International Journal of Learning, Teaching and Educational Research
Vol. 24, No. 3, pp. 545-561, March 2025
https://doi.org/10.26803/ijlter.24.3.26
Received Jan 21, 2025; Revised Mar 18, 2025; Accepted Mar 24, 2025

A Qualitative SWOT Analysis Study of the Integration of AI Technologies into Higher Education Institutions in the Sultanate of Oman

Sheikha Ali Salim Al-Buraiki* **and Hala Said Al-Ruheili**
Sohar University, Sohar, Sultanate of Oman

Abstract. Researchers conduct (Strengths, Weaknesses, Opportunities, and Threats) SWOT analysis studies to outline the four significant components related to a pressing issue: strengths, weaknesses, opportunities and threats. This qualitative study employed SWOT analysis to examine the practices of Artificial Intelligence (AI)-powered technologies in higher educational institutions in Oman. To this end, six instructors from different universities across the country were interviewed, and their insights were analysed to extract the themes that were subsequently analysed considering the SWOT framework. Several strengths were identified, including the use of AI-powered tools in making decisions, facilitating personalized learning, and performing routine tasks, which allow the instructors to do other, more critical tasks. Concerning the weaknesses, the interviewed educators pointed to the likelihood that students will become excessively dependent on AI tools, adversely affecting their learning and cognition development. Opportunities included fostering further personalized instruction and increased humanization support. Threats encompassed concerns regarding the high costs of AI technologies, the need for providing the necessary in-service training, and concerns related to ethical issues and data privacy. The findings emphasized the need to stress the significance of offering ongoing training to the faculty members and administrators, coupled with promoting the educators' involvement in decisions regarding AI applications and developing guidelines to address ethical concerns. The findings of the study highlight critical areas not only for the intervention of policymakers but also to serve as a springboard for future studies to enable them to explore strategies for adapting AI, for framing ethical regulations, and for fostering long-term impacts on teaching and learning.

Keywords: Artificial Intelligence; opportunities; strengths; threats; weaknesses

* Corresponding Author: Sheikha Ali Salim Al-Buraiki; *shikaalbriki@gmail.com*

1. Introduction

Artificial Intelligence (AI) technologies consist of computer software, applications, and/or websites that can mimic the human mind (Russell & Norvig, 2020) and can perform cognitive functions, including the ability to learn, reason and react, as well as contribute to decision-making (Hassan, 2022; Russell & Norvig, 2020). Artificial Intelligence (AI) technologies are recognized as being effective at dealing with complex problems in multiple domains, including education (Ouyang et al., 2022). AI encompasses various technologies representing a broad spectrum of advancements, such as natural language processing and machine learning. In education, several AI technologies are manifested, such as interactive educational games, visual and augmented reality, intelligent tutoring platforms, big data assessment systems and many other AI-enhanced instructional tools (Guan et al. 2020). These AI tools are essential for transforming teaching and learning and revolutionizing educational leadership. They facilitate the adoption of ground-breaking instructional methods while concurrently improving decision-making processes, leading to more effective and data-driven educational management.

Higher education institutions have witnessed considerable transformations that have taken place worldwide and they are primarily driven by the introduction of AI tools and applications into teaching and learning processes, as well as other administrative and leadership tasks. AI technologies have significantly transformed HEIs (Choi, 2020), and they are altering education in many ways. First, AI-driven tools can offer personalized learning experiences to different learners and thus help to address the individualized needs of each student. By analysing the students' data, AI-driven technologies can determine the students' pattern of learning and identify their strengths and weaknesses to tailor educational content accordingly. For instance, platforms like Khan Academy provide tutoring that fosters student engagement and enhances their learning outcomes. Examining the learners' behaviours assists them in providing tailored support (Liu et al., 2019), thus accommodating their individualized requirements. Second, AI-powered tools boost the learners' engagement with their studies in HEIs (Donasco & Oliveros, 2024) as learners interact with the tools and applications to achieve a certain goal, be it writing a research paper or creating a presentation. Additionally, using AI can improve the learners' academic performance and attainment, foster their motivation and classroom participation, and increase their attention (Moussa et al., 2024; Xu, 2024).

Recent studies interested in integrating AI into HEIs are growing, and they point to the usefulness of AI tools for improving decision-making and teaching strategies (Abduljaber, 2024). A study conducted in different public colleges in Philippines by Donasco and Oliveros (2024) looked at the effect of AI tools on students' learning and practices of educational leadership and found there to be a significant impact due to such advanced technologies on student performance, the teachers' pedagogical approaches, the leaders' administrative decisions, and the execution of routine repetitive tasks. The participants in this study highlighted the importance of drawing attention to ethical issues, such as potential bias, discrimination and data privacy. Many researchers (i.e. Abduljaber, 2024)

emphasize the concerns related to ethical issues and data privacy as well. Under ethical issues, academic integrity represents a pressing problem. In other words, the support offered by AI technologies, particularly generative AI models, raises questions about academic integrity. For example, students are now using generative AI tools like ChatGPT to complete their homework. Cardona et al. (2023) caution educators that traditional homework assignments will be profoundly affected due to the increasing reliance on AI to complete homework tasks. This shift presents a big challenge, necessitating the need to adopt innovative educational approaches, thus equipping educators to redefine the future of education. Students need to know that an excessive dependence on AI-driven tools such as ChatGPT may adversely impact their academic performance and could lead to failure (Donasco & Oliveros, 2024). There is a necessity to embrace a balanced approach that fosters innovation in the use of AI-powered tools along with safeguarding academic values and ethical considerations (Alqahtani & Wafula, 2024). This can be obtained by considering both the instructors' and learners' voices.

A growing body of literature is discussing the role of AI technologies in assessment and evaluation processes in education. Rahiman and Kodikal (2024) explored how well-informed instructors are in higher education about incorporating AI-driven tools in Asian educational institutions. The data was drawn from 250 instructors working at different universities with a QS ranking. The study looked at how AI elevates the educators' work engagement in the educational process, and the results demonstrated the great use of AI in altering assessments and evaluations. A review study was conducted by Moorhouse et al. (2023), who analysed the available assessment guidelines from the top 50 universities ranked by the Times Higher Education World University Rankings 2023. In their review, the researchers reported a general tendency to incorporate GenAI tools in assessments and the redesign of assessments within the framework of AI integration, emphasizing critical thinking and creativity and focusing on the process of learning rather than the end outcomes. It is crucial to prevent the potential misuse of GenAI in producing responses and solutions. Alternatively, more authentic assessment tools such as case studies, data analysis and in-class closed book assessments are encouraged.

In the context of Omani HEIs, research on the integration of AI technologies remains limited. Recently, Ayed (2022) explored the existing practices, potentials and risks associated with the use of AI in HEIs. The study collected the students' viewpoints and perspectives on the effectiveness of existing AI, revealing diverse viewpoints on their use. The participants highlighted the need for ongoing training sessions to foster AI literacy and pointed to concerns related to the resistance to change in relation to adopting AI-driven educational trends. Another study was conducted by Al-Harrasi et al. (2021), who examined the influence of AI-driven tools in various leadership functions in four ministries in Oman. The research has highlighted the current leadership practices that primarily focus on strategic improvement and administrative tasks. Based on the findings, the researchers recommended shedding more light on the role of AI in enhancing leadership effectiveness, which includes generating creative methods for dealing

with arising technological issues and fostering a culture of trust and innovation. Ayed (2022) and Al-Harrasi et al. (2021) suggested carrying out more studies to examine the evolving practices and tackle the challenges relevant to integrating AI into HEIs.

Numerous studies have emphasized the benefits and limitations of incorporating AI tools into education. For instance, Ahmad et al. (2023) explored the advantages and disadvantages of using large language models (LLMs) such as ChatGPT in education. The researchers listed the benefits as the capacity of LLMs to facilitate the students' creative writing, how it helped to develop critical thinking, and how it translated languages. For teachers, LLM technologies provide personalized support to their learners, offer automated essay grading, and can enhance interactive and adaptive learning. However, numerous limitations were identified, including questions about academic integrity, impeding human interaction and creativity, a lack of contextual understanding, and the inability to customize the instructions.

Farrokhnia et al. (2024) used the SWOT analysis framework to identify the strengths, weaknesses, opportunities and threats of using ChatGPT in education. The results indicated that ChatGPT helped generate plausible answers, self-improving capability, and provided personalized and real-time responses. In other words, ChatGPT has contributed to the students' chances of accessing information and decreased the teaching load by facilitating learning. However, the weaknesses associated with the educational uses of ChatGPT are represented as difficulties with deep understanding, the inability to evaluate the quality of the students' work, the potential for discrimination and bias, and the counter effects on higher-order thinking skills. The researcher also discussed the threats of ChatGPT to education. While Farrokhnia et al.'s (2024) study was solely based on a literature review, the present study gathered data from interviews, which will offer a more comprehensive and authentic understanding of the topic under investigation.

2. SWOT analysis

The acronym SWOT stands for strengths, weaknesses, opportunities and threats. The framework was originally introduced in the early 1950s to examine the effectiveness of organizational strategies (Benzaghta et al., 2021). SWOT analysis is commonly used to investigate the internal and external factors affecting the uncertainty of the organizational environment (Adebesin et al., 2024). In education, SWOT analysis has been used widely to inform decision-making and strategic planning, taking into consideration the perceptions and capabilities of various contributors (Zhu & Justice, 2015).

Considering the SWOT analysis, successful implementation of AI technologies encompasses taking advantage of the opportunities offered by such technologies by exploiting their strengths, addressing its threats and mitigating its weaknesses (Farrokhnia et al., 2024). Strengths represent the tools or resources enabling the application of the new technologies to achieve the predefined goals. Opportunities are associated with internal and/or external characteristics

believed to contribute to the growing demand for such technologies. Weaknesses are the limitations getting in the way of the successful application of the technologies, which subsequently result in impeding progress towards the defined goals. A threat refers to any unfavourable characteristics of the concerned technologies which restrict its strategy and present as barriers and constraints, therefore preventing the achievement of goals (Benzaghta et al., 2021; Farrokhnia et al., 2024).

In recent years, there has been a growing interest in researching AI-powered tools and applications in education in general. In the setting of higher education, the volume of studies is still small. One of the studies conducted recently in this context is by Denecke et al. (2023). The researchers collected their data using an e-survey to outline the strengths, weaknesses, opportunities and threats of employing AI-based tools in higher education settings. Based on a SWOT analysis framework, the findings indicated that ABTs have a high to moderate impact on teaching, learning and assessment. The strengths of ABTs included the personalization of learning and automation of some routine repetitive tasks, while the challenges included receiving the respected skills to use AI effectively and concerns related to data protection and bias. The researchers suggested conducting more research to examine the unintended consequences of using ABTs in higher education. While the work of Denecke et al. gathered quantitative data via an e-survey from a broader range sample, the present study captured the participants' deep perspectives and experiences from rich qualitative data.

SWOT analysis is beneficial when it comes to providing a systematic structure to collect pertinent information from multiple sources, offering "an overview of the internal (i.e. strengths and weaknesses) and external factors (i.e. threats and opportunities)" (Houben et al., 1999, p. 125) that are likely to impact the incorporation of new technologies into education. A SWOT analysis provides valuable feedback on the current practices and prospects of certain issues and phenomena. In other words, SWOT analysis helps to reinforce the strengths and opportunities and address the potential risks and challenges. In the case of AI integration, a SWOT analysis will ensure "that the most is made of these technologies to enhance teaching, learning and administrative processes" (Denecke et al., 2023). There is a lack of studies examining the impact of AI in HEIs in the Sultanate of Oman, particularly in exploring how educational leaders manage the challenges stemming from the existence and application of AI tools into leadership positions, the teaching profession and learning situations. Thus, considering the reviewed literature above and guided by the framework of SWOT analysis, the present research study aimed to answer the following research questions:

1. What are the perceived strengths and weaknesses of the application of AI-based tools in higher education institutions in the Sultanate of Oman?

2. What are the potential opportunities and threats that may arise from the application of AI-based tools in higher education institutions in the Sultanate of Oman?

3. Research Methodology

The present study employed a qualitative-method approach to collect data through interviews with university lecturers. The interview questions were validated by two expert researchers, who were assistant professors teaching university courses. Based on their feedback, the interview questions were refined to ensure that they aligned with the research questions. Collecting data using interviews is believed to yield substantive information from the participants (Roulston, 2023) and in-depth information about the topic or issue under investigation (Kvale, 2012). Data gathered from interviews is believed to enable the drawing of a comprehensive picture of the topic in question (Bryman, 2023), which for this research is the incorporation of AI-powered technologies into educational leadership, as well as teaching and learning. To ensure the trustworthiness of the data collection, Lincoln and Guba's (1985) four criteria were maintained: credibility, transferability, dependability and confirmability. To maintain credibility, member checking was conducted in which the participants were allowed to review the accuracy of their interview responses. The triangulation method was employed, which entailed comparing the findings with pertinent literature to strengthen validity. To achieve transferability, a thick and rich description of the participants' experiences and backgrounds was provided, enabling readers to assess the transferability to similar settings. For dependability, the entire research process has been documented, including the data collection, coding and analysis. As the findings were based on the participants' responses to the interview questions, confirmability was achieved.

The six educational leaders involved in the study worked in three different higher educational institutions in Oman. They were selected based on their long experience of teaching at higher educational institutions. This experience allowed them to compare the old and traditional leadership approaches and the more recent ones, particularly after the introduction of AI-powered technologies into management and decision-making. Aside from their leadership tasks, some of the interviewed lecturers performed some academic duties as well. The participants, who were given pseudonyms, had working experience in HEIs for up to 23 years. Each interview included an array of nine open-ended questions related to AI current trends, challenges, advantages, opportunities and potential threats.

Each interview took 30 minutes, and the interview data was transcribed verbatim before being thoroughly reviewed by a research assistant and the authors of the present study for accuracy. Following the transcription of the interviews, the transcripts were examined several times by the research investigators while making detailed comments, important notes and observations (Merriam & Tisdell, 2015) to identify the key insights that aligned with the research questions within the framework of the SWOT analysis. The researchers used thematic analysis, which is a method for identifying, analysing and reporting recurring themes. This process can allow researchers to make sense of large datasets by grouping similar ideas and notions into independent meaningful categories. According to Braun and Clarke (2024), there are six phases involved in the process of thematic analysis. The first step is familiarization with the data, which was achieved via transcribing the interviews verbatim and reading the transcripts

several times to note down any recurring ideas and phrases. The second step is generating the initial codes by identifying meaningful segments in the interviews and assigning codes. The third step is searching for themes by grouping similar codes into broader categories and themes. The fourth step entails reviewing the themes and checking whether the themes accurately represent the data. In the fifth step, the themes are clearly defined and named. The last step concerns writing the report in which the themes are supported using quotes from the participants.

4. Results

To address the research questions, the researchers developed guiding questions for the interviews (see Table 1). The researchers subsequently employed thematic analysis to identify recurring themes in the interview data. They then examined the results and compiled the responses to the interview questions that informed the SWOT analysis.

Table 1. Questions Driving the SWOT Analysis

Internal features	**Strengths**	**Weaknesses**
	What AI tools are being used in education? What are the benefits of using AI in your educational and leadership position?	What challenges do educators and leaders encounter while integrating AI-powered tools? What ethical issues arise with the use of AI in education?
External features	**Opportunities**	**Threats**
	How are AI tools changing your profession? What recommendations do you have for educators and leaders using AI in education? What do you envision the role of AI in education to be in five years?	What essential skills should educators and leaders develop to effectively incorporate AI into their professions? How can educators fix the problems they face when integrating AI?

4.1 Strengths

Educational professionals and leaders tend to use AI-powered tools for numerous tasks, including teaching, assessment and administrative routine tasks. Under this section, the findings related to strengths were outlined and explained. These strengths represent the internal competitive advantages of AI in HEIs. They include the overall usefulness of AI and the positive impact on teaching, learning and leadership.

4.1.1 Overall usefulness of AI

The study participants identified a variety of ways in which AI technologies impact education in teaching and learning and leadership roles. For instance, Tariq noted that *"AI tools alter educational leadership dynamics by enhancing decision-making processes, simplifying administrative processes, improving teaching and learning strategies, and facilitating personalized learning."* Jood, a language instructor, perceived AI tools as *"offering significant opportunities to explore diverse pedagogical approaches for language main skills, sub-skills, research capacities, and other academic competencies."* Warda emphasized that *"AI technologies have reconceptualized the meaning of literacy, necessitating educators to acknowledge their presence as learners might predictably utilize AI technologies."* Shaima stated that generative AI has introduced *"creative elements into her profession."* She elaborated that the *"preparation for each lecture is becoming a simple act awing to large language models such as ChatGPT."* She also noted that these technologies optimize her work life, conserving time and effort while assisting her in meeting professional requirements.

Artificial Intelligence (AI) technologies offer significant advantages for enhancing the pedagogy of teaching and optimizing the allocation of time and resources. Jood asserted that *"AI tools can be highly effective and efficient for swiftly generating tasks that promote active learning, self-directed learning, project-based learning, and related approaches."* Numerous educators believe that AI tools can support their profession in identifying *"new pedagogical approaches, more supportive guideline to complete different activities"*, as Jood noted. Shareef posited that AI-driven technologies can assist leaders in the realm of education with *"instant insights and analytics,"* allowing the educational leaders to make well-informed decisions grounded on empirical data. He emphasized that educational leaders with *"permission to use programs with the feature of predictivity, recognition of patterns, and performance metrics"* would be better positioned to accurately identify trends and adapt effective strategies. Huda stressed the significant functions of AI technologies in *"simplifying leadership duties and enhancing the processes of making informed decisions."*

4.1.2 Positive impact on teaching and learning

The participants reported that there were diverse impacts of AI technology on their teaching practices. Instructors have acknowledged the use of AI tools for generating customized teaching materials and creating assessment tools. For instance, Warda characterized AI tools as valuable resources as *"AI tools are great for content development generating engaging and customized material for effective instruction."* She further noted that for certain AI applications, *"there are also certain tools which help in grading long essays conserving both energy and time."* These tools help educators to be creative in their teaching and enable them to save time and energy. Teaching larger numbers of students and thus being responsible for marking their exam papers has always been a daunting job; however, with the aid of AI, it has become possible to grade students' work and provide them with appropriate feedback in a timelier manner. Shaima disclosed that she regularly utilizes generative AI platforms *"to create PowerPoint presentations, write exam questions and correct students' essays."*

4.1.3 Positive impact on leadership

The study participants highlighted the valuable contributions of AI tools in the facilitation of leadership duties. These tools enhanced the leaders' productivity by *"automating repetitive tasks like grading, scheduling, enrolment processing and record keeping of students' marks and attendance and thus redirecting their time for more complicated and human oriented tasks"* as expressed by Tariq. It is like having an e-assistant that fulfils some of the more repetitive and routine tasks. Additionally, AI technologies facilitate interactive communication through chatbots like ChatGPT. Tariq explained that *"Writing emails is becoming easier with the use of ChatGPT."* Employing graphical data representation and pattern recognition methods aid strategic foresight and informed decision-making. Shaima shared her thoughts about the positive impact of AI in educational leadership by saying, *"AI plays big roles in supporting schools and universities in making better decisions when turning complex data into easy-to-understand insights."* AI technologies assist leaders in developing individualized learning pathways and optimizing educational spaces. Huda noted that AI-powered technologies helped her save time and effort in various aspects of her profession. She stated that AI-enabled tools assisted her in "*customizing student learning, providing meaningful insights into academic performance, and enhancing communication students and colleagues."* Huda reported that using AI tools has made her teaching more engaging and efficient.

4.2 Weaknesses

The weaknesses that emerged from the findings referred to the internal factors that adversely affect the performance of an organization and hinder its ability to perform at its best. These included the negative impact on teaching and learning and skills deficits.

4.2.1 Adverse impact on teaching and learning

AI technology has a significant influence on education. Warda, as an English as a Foreign Language instructor, has shared her concerns regarding EFL students, particularly those at the beginner level with limited English proficiency, potentially becoming excessively reliant on AI tools. She articulated her apprehension that *"if students rely heavily on AI tools for their writing, they may miss out on necessary support from their teachers."* Jood echoed a similar concern, stating that "*one of the problems facing educators in my place is academic misconduct and over-reliance on AI-powered tools."* In this context, the students' over-dependency on AI could hinder their ability to develop essential and critical language skills, such as vocabulary retention, the accurate construction of sentences, and coherent writing. If students rely excessively on AI-generated language without engaging in the cognitive abilities necessary for language acquisition, they may go on to struggle with independent and authentic use of the language.

4.2.2 Skills deficit

The interviewees consistently expressed their concerns regarding the educators' skill deficits in relation to AI. For instance, Shareef mentioned that this deficit encompasses "*the development, implementation, and management of AI."* Tariq noted that despite the higher education institutions' willingness to incorporate AI into their systems, they encounter challenges, including inadequate staff training. Jood validated this perspective by emphasizing "*inadequate continuous professional*

development for faculty on AI, including its applications, opportunities, risks and strategies for addressing those challenges." She expressed apprehension and concerns that students might outstrip academic and non-academic staff in their AI knowledge and usage. Huda expressed her own experience using AI stating, "*I face challenges due to limited training on AI tools and concerns regarding data privacy.*" Warda articulated her views, saying that "*the biggest challenge for educators in relation to AI tools is keeping pace with the ongoing advancements and effectively learning how to utilize them.*" Shaima reinforced this point, asserting that one of the obstacles to AI adoption is the need for proper training and orientation sessions on AI-driven technologies to improve experiences.

4.3 Opportunities

Within the framework of SWOT analysis, opportunities highlighted the potential for growth and the innovation of the organization and its staff. Here, opportunities entailed fostering personalization and humanization and greater institutional recognition.

4.3.1 Fostering personalization and humanization

The interviewees expressed consistent viewpoints on the future paths of AI in education. For instance, Tariq anticipated significant advancements in AI that would enhance personalized instruction when he said that it would begin "*providing more customized learning experiences that cater to diverse learner needs.*" Notably, Tariq predicted an increase in AI-driven educational aids, such as digital tutors and mentors, as well as the integration of AI into continuous instructional platforms that aim to ensure ongoing professional development for academic and administrative staff. In the same vein, Jood hypothesized that AI would demonstrate enhanced capabilities. She explained, "*I think AI will become more advanced in making texts more human-like and processing complex requests that account for nuances in mood and advanced cognitive skills.*" She contended that HEIs must recognize AI platforms as invaluable learning tools and suggested that AI technologies be more comprehensively incorporated into educational practices, advancing instructional approaches, learning methodologies, and evaluation techniques and strategies.

4.3.2 Greater institutional recognition

According to Warda, AI tools are expected to have significant impacts on educational systems in every possible way. She suggested that educational institutions should introduce additional courses and programs to incorporate these technological advancements. Warda elaborated, "*As for leaders, I believe they need to support educators in becoming comfortable with these tools rather than resisting them, fostering their integration into different educational settings.*" Warda and Shaima illustrated that numerous HEIs have already introduced AI degree programs to educate students and equip the younger generations with up-to-date knowledge in this regard. Huda proposed several recommendations for educational institutions, including "*offering personalized learning experiences, utilizing engaging AI tools, keeping ethics and privacy in mind, investing in teacher training, and maintaining ongoing collaboration with technology experts.*" Huda predicted that in the next few years, AI tutors would be more prevalent and would have enhanced

information processing, which would offer greater student support, leading to a more accessible and effective education system.

4.4 Threats

4.4.1 Concerns related to cost

Tariq emphasized the substantial financial funds required for the implementation of AI technologies, highlighting that many HEIs lack the necessary infrastructure. Regarding the ethical implications of AI in education, Tariq voiced apprehensions related to equity, cautioning that AI systems may disseminate bias if not adequately regulated. He further posited that *"excessive dependence on AI could detrimentally affect both students and educators."* Shaima verified this perspective, asserting, *"The considerable expense presents an additional challenge. Multiple AI tools offer sophisticated features that necessitate paid subscriptions."*

4.4.2 Ethical issues and data privacy

All interviewees voiced their concerns regarding ethical issues and data privacy. Jood specifically highlighted the challenge of the *"students' academic dishonesty in completing projects and home assignments,"* identifying it as a significant issue among educators, particularly in HEIs. She elaborated that *"Users often take full texts and presentations from various AI applications without making any modifications to the original content,"* which distorts the educational process. Shaima similarly pointed out that *"AI tools present new challenges in assignment completion, with students relying excessively on them for writing tasks."* This dependence on AI tools for copying content could adversely affect the students' writing ability. Consequently, the learners' cognitive functions might become inactive, impeding their mental development, particularly their advanced cognitive abilities. Warda identified misconduct of academic integrity as the primary ethical concern linked to the usage of AI tools. Additionally, she highlighted biases and ethnic and religious stereotypes, particularly in AI-generated images and video. Huda posed the question, *"Who holds accountability for AI-driven decisions?"* and mentioned the ethical issue of unequal access to technology, which *"could deepen inequality in education."*

4.4.3 Job displacement concerns

There is the fear that the automation of administrative tasks and some teaching duties would lead to the loss of some jobs, which may result in dissatisfaction and staff resistance to change. Shaima expressed this concern, stating that there is the issue of *"keeping up with the new tools emerging every day"*. Due to this reason, there was a high likelihood of resisting change since the academic and non-academic staff found it difficult to keep up with the rapid advancement of technology. When Tariq was asked about the challenges they face in implementing AI tools, he said, "*Some lectures resisted change and thus do not welcome the adoption of new technologies believing that technology might replace them one day."*

5. Discussion

The educational landscape is undergoing significant transformations driven by the extensive influence of the AI tools used by students, instructors, and educational leaders. As institutions strive to enhance their educational experiences, it becomes crucial for educators and leaders to understand the

advancement in technologies that affect their profession while addressing ethical concerns. This study, which used the SWOT analysis framework, has found that educators and leaders in Omani HEIs view artificial technologies as valuable means to improve professional workflows and optimize the overall teaching and learning experience. However, they also recognized the associated challenges and risks.

5.1 SWOT analysis

From the interview results the answers to the research questions guided the SWOT analysis.

5.1.1 Strengths

The interviewees contended with using different AI tools such as language models, chatbots and GPTs. Similarly, Chen et al. (2020) conducted a literature review through which they found that AI tools are extensively adopted and utilized in different educational settings, such as using web-based and smart educational systems, chatbots and humanoid robots. AI tools play a considerable role in executing routine tasks and facilitating administrative duties, which aligns with the previous studies (Ahlquist, 2020; Denecke et al., 2023). AI technologies can stimulate focused and personal interactions with students by providing immediate feedback and customized guidance. Zawacki-Richter et al. (2019) reported that AI-powered systems can enhance the students' learning engagement and thus reduce the pressure on the lecturers' shoulders.

Educators emphasized the paramount support provided by AI tools and technologies. Consequently, AI-powered tools have been proven to be highly useful in teaching and leadership roles by streamlining tasks, improving the methods of assessment and evaluation, and systematically analysing the students' skills and challenges based on their exam results. These findings align with studies such as those by Ahlquist (2020) and Denecke et al. (2023). Forty percent of teaching-related duties are expected to be automated by AI technologies, such as monitoring students' progress and managing administrative responsibilities (Frank et al., 2019). Subsequently, AI-powered tools allow educators to focus more on how to provide environments for student engagement, instructional design and providing learners with quality feedback leading to optimized productivity and efficiency. Previous studies, such as the work by Zawacki-Richter et al. (2019), confirm this finding.

5.1.2 Weaknesses

While recognizing AI's immense potential in the educational sector, the findings also underscore the challenges and ongoing risks associated with its misuse by learners and educators. Key concerns include skills deficits and several adverse impacts on teaching and learning. Numerous studies have echoed similar apprehensions regarding the misuse of AI-powered tools by educators and students alike (Abduljaber, 2024; Wang, 2021; Zhu & Justice, 2015; etc.). Another weakness is the lack of human interaction that results from an over-reliance on AI tools. It is true that while AI tools can provide personalized feedback, they cannot replace educators entirely because the interpersonal connections with the educators offer learners "nuanced interactions and emotional support" (Denecke

et al., 2023, p.682), which cannot be provided by machines and AI tools. Thus, educators still play a crucial role "in guiding and contextualizing the use of AI tools to ensure optimal learning experiences for students" (p. 682).

The study participants raised their concerns regarding skill deficits which relate to the educators and educational leader's continuous needs and professional development. As AI technologies are evolving and revolutionizing the landscape of education, the participants expressed their need for ongoing professional development programs that tap into the uses of AI tools and how to deal with the ethical issues related to each tool. Even though AI-powered tools provide innovative instructional solutions, their effective implementation requires technical support and digital literacy (Luckin et al., 2016). A lack of training may hinder the educators' optimal integration into their teaching practices (Zawachi-Richter et al., 2019).

5.1.3 Opportunities

The interviewees consistently emphasized the importance of integrating AI tools in education, particularly HEIs, because of their numerous opportunities. They highlighted the potential of AI in enhancing personalized instruction, and they pointed to the increase in AI-driven educational aids such as digital tutors and mentors. Added to that, AI-powered tools contribute to the integration of continuous instructional platforms that aim to ensure ongoing professional development for academic and administrative staff. Similar notions have been emphasized by Zawachi-Richter et al. (2019), who also anticipated the contribution of AI as advancing instructional approaches, evaluation techniques and adaptive educational systems.

Artificial Intelligence (AI) tools are expected to have significant impacts on educational systems in every possible way as they can be treated as transformative learning tools. Incorporating AI technologies into teaching strategies, administrative tasks, and assessment models will support HEIs in gaining more recognition and acknowledgement. Many educational institutions have already introduced AI courses and degree programs to equip students with cutting-edge knowledge in an AI-driven world (Selwyn, 2019). Numerous HEIs have already introduced AI degree programs to educate students and equip the younger generations with up-to-date knowledge in this regard. The participants anticipated that in the upcoming years, there would be an expansion of AI tutors and data-driven insights, which will result in improved student support systems and more accessible and effective education (Holmes et al., 2019). Institutions that apply these advanced AI technologies can gain a competitive advantage and recognizable reputation by fostering innovation in teaching and learning.

5.1.4 Threats

Regarding the challenges, addressing data privacy and ethical issues was a primary concern associated with the use of AI-driven technologies. All participants highlighted this issue, which aligns with the findings from several previous studies (Denecke, 2023; Rahiman & Kodikal, 2024), among many others. With an increasing number of students using AI-driven tools, ensuring data security and confidentiality is paramount. Educational institutions should play a

key role for implementing well-defined regulations and guidelines (Rahiman & Kodikal, 2024) to monitor AI technology usage and mitigate data protection and other ethical risks. Equally important is the role of HEIs in offering targeted training programs that equip educators and learners with the necessary knowledge and essential skills to effectively use AI-powered learning systems.

Some educators continue to express their concerns about the potential impact of automating tasks that could result in job loss as AI is redefining the future of the job markets (Frank et al., 2019). Zeira (2018), for instance, reported that in America, over 30% of career students are now facing the potential risk of automation within the next 15 years. Additionally, projections estimate that by 2025, AI could lead to the loss of 85 million jobs while simultaneously creating 97 million new job opportunities (Jovanovic, 2024).

6. Implications

Given the rapid integration of AI technologies into HEIs, it is highly recommended that educators and educational leaders address the emerging challenges associated with the technological shift of AI tools. First, there is a pressing need for specialized ongoing professional development training to keep up with recent technological advancements. Tailored continuous professional development programs are hoped to equip educators, administrators and support staff with the necessary knowledge and skills to effectively integrate AI-powered technologies into academic and administrative functions. Such professional training should also encourage discussions about any issues arising from the incorporation of AI in the landscape of HEIs. There is a call for active participation and ongoing discussions involving academic and non-academic personnel in decision-making regarding the application and regulations of AI in HEIs. A critical examination should include topics such as the reliability of AI-generated content, the role of AI in student assessment, and the implications of AI-powered administrative tools. As AI tools often rely on large datasets, raising concerns about data security, potential biases, and the ethical implications of AI-generated outputs, institutions must implement robust data governance policies that outline how student and staff data is collected, stored, and used in AI-driven applications. There is a need for developing clear ethical regulations to prevent the misuse of AI, such as the unauthorized use of AI in student assessments and plagiarism detection systems that compromise privacy. Regulations guiding the use of AI by students and academic and non-academic staff are also important. Future research may focus on developing evidence-based guidelines and frameworks to support ethical AI integration in HEIs, and further research should explore the impact of AI on teaching methodologies, the students' learning outcomes and institutional decision-making.

7. Conclusion

The increasing adoption of AI-driven technologies in HEIs is reshaping the roles of instructors, students and educational leaders. This research study, which examined the incorporation of AI-powered technologies into HEIs in Oman, has highlighted the current trends, strengths, weaknesses, opportunities, and threats. As the results indicate, educators are utilizing AI tools to enhance the students'

learning and to facilitate the instructors' jobs by performing tasks such as content writing, creating images and videos, and assessing and providing feedback. Benefits related to the educational leaders included automating some routine tasks and assisting in decision-making. The findings revealed that educators are faced with the challenges of the adverse impact of AI on students' learning and cognitive development. Students become over-dependent on AI tools to do their homework, research papers and projects, impeding their learning process. There is also the fear that the students might not get the necessary support from their respective teachers as they cannot identify their real difficulties. The interviewed educators highlighted some opportunities for using AI, which include fostering further personalized instruction, increased humanization support and greater institutional recognition. Embracing these opportunities guarantees the competitiveness of the institution and encourages student success. Several threats were discussed concerning the high costs of AI technologies, including the need for providing the necessary and ongoing in-service training, ethical issues and data privacy.

8. References

Abduljaber, M. F. (2024). *Perceived influence of artificial intelligence on educational leadership's decision-making, teaching, and learning outcomes: A transcendental phenomenological study* [Unpublished doctorate dissertation]. Liberty University. https://digitalcommons.liberty.edu/cgi/viewcontent.cgi?article=6773&context=doctoral

Adebesin, F., Adeliyi, T., & Oluwadele, D. (2024). Mapping the knowledge landscape of AI in higher education: A SWOT Analysis. *Theory and Practice*, *30*(5), 9068–9087. https://www.researchgate.net/profile/Deborah-Oluwadele-2/publication/382524457_Mapping_the_Knowledge_Landscape_of_AI_in_Higher_Education_A_SWOT_Analysis/links/66a16b96705af53644953efc/Mapping-the-Knowledge-Landscape-of-AI-in-Higher-Education-A-SWOT-Analysis.pdf

Ahlquist, J. (2020). *Digital leadership in higher education: Purposeful social media in a connected world*. Routledge. https://doi.org/10.4324/9781003444244

Ahmad, N., Murugesan, S., & Kshetri, N. (2023). Generative artificial intelligence and the education sector. *Computer*, *56*(6), 72–76. https://doi.org/10.1109/MC.2023.3263576

Al Harrasi, N., El Din, M. S., & Al Balushi, B. (2021). Towards an artificial intelligence (AI)-driven government in Sultanate of Oman: Transforming and augmenting leadership competencies. In E. Thangasamy (Ed.), *Managerial issues in digital transformation of global modern corporations* (pp. 244–256). IGI Global. https://doi.org/10.4018/978-1-7998-2402-2.ch016

Alqahtani, N., & Wafula, Z. (2024). Artificial intelligence Integration: Pedagogical strategies and policies at leading universities. *Innovative Higher Education*, *49*(2), 1–20. https://doi.org/10.1007/s10755-024-09749-x

Ayed, I. A. H. (2022). *Oman higher education institutions dealing with artificial intelligence* [Unpublished doctoral dissertation]. Universidade do Minho. https://repositorium.sdum.uminho.pt/bitstream/1822/76188/1/Tese%2Bretificada.pdf

Braun, V., & Clarke, V. (2024). Thematic analysis. In *Encyclopedia of quality of life and well-being research* (pp. 7187–7193). Springer International Publishing. https://link.springer.com/referenceworkentry/10.1007/978-3-031-17299-1_3470

Benzaghta, M. A., Elwalda, A., Mousa, M., Erkan, I., & Rahman, M. (2021). SWOT analysis applications: An integrative literature review. *Journal of Global Business Insights*, *6*(1), 55–73. https://doi.org/10.5038/2640-6489.6.1.1148

Bryman, A. (2023). *Social research methods* (5th ed.). Oxford University Press. https://lib.mdpu.org.ua/wp-content/uploads/2024/03/Alan-Bryman-Social-Research-Methods2016.pdf

Cardona, M. A., Rodríguez, R. J., & Ishmael, K. (2023). *Artificial intelligence and the future of teaching and learning: Insights and recommendations*. Office of Educational Technology. https://policycommons.net/artifacts/3854312/ai-report/4660267/

Chen, L., Chen, P., & Lin, Z. (2020). Artificial intelligence in education: A review. *IEEE Access*, *8*, 75264–75278. https://ieeexplore.ieee.org/abstract/document/9069875

Choi, K.-S. (2020). Opportunities for higher education of artificial intelligence in Korea. *International Journal of Engineering Research & Technology*, *13*(11), 3428–3430. https://doi.org/10.37624/IJERT/13.11.2020.3428-3430

Denecke, K., Glauser, R., & Reichenpfader, D. (2023). Assessing the potential and risks of AI-based tools in higher education: Results from e-survey and SWOT analysis. *Trends in Higher Education*, *2*(4), 667–688. https://doi.org/10.3390/higheredu2040039

Donasco, A., & Oliveros, S. T. R. (2024). AI's impact on educational leadership and learning. *International Multidisciplinary Journal of Research for Innovation, Sustainability, and Excellence, 1*(8), 228–236. https://risejournals.org/index.php/imjrise/article/view/630/1004

Farrokhnia, M., Banihashem, S. K., Noroozi, O., & Wals, A. (2024). A SWOT analysis of ChatGPT: Implications for educational practice and research. *Innovations in Education and Teaching International*, *61*(3), 460–474. https://doi.org/10.1080/14703297.2023.2195846

Frank, M. R., Autor, D., Bessen, J. E., Brynjolfsson, E., Cebrian, M., Deming, D. J., & Wang, D. (2019). Toward understanding the impact of artificial intelligence on labor. *Proceedings of the National Academy of Sciences*, *116*(14), 6531–6539. https://www.pnas.org/doi/10.1073/pnas.1900949116

Guan, C., Mou, J., & Jiang, Z. (2020). Artificial intelligence innovation in education: A twenty-year data-driven historical analysis. *International Journal of Innovation Studies*, *4*(4), 134–147. https://doi.org/10.1016/j.ijis.2020.09.001

Holmes, W., Bialik, M., & Fadel, C. (2019). *Artificial intelligence in education: Promises and implications for teaching and learning*. Center for Curriculum Redesign.

Hassan, A. (2022). The influence of artificial intelligence on smart learning: An overview. In A. Hamdan, A. E. Hassanien, T. Mescon & B Alareeni (Eds.), *Technologies, artificial intelligence and the future of learning post-COVID-19: The crucial role of international accreditation* (pp. 591–615). https://doi.org/10.1007/978-3-030-93921-2_31

Houben, G., Lenie, K., & Vanhoof, K. (1999). A knowledge-based SWOT-analysis system as an instrument for strategic planning in small and medium sized enterprises. *Decision Support Systems*, *26*(2), 125–135. https://doi.org/10.1016/S0167-9236(99)00024-X

Jovanovic, B. (2024, February 6). *55 Fascinating AI statistics and trends for 2024: Key AI statistics*. https://dataprot.net/statistics/ai-statistics/

Kvale, S. (2012). *Doing interviews*. Sage. https://books.google.com.om/books?hl=ar&lr=&id=gkBdBAAAQBAJ&oi=fnd&pg=PR5&dq=kvale+interviews&ots=bhziBGbE2_&sig=F3boRELTM1WWd-h8Dh0HLkiONIw&redir_esc=y#v=onepage&q=kvale%20interviews&f=false

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry*. Sage. https://doi.org/10.1016/0147-1767(85)90062-8

Liu, Z., Yang, C., Rüdian, S., Liu, S., Zhao, L., & Wang, T. (2019). Temporal emotion-aspect modeling for discovering what students are concerned about in online course forums. *Interactive Learning Environments*, *27*(5-6), 598–627.

Merriam, S. B., & Tisdell, E.J. (2015). *Qualitative research: A guide to design and implementation*. John Wiley & Sons.

Moorhouse, B. L., Yeo, M. A., & Wan, Y. (2023). Generative AI tools and assessment: Guidelines of the world's top-ranking universities. *Computers and Education Open*, *5*, 100151. https://doi.org/10.1016/j.caeo.2023.100151

Moussa, N., Bentoumi, R., & Saali, T. (2024). Promoting student success with neutrosophic sets: Artificial intelligence and student engagement in higher education context. *International Journal of Neutrosophic Science*, *23*(1), 238–38. https://doi.org/10.54216/IJNS.230121

Ouyang, L., Wu, J., Jiang, X., Almeida, D., Wainwright, C., Mishkin, P., & Lowe, R. (2022). Training language models to follow instructions with human feedback. *Advances in Neural Information Processing Systems*, *35*, 27730–27744. https://proceedings.neurips.cc/paper_files/paper/2022/file/b1efde53be364a73914f58805a001731-Paper-Conference.pdf

Rahiman, H. U., & Kodikal, R. (2024). Revolutionizing education: Artificial intelligence empowered learning in higher education. *Cogent Education*, *11*(1), 1–24. https://doi.org/10.1080/2331186X.2023.2293431

Roulston, K. (2023). *Interviews in education research*. Sage Publications. https://doi.org/10.1002/9781405198431.wbeal0572.pub3

Russell, S., & Norvig, P. (2020). *Artificial intelligence: A modern approach*. Hoboken. https://doi.org/10.1093/oso/9780190905033.003.0012

Selwyn, N. (2019). *Should robots replace teachers? AI and the future of education*. John Wiley & Sons. https://eric.ed.gov/?id=ED599636

Wang, Y. (2021). When artificial intelligence meets educational leaders' data-informed decision-making: A cautionary tale. *Studies in Educational Evaluation, 69*, 100872. https://doi.org/10.1016/j.stueduc.2020.100872

Xu, Z. (2024). AI in education: Enhancing learning experiences and student outcomes. *Applied Computational Engineering, 51*, 104–111. https://doi.org/10.54254/2755-2721/51/20241187

Zawacki-Richter, O., Marín, V. I., Bond, M., & Gouverneur, F. (2019). Systematic review of research on artificial intelligence applications in higher education–where are the educators? *International Journal of Educational Technology in Higher Education*, *16*(1), 1–27. https://doi.org/10.1186/s41239-019-0171-0

Zeira, J. (2018). Workers, machines, and economic growth. *The Quarterly Journal of Economics*, *113*(4), 1091–1117. https://doi.org/10.1162/003355398555847

Zhu, C., & Justice, K. (2015). A SWOT analysis of the integration of e-learning at a university in Uganda and a university in Tanzania. *Technology, Pedagogy and Education*, *24*(5), 1–19. https://doi.org/10.1080/1475939X.2015.1093537