and activities.

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- Improve learning outcomes by providing personalized instruction and individualized feedback.
- Streamline teaching processes, thereby saving time and effort for faculty members.

However, the research indicated the presence of moderate challenges (with an overall mean of $3.38$), primarily centered on the accuracy and reliability of the content generated by ChatGPT, the lack of source attribution, and ethical concerns related to academic integrity and potential misuse. The study also revealed a crucial finding: no statistically significant differences in the perception of impact and challenges across the variables of gender, experience, and academic rank. This suggests that the challenges and opportunities are systemic phenomena at the institutional level.

Furthermore, the research concludes that the ChatGPT program is a powerful tool with promising potential to drive a positive revolution in higher education in Jordan, aligning with global and regional trends toward adopting modern technology. These capabilities place a great responsibility on educational institutions to ensure maximum utilization while mitigating risks.

Finally, this research emphasizes that the key to capitalizing on the transformative potential of ChatGPT in Jordanian higher education lies in meticulous planning, ethical risk management, and the provision of institutional frameworks that enable its use as an educational partner that enhances, rather than replaces, critical thinking and human creativity.

### Limitations

1. Generalizability: While the sample size of 310 faculty members is robust, the study employed a simple random sampling method *within colleges of educational science*. This may limit the generalizability of findings to faculty members in other disciplines or across all Jordanian universities, as their use cases, challenges, and perceptions of ChatGPT might differ.

2. Self-Reported Data: The study relies solely on self-reported data through an electronic questionnaire. This method is susceptible to response bias, in which participants may consciously or unconsciously provide answers that are socially desirable or align with institutional expectations, potentially overstating benefits or understating challenges.

3. Cross-Sectional Design: As a cross-sectional study, it captures perceptions at a single point in time. The landscape of AI, especially large language models like ChatGPT, is rapidly evolving. Therefore, faculty members' experiences, perceptions, and challenges might change significantly over short periods.

## 7. Recommendations for Future Research

Based on the findings and limitations of this study, the following recommendations are proposed for future research:

- Qualitative Exploration of Challenges: Conduct in-depth qualitative studies (e.g., interviews, focus groups) to delve deeper into the nature of challenges such as information accuracy, lack of documented sources, and faculty trust in ChatGPT. This would provide rich contextual data and specific examples of how these issues manifest in practice.
- Discipline-Specific Studies: Expand research to investigate ChatGPT's impact and challenges within specific academic disciplines beyond education sciences (e.g., engineering, humanities, and medicine). Different fields may have unique use cases, ethical considerations, and pedagogical integrations that warrant specialized investigation.

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## Declarations

**Author Contributions.** Mohammed Abed Latif Mohammad Smadi is a faculty member of the Education College at Amman Arab University. His research interests include educational technology, the use of educational computers, e-learning, and the application of artificial intelligence tools in education. An assistant professor graduated from the University of Utara Malaysia and is currently engaged in lecturing, researching, and institutional education work. he can be contacted at email: m.smadi@aau.edu.jo.

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**Ethical Approval.** (This study strictly adhered to ethical principles and guidelines for research involving human participants. Informed consent was obtained from all participating faculty members after they were fully briefed on the study's purpose, procedures, and their right to withdraw at any time without consequence. To ensure the protection of participants' rights and privacy, all data were collected and analysed anonymously. Personal information was not recorded, and all collected data were treated with the utmost confidentiality. Ethical approval for this study was granted by the [MoHE]. The official approval was issued under the reference number: [JO-MoEH-2023/250RA].

**Data Availability Statement.** This study was conducted within the context of Jordanian universities. The higher education sector in Jordan is well-regarded and holds a strong regional reputation. Two main types of universities characterize the educational system:

- **Public Universities:** Also known as official universities, these are the largest and oldest in the country. They enjoy a prestigious academic reputation and enroll a large number of both Jordanian and international students.
- **Private Universities:** These have witnessed significant growth and offer diverse academic options. Modern, specialized programs and advanced infrastructure distinguish some.

Most universities in Jordan follow a credit-hour system similar to the American and British educational models, which grants students greater flexibility in course selection.

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## About the Contributor(s)

**Mohammad Abed-Latif Mohammad Smadi,** is a faculty member of Education College at Amman Arab University. His research interests include educational technology, the use of educational computers, e-learning, and the application of artificial intelligence tools in education. An assistant professor graduated from the University of Utara Malaysia and is currently engaged in lecturing, researching, and institutional education work. he can be contacted at
Email: m.smadi@aau.edu.jo.
ORCID: http://orcid.org/0000-0002-3419-3125

**Tariq Mohammed Farghal,** Princess Sumaya University for Technology.
Email: t.farghal@psut.edu.jo
https://orcid.org/0000-0002-2891-6892

**Najla Ali Funayyis Alshahrani,** Imam Abdulrahman Bin Faisal University.
Email: Najlaalshahrani11@gmail.com
ORCID: https://orcid.org/0009-0009-7718-7698

**Amneh Ahmad Daifallah Al-tal,** National Agricultural Research Center.
Email: Amneh.Altal@narc.gov.jo
ORCID: https://orcid.org/0009-0002-7129-2613

**Khawla Mohammad Sa'adeh,** Ministry of Education.
Email: khawlasaada@gmail.com
ORCID: https://orcid.org/0009-0007-1663-8577

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