Review

Impact of COVID-19 on women leadership in Saudi higher education institutions

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Abstract: The COVID-19 epidemic caused unexpected complications, complexities and challenges in higher educational institutions (HEIs). In order to promote and strengthen the role of women leadership, this study aimed to clarify the unique challenges faced by female leaders at Saudi HEIs during the epidemic, find possible solutions to these challenges, and provide policy as well as management implications. A systematic literature review (SLR) was conducted, examining 27 records (i.e., research papers, articles and conference studies). The data were qualitatively analysed and categorized based on themes like challenges faced, opportunities recognized, and solutions proposed. Findings highlighted women leaders in Saudi HEIs grappled with multiple challenges, including technological barriers, cultural constraints, and increased workloads. Merging challenges with solvable strategies offers a forward-looking perspective, advocating for systemic changes that can shape a resilient and inclusive future for HEIs in Saudi Arabia.

Keywords: COVID-19 pandemic; leadership landscape; women; Saudi higher educational institutions

1. Introduction

Political and social leadership is considered highly significant for shaping the social as well as the economic development of a country (Sharif et al., 2022, 2024). During the COVID-19 crisis, world leaders focused on managing the crisis, as the health crisis caused by COVID-19 had been particularly intense and affected both genders. It has been known that female empowerment plays a vital role in social and economic advancement, but little is known about the impact of COVID-19 on female leadership (Bruce et al., 2021).

Globally, women have been severely affected by the COVID-19 pandemic, they faced many variable inequalities at both work that affected their growth and development. Some of the evidence has informed that women in leadership positions increased before COVID-19, while after the pandemic; one in every 4 women is considering leaving their positions due to more responsibilities at home especially the e-learning. According to McKinsey and Company (2021), companies support their female employees, senior managers, and executives, however, females in such positions feel more exhausted, stressed, and burned out, which in turn reduces their participation in the workplace.

COVID-19 has developed new opportunities for women engagement in leadership positions and decision-making processes as the employing affected women more than men and also affected their balance between full-time work with caregiving (Freizer et al., 2021). Before COVID-19, women leadership in Saudi Arabia was still

developing as new leadership worked to redefine women's place in the labour force and economy through its flagship 2030 vision program. This had yet to start gaining opportunity with appointing some women in leadership positions. However, it needs to be clear how COVID-19 has affected the leadership landscape for Saudi women. In Saudi Arabia, the education sector has consistently employed the greatest number of women in leadership positions.

Examining the effects of COVID-19 on women leadership in Saudi Arabian higher education system can offer crucial hints on how COVID-19 has impacted Saudi Arabia's female leadership landscape, which subsequently offers avenues for improvement interventions (Al-rashaidan and Al-thwaini, 2021). The literature suggests that while the pandemic has accelerated specific transitions like digitalization in education (Abdulrahim and Mabrouk, 2020; Almaiah et al., 2021). It has also accentuated specific challenges, especially for women in higher education (Alessa et al., 2021; Bruce et al., 2021). The COVID-19 pandemic has posed unforeseen challenges worldwide, which significantly caused bad impacts on many sectors such as higher education. Notably, the higher educational institutions in Saudi Arabia, especially regarding Saudi women participation and leadership, are witnessing specific challenges. This issue is compounded by the fact that Saudi Arabia was already transitioning, attempting to bring more women into leadership roles and the workforce (Alghofaily, 2019; Alotaibi, 2020; Alqahtani, 2021).

Worth mentioning, there is limited research detailing how the pandemic has influenced or changed the Saudi women in HEIs. Many studies including those by Alghamdi et al. (2021), Almaiah et al. (2021), A'mar and Eleyan (2022), Ahmed and Opoku (2022) have outlined the general challenges faced by higher educational institutions in Saudi Arabia during the COVID-19 pandemic, but regarding the challenges faced by Saudi women in these institutions there is a shortage of comprehensive research. Instead, the existing literature (Alghofaily, 2019; Allam et al., 2021) highlights the pre-pandemic status of women's leadership and participation in higher education.

Based on the aforementioned information, the potential for Saudi women to combat COVID-19 challenges in higher educational institutions still needs to be researched, with most studies focusing on the broader challenges rather than proactive strategies employed by Saudi women. Considering the cultural, societal, and organizational paradigms, solutions tailored to Saudi women unique context have yet to be extensively explored in the available literature.

Identifying the critical challenges posed by COVID-19 to higher educational institutions, will provide a comprehensive understanding that policymakers, institutional leaders, and educators can leverage for future preparedness and current strategies. In addition, delving into the specific challenges Saudi women face during this pandemic in the academic realm will spotlight areas requiring attention, promoting gender equality and equity in academia. Of great interest, this research will serve as an inspiration and guide for women in not only Saudi Arabia but also any regions with similar cultural constructs via exploring the potential and strategies they can employ to counteract COVID-19 challenges. This study aims to identify and explore the critical challenges posed by COVID-19 to higher educational institutions, with a focus on Saudi women, and to propose practical solutions and policy recommendations to

address these challenges effectively. Based on, the research questions can be summarized as follows:

1) What are the critical challenges faced by higher educational institutions due to COVID-19?
2) What specific challenges do Saudi women encounter in higher educational institutions during the COVID-19 pandemic?
3) How can Saudi women in higher educational institutions effectively address and overcome the challenges posed by COVID-19?
4) What policy and management implications can be proposed to mitigate the COVID-19 challenges Saudi women face in higher educational institutions?

2. Literature review

2.1. Women leaders in Saudi Arabia

Women economic engagement in Saudi Arabia has significantly improved during the last 10 years after the government has paid great attention to the involvement of women in the Saudi public and business sectors. Higher education witnessed significant progress in the female participation (Alotaibi, 2020). Saudi Arabian women are displaying central participation as instructors and teachers in higher education (American Education Council, 2017), which enhanced their role in leadership positions especially with the introduction of Vision 2030. Evidence has further informed that educational qualification has been increased among Saudi women, which give them the ability to be represented in the top organizational hierarchy or leadership positions (Alghofaily, 2019). Unfortunately, women have been marginalized in leadership positions in KSA including the education sector either directly or indirectly (Alotaibi, 2020).

Mulligan (2019) argued that Saudi Arabia is the country that has displayed the fastest growth in women labor force participation in all G20 countries. Although leadership positions are male-dominated, worldwide, Saudi women have consistently grown to reach a higher organizational hierarchy. Before COVID-19, statistics had shown an increase in the number of women reaching leadership positions. Although women were experiencing organizational, cultural, and personal barriers, changes in the social system within the Kingdom allowed women to reach senior management positions (Parveen, 2021). Therefore, female also contributes strategic practices to Saudi higher educational institutions.

2.2. Women leaders and Saudi culture

The culture of Saudi Arabia had a big influence on women development. Since Saudi Arabia had a tribal culture, the social and family structure had been designed, with limited rights for women. King Abdullah identified the need for women's education, growth, and development as well as started promoting women rights. Women's empowerment marked significant progress in the current regime of Crown Prince Mohammed Bin Salman, increasing women's participation in the labor force by three times (Alotaibi, 2020). However, the leadership of upper management positions is traditionally considered male-dominated (Aram and Salipante, 2000;

Berry, 1995).

Princess Nora Bint Abdul Rahman University is identified as the only institution with female heads in Saudi Arabia (Alsubaie and Jones, 2017). However, there are other universities in Saudi Arabia where women are appointed vice deans and vice deputy deans for leading women's sections in universities (Alsubaie and Jones, 2017). Research has also indicated that Saudi women in high leadership roles and as managers are just as productive and successful as their male counterparts. Nonetheless, as per Al-Shamrani, (2015), Saudi Arabian social and economic transformations are also affecting the leadership terrain for women.

2.3. Women leadership landscape in Saudi Arabia after COVID-19

COVID-19 has profoundly affected every facet of human existence; it has not only resulted in a worldwide health crisis but also social, political, and economic crises in the world (Aldrich and Lotito, 2020). Considering the spread of COVID-19, many national and international organizations continued to take preventive and precautionary measures. For example, all the educational institutions in Saudi Arabia were closed to limit the spread of the virus and ensure that students and school communities are safe (Almaghaslah and Alsayari, 2020). Debates have long focused on issues of gender equality, women representation in the workforce, and chances for female leadership. However, the COVID-19 pandemic has deepened the pre-existing social and economic inequalities for women (UN Women, 2021). A study informed that the participation of women in leadership positions in different parts of the world had increased from 2015 to 2020. Although male managers rendered females from achieving higher positions, steady progress in women's leadership positions was being made. However, the COVID-19 crisis threatens to erase the benefits and progress gained in the past six years (McKinsey and Company, 2021).

For women, particularly those in high executive roles, COVID-19 has put numerous obstacles, as employees were obliged to work from home, which increased the additional responsibility and burden on working women for their housing and children responsibility (Nanavaty, 2020; Sangem, 2020). Evidence has shown that this also pushed many women out of the workforce, as the women feel less supported at home and workplaces (Uddin, 2021; Wang and Cho, 2013). It was concluded that women leaders are more efficient than men during times of crisis although they face additional challenges like proving their ability to continue leading the organization in eastern countries like KSA (Zenger and Folkman, 2020). Although women leaders were dealing with a kind of pressure of improving the system of education as envisioned under Vision 2030, COVID-19 crisis has increased this pressure.

A study was carried out by KPMG Saudi Arabia found that COVID-19 pandemic caused female leaders to adopt advanced adjustments (KPMG, 2020). For instance, new digital innovations that have altered the performance of firms and organizations are being adopted by female executives. According to Allam et al. (2021) cultural norms have impeded women's advancement, with only a small percentage of women in leadership roles at Arab universities. For instance, the COVID-19 pandemic caused the higher education system to move to digital platforms, which has increased the amount of childcare and domestic tasks that senior management and female university

executives must handle when working from home. Women in Saudi Arabia already experience many mobility and social life restrictions, further increasing due to COVID-19 restrictions, reducing productivity, networking opportunities, and career advancement (von Alberti-Alhtaybat and Aazam, 2018). Therefore, women leaders have always been a part of Saudi higher educational performance.

2.4. Women leadership and socio-cultural aspects

A report done by KPMG (2020) has informed that female leaders in Saudi Arabia are experiencing social and gender inequalities. For example, women leaders in higher education institutions were not involved in decision-making, or meetings. Some major difficulties include barriers to assuming leadership positions and making their presence equally important as male colleagues in their organizations (Alberti-Alhtaybat and Aazam, 2018; Cubillo and Brown, 2003). This problem was reported to increase during COVID-19 pandemic when women work remotely and their positions are overshadowed by their male counterparts (von Alberti-Alhtaybat and Aazam, 2018). Gender and societal norms complicate women leadership, especially in socio-cultural contexts (Sharif et al., 2022). Transformational leadership promotes innovative work behavior, crucial in settings with socio-cultural barriers, such as the hotel industry, where leadership styles can affect knowledge sharing and voice behavior (Karakose et al., 2023; Sharif et al., 2024). Gender differences in leadership positions highlight the need to understand how they affect organizational outcomes, especially in contexts where women face unique challenges (Sharif et al., 2022). For educational institutions to address gender-related issues, social justice leadership in education literature emphasizes the evolution and importance of equitable leadership practices (Karakose et al., 2023). Women motivation and support affect their ability to lead in educational and organizational settings (Karakose et al., 2021; Sharif et al., 2023).

According to Alghamdi et al. (2021), the post-pandemic higher education landscape in Saudi Arabia will be significantly changed. Students and teachers have faced major challenges related to digital education platforms. However, such evidence informs that female leaders in higher education will be required to enhance the quality of online learning, manage students, and staff members (Alyoubi et al., 2021; Azmi et al., 2022a; Mohammed et al. 2021). Hence, Alqahtani (2021) espoused that with the changing social, political, and economic conditions, the leadership landscape for women employed in higher education institutions of Saudi Arabia will also be changed. Women leaders would be required to display increased efficiency in managing the workplace and their families (Nakhaie, 2009; Nammour, 2019; Phelps, 2020).

Evidence has further informed that many female leaders may choose to leave the workforce with increased pressure of maintaining efficiency and with home and official responsibilities (Alqahtani, 2021). Research informed that the pandemic has affected leadership attributes and requires leaders to be more resilient, emotionally intelligent, having effective communication skills and compassionate, to endure stress. A report by KPMG (2020) documented that 66% of the female leaders consider themselves as well as their organizations to experience significant growth in the next

three years and that 50% of them have displayed high confidence in their growth prospects (KPMG, 2020). Noteworthy, changing the leadership landscape for women in Saudi Arabia would encourage them towards developing strategic alliances which in turn will support their growth and organizational growth as well.

Digital transformation of the operations of almost all organizations and institutions in Saudi Arabia has also opened new opportunities for women leaders, as effectively embracing digital transformation will open new ways for interaction and communication (Alessa et al., 2021). Although evidence has also informed that female leaders have outperformed male leaders at times of crisis, in countries with strict social norms and patriarchal culture, it has been difficult for female leaders to perform better during the crisis (Balaji, 2014; Eagly and Carli, 2007; Ellemers et al., 2012). More research is necessary to fully comprehend the leadership environment that Saudi Arabian women face in higher education.

2.5. Leadership styles and cultural background

Studies show transformational women leaders foster innovative work behaviors, especially in hospitality, where leader-member exchange and voice behavior are crucial (Karakose et al., 2022; Sharif et al., 2024). Addressing gender disparities in leadership can improve organizational performance by increasing affective commitment and tacit knowledge sharing (Sharif et al., 2022). The intellectual structure of transformational school leadership also shows that women leaders need effective mentoring and professional development to improve their leadership capacity and organizational outcomes. Bibliometric mapping shows that women leaders must adapt to technological advances to ensure organizational sustainability (Karakose et al., 2022). The scientific advancement of social justice leadership in education supports the idea that empowered women leaders can improve organizational outcomes (Karakose et al., 2023).

3. Research methodology

The current systematic literature review (SLR) will offer a thorough grasp of the difficulties that COVID-19 has caused for higher education institutions, particularly the difficulties that Saudi women face in these institutions confront.

3.1. Research strategy and databases

For a rigorous and comprehensive literature search, multiple databases were employed. Commonly accessed databases for academic and management research including Google Scholar, Scopus, JSTOR, PubMed, and the Web of Science. These databases have been chosen due to their vast array of peer-reviewed articles and their relevance in multidisciplinary studies (Crawford and Cifuentes-Faura, 2022; Hossain et al., 2022).

3.2. Keywords used in search

Combinations of terms like "COVID-19 challenges," "higher educational institutions," "Saudi Women," "leadership," and "solutions," to ensure the specificity and relevance of returned articles.

3.3. Inclusion and exclusion criteria

Articles included in this review specifically address the challenges posed by COVID-19 in higher educational institutions. They focused on the experiences of Saudi women in these institutions during the pandemic. Furthermore, only publications in English and peer-reviewed articles released since the onset of the COVID-19 pandemic (late 2019) were considered. On the other hand, non-peer-reviewed papers (blogs, editorials, and opinion pieces) were excluded. Furthermore, research that required further analysis of the particular difficulties Saudi women encountered during the pandemic time was left out. To preserve the study's current relevance, all research done prior to the COVID-19 pandemic was excluded from the review.

3.4. Sample size

Initial searches from the literature studies yielded around 283 research papers, articles, books, and conference papers, where 179 records were removed from the research due to irrelevant records in Saudi Arabia. After analysing the remaining 104 records, the study found that 77 records had involved other challenges rather than COVID-19 so they were also removed from the study. Finally, the final sample size reached 27 relevant records of Saudi Arabian Women's leadership in higher educational institutions according to the inclusion and exclusion criteria.

3.5. Synthesis and schematization

After selecting the final articles based on the criteria, the data was synthesized using thematic analysis (Braun and Clarke, 2006). This method allows for patterns or themes within the data to emerge, providing a structured summary of the literature findings. These themes were then visually represented to offer an integrated view of the existing literature, pinpointing the challenges and potential solutions. This approach ensures that the SLR results are transparent, replicable, unbiased and comprehensively cover the research objectives.

4. Results

4.1. Demographic information

Figures 1 and **2** provides an intriguing look into the amount of research carried out in Saudi educational institutions across the period 2019–2023, only 27 studies have already been recorded that matched the inclusion criteria which indicating that the research rate remains robust. This theory is supported by the fact that this theme is mentioned in a number of the titles. In essence, there is a discernible advance and increased research activity in Saudi educational institutions, particularly in the second half of the presented timeline (**Figures 1** and **2**).
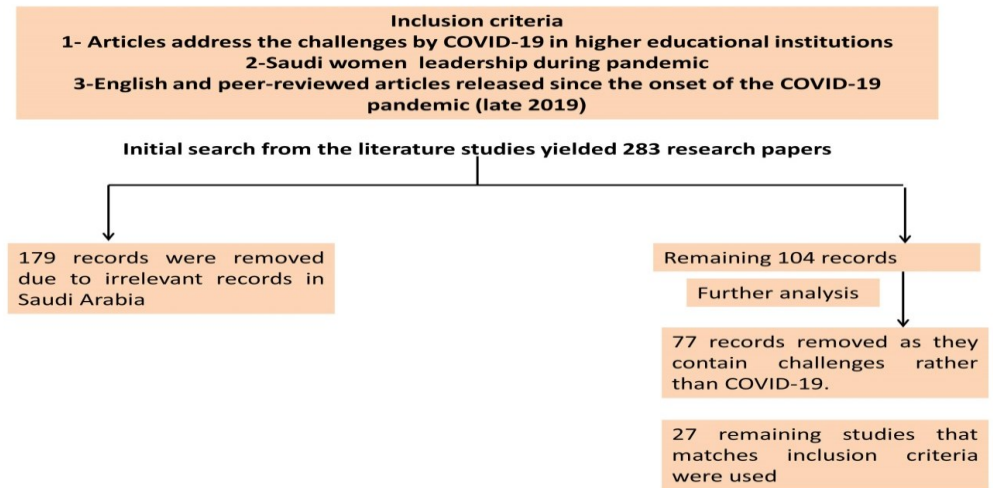
Figure 1. Schematic identification of studies via databases and registers.
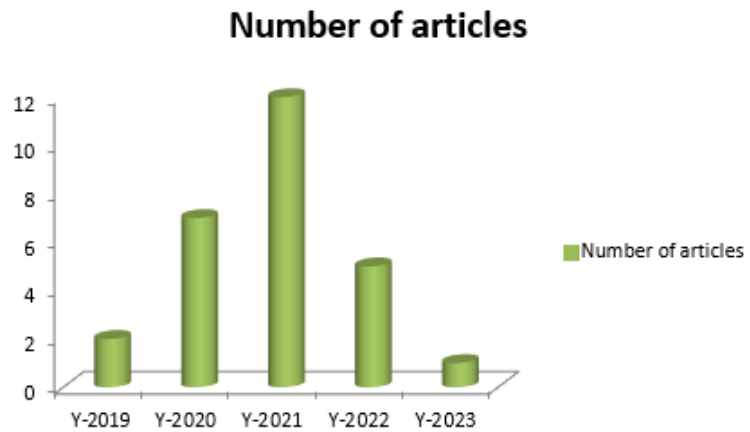
Figure 2. Supplementary material.

Finally, 27 studies that are based on particular themes or elements associated with research in Saudi educational institutions are displayed in **Figure 3**. This depiction is employed to evaluate the areas of interest and concentration of researchers during the relevant times. Historically, Saudi Arabia has been viewed as a conservative society with stringent roles and expectations placed on women. The concentrated research in this area might suggest that there has been an evolving paradigm or at least a profound interest in understanding women's leadership dynamics in Saudi educational institutions. This indicates broader socio-political changes in the country, where women's rights and societal roles are undergoing substantial transformation.

About the COVID-19 pandemic, 21 studies are directly associated with it, divided among challenges, possibilities, and solutions. Specifically, COVID-19 challenges have garnered attention in 9 studies, highlighting the impacts and complications that the pandemic had brought to the educational realm. This interest is not surprising, given the global disruption the pandemic caused. The studies on the possibilities of challenging COVID-19 (5 studies) and solutions to COVID-19 challenges (7 studies) suggest a proactive approach from the research community. It points towards an academic pursuit to understand, innovate, and implement strategies to navigate and mitigate the adverse effects of the pandemic on education. While the challenges

presented by the pandemic are evident, the higher number of studies focused on solutions and possibilities indicates an optimistic and forward-looking stance in the Saudi academic landscape.
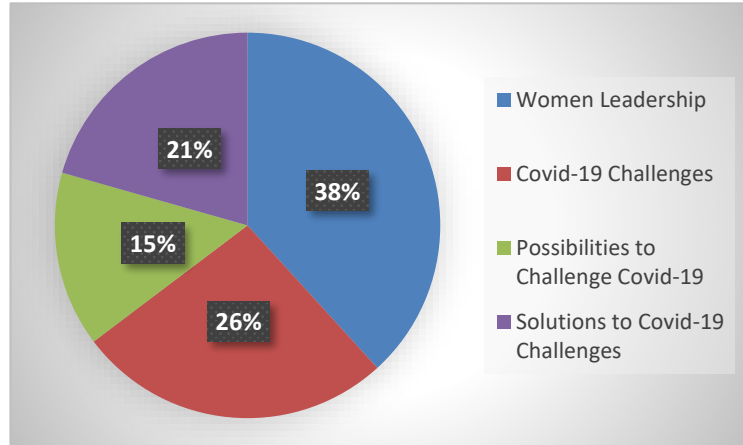

Figure 3. Nature of the study.

4.1.1. Critical challenges of COVID-19 faced by higher educational institutions

Various studies have shown that the COVID-19 pandemic has presented unprecedented challenges to higher education worldwide, including in Saudi Arabia (see **Table 1**). Another significant change has been the rapid shift to distance and online education, which now dominates 37% of academic discourse. In addition to its urgency and magnitude, this transition has transformed educational systems across the Kingdom. Like their global counterparts, Saudi universities must quickly adopt new pedagogical models, integrate advanced technologies, and rethink engagement strategies to maintain educational continuity. The Saudi educational landscape has changed significantly, aligning with Vision 2030's modernization and technological integration goals.

Table 1. Critical challenges of COVID-19 faced by higher educational institutions

Critical Challenges	Studies percentages%	Sources
Distance and Online Education Transition	37% (10 out of 27)	Abdulrahim and Mabrouk (2020), Alghamdi et al. (2021), Turnbull et al. (2021), Crawfordand Cifuentes-Faura (2022), Hossain et al. (2022), Cranfield et al. (2021), Crawford (2023), O'Keefe et al. (2020), Augustus (2021), Zabaniotou (2021)
Impact on Women's Leadership and Workforce	33.33% (9 out of 27)	Aldrich and Lotito (2020), Alghofaily (2019), Allam et al. (2021), Alotaibi (2020), Alqahtani (2021), Bruce et al. (2021), Okeke-Uzodike and Gamede (2021). Augustus (2021), Zabaniotou (2021)
Effects on Academic Staff and ResearchProductivity	14.82% (4 out of 27).	Alessa et al. (2021), Almaghaslah and Alsayari (2020), Augustu (2021), Zabaniotou (2021)
Impact on Entrepreneurship andConsumer Behaviour	7.4% (2 out of 27)	Alessa et al. (2021), Sangem (2020)
Women's Role in Higher Education Institutions	18.52% (5 out of 27)	Alghofaily (2019), Alotaibi (2020), Alqahtani (2021), Augustus (2021), Zabaniotou (2021)
Impact on Students' Well-being and Mental Health	7.4% (2 out of 27)	Azmi et al. (2022a), Zabaniotou (2021)
General Impact on Higher Education	14.82% (4 out of 27)	Abdulrahim and Mabrouk (2020), Alghamdi et al. (2021), Augustus (2021), Zabaniotou (2021)
Technological Challenges and Adaptation	4% (1 out of 25)	Abd Kadir (2022)

In addition, 37% of studies have focused on Saudi Arabian socio-cultural dynamics and women's higher education challenges due to the pandemic. The nation's Vision 2030 promotes female participation in all sectors and educational empowerment. This research suggests that addressing women higher education challenges is fair and crucial to the Kingdom's development. With 14.82% of studies reporting pressures from disrupted routines, remote work, and adjusted academic calendars, academic staff, and research productivity have also suffered. These disruptions have strained faculty productivity and well-being, highlighting the need for strong support systems. Previous research suggests that effective leadership and strategic planning are essential to navigating such disruptions (Sharif, 2024; Yirci et al., 2023).

Even though entrepreneurship and consumer behavior in education and their effects on higher education have been studied less, the insights are still valuable. Though less discussed, these areas are crucial to the pandemic's economic and entrepreneurial effects on educational institutions. 18.52% of studies emphasize the need to empower women in Saudi Arabian educational system. Global discourse on gender parity in leadership and socio-cultural challenges (Karakose, 2023; Sharif et al., 2022) supports this focus. Only 7.4% of studies discuss students' well-being and mental health, but these issues are crucial. Due to the sudden switch to remote learning and the pandemic's stress and uncertainty, students' mental health has suffered, requiring comprehensive support.

Technological issues, discussed in 7.4% of studies, emphasize the need for solid digital infrastructures and ongoing technological adaptation. Rapid shifts to online education have revealed digital readiness gaps, requiring strategic technology investments to ensure resilience to future disruptions. These studies' diverse challenges reveal the COVID-19 pandemic's impact on Saudi Arabian higher education system. These findings help Saudi universities develop post-pandemic strategies and emphasize the need for technological integration, gender equity, and academic staff and student support to create a resilient and progressive educational environment. These insights align with previous leadership and socio-cultural dynamics studies, emphasizing the strategic importance of addressing these challenges within Vision 2030.

4.1.2. Critical challenges of COVID-19 faced by Saudi women in higher educational institutions

Table 2 shows that a predominant challenge women face in higher education leadership roles in Saudi Arabia during the COVID-19 era is their underrepresentation in leadership positions, as emphasized by 18.5% of the studies (Bryman, 2007). This underrepresentation indicates a more profound structural issue rooted in societal norms and cultural expectations despite the ongoing efforts for women's empowerment in the nation. Another challenge is the balance of workload amidst the pandemic. Women leaders faced pressure in academic environments, while the pandemic has accentuated this situation as remote working and home responsibilities converged. Moreover, the impact on women scholars' productivity and participation in the labor force highlights the multi-dimensional challenges faced by women during this time.

Table 2 also underscores women leaders' resilience and performance during the crisis, as reported by Aldrich and Lotito (2020). This resilience, however, is consistent with the evident challenges they encountered, ranging from entrepreneurship hurdles during the pandemic to issues of technological adaptation. Overall, while the leadership potential of women has been positively acknowledged, systemic challenges remain a barrier in higher educational institutions in Saudi Arabia.

Table 2. Critical challenges of COVID-19 faced by Saudi women in higher educational institutions.

Critical Challenges	Studies Percentages%	Sources
Underrepresentation inLeadership Roles	18.5% (5 out of 27)	Alghofaily (2019), Alotaibi (2020), Alqahtani(2021), Aldrich and Lotito (2020), Bruce et al. (2021)
Balancing Workload Amidst Pandemic	3.7% (1 out of 27)	Okeke-Uzodike and Gamede (2021)
Impact on Women Scholars' Productivity	3.7% (1 out of 27)	Allam et al. (2021)
Empowerment and Labor Force Participation	7.5% (2 out of 27)	Mulligan (2019), Parveen (2021)
Challenges in Entrepreneurship During Pandemic	3.7% (1 out of 27)	Sangem (2020)
Performance of Women Leaders in Crisis Management	3.7% (1 out of 27)	Aldrich and Lotito (2020)
Effects of the Pandemic on Female Academic Staff	3.7% (1 out of 27)	Almaghaslah and Alsayari (2020)
Challenges in Technological Adaptation for Female Academics	3.7% (1 out of 27)	Almaiah et al. (2021).

4.1.3. Possibilities to challenge COVID-19 by Saudi women in higher educational institutions

Table 3 reveals multiple dimensions through which Saudi women in higher educational institutions have been positioned to challenge the implications of the COVID-19 pandemic. A predominant factor emerging from the analysis is the adoption of distance education and e-learning, represented in over 7% of the studies (Arab News, 2020; Arguel et al., 2019). This underscores the significance of technological infrastructure and adaptability in the educational realm, as institutions across the globe have had to pivot to online platforms. The urgency and immediacy of this transition were crucial, and Saudi women, as a part of the academic community, were central to this shift.

Table 3. Possibilities to challenge COVID-19 by Saudi women in higher educational institutions

Possible Factorsto Challenge COVID-19 by Saudi Women in Higher Education	Studies Percentages%	Sources
Adoption of Distance Educationand e-Learning	7.5% (2 out of 27)	Alghamdi et al. (2021), Abdulrahim and Mabrouk (2020)
Embracing TechnologicalLeadership	3.7% (1 out of 27)	Abd Kadir (2022)
Female LeadershipEfficacy in Crises	7.5% (2 out of 27)	Zenger and Folkman (2020), Bruce et al. (2021)
Empowerment ofWomen in Leadership Roles	7.5% (2 out of 27)	Alotaibi (2020), Parveen (2021)
Addressing theWorkload and Mental Health Concerns	7.5% (2 out of 27)	Okeke-Uzodike and Gamede (2021), Azmi et al. (2022b).
Advocacy for Equality and Reducing Gender Disparities	3.7% (1 out of 27)	Almaghaslah and Alsayari (2020)

Another noteworthy observation is the emphasis on leadership, both in terms of embracing technological leadership and the efficacy of female leadership during crises. This could indicate a broader discourse on diversifying leadership roles, especially in times of unpredictability and change. The mentioned studies have

highlighted the distinct leadership qualities and capabilities that women bring to the table, particularly during challenging times. Approximately 7.5% of the studies highlight the empowerment of women in leadership positions, indicating a persistent movement towards greater gender parity and acknowledging women's abilities in leadership positions within academic institutions.

Last but not least, the worries about stress and mental health among female academic professionals, along with the support for closing gender gaps, point to a complex picture of the difficulties Saudi women encountered in higher education during the pandemic. These issues highlight the need for a supportive environment that recognizes and addresses the unique challenges faced by women, ensuring their well-being and continued contribution to the academic community. Overall, the studies collectively point toward Saudi women's resilience, adaptability, and pivotal role in steering HE through the tumultuous times brought about by the COVID-19 contagion.

4.1.4. Solutions to eliminate COVID-19 challenges by Saudi Women in higher educational institutions

COVID-19 has presented many challenges for higher education institutions worldwide, including Saudi Arabia. These challenges, especially for Saudi women in higher education, require comprehensive solutions, as shown in **Table 4**. Approximately 3.7% of studies support distance education and e-learning as a significant solution. The quick switch to online learning ensured education continuity during the pandemic and provided a flexible option that fit Saudi Arabia's socio-cultural dynamics. Saudi women may face cultural or health barriers to physical attendance, making this crucial. According to previous research, flexible learning environments are essential for educational access and equity (Alghamdi et al., 2021; Almaiah, 2021). According to Alotaibi (2020) and Alqahtani (2021), empowering women in educational leadership is another pivotal solution. By empowering women in leadership, they can voice their challenges and actively shape solutions. As the literature on transformational leadership shows, inclusive leadership practices promote organizational resilience and innovation (Karakose et al., 2023; Sharif et al., 2024).

Table 4. Solutions to eliminate COVID-19 challenges by Saudi women in higher educational institutions.

Soluble Factors	Studies Percentages %	Sources
Adoption of distance education and e-learning	3.7% (1 out of 27)	Almaiah et al. (2021)
Empowering women in leadership roles	7.5% (2 out of 27)	Alotaibi (2020), Alqahtani (2021)
Bibliometric and systematic reviews fortargeted strategies	7.5% (2 out of 27)	Crawford and Cifuentes-Faura (2022), Hossain et al. (2022)
Mental health awareness and interventions	3.7% (1 out of 27)	Azmi et al. (2022b)
Gender equity advocacy and support mechanisms	3.7% (1 out of 27)	Okeke-Uzodike and Gamede (2021)
Role of technology leadership in teaching and learning	3.7% (1 out of 27)	Abd Kadir (2022)
Continued research and collaboration for crisis management	3.7% (1 out of 27)	Crawford (2023)

Bibliometric and systematic reviews are becoming valuable tools for educational institutions, along with leadership empowerment. These reviews help institutions map

pandemic dynamics and strategize. These methods have helped us understand education trends and challenges, particularly crisis management and organizational adaptation (Crawford and Cifuentes-Faura, 2022; Hossain et al., 2022). Given pandemic pressures, mental health awareness is also essential. Due to pandemic-exacerbated mental health issues, women in higher education need comprehensive support. Azmi et al. (2022a) agree that mental health initiatives are crucial to women well-being and productivity in education. Higher education faces complex COVID-19 pandemic challenges that require a multifaceted response. Technology-driven solutions like e-learning platforms are essential for educational continuity, but leadership empowerment and mental health initiatives are also important. This integrated approach is crucial for providing Saudi women with a strong and supportive education during difficult times.

COVID-19 has caused other problems for Saudi higher education. 37% of studies have noted the pandemic's rapid shift to distance and online education. Due to this significant change, educational institutions must quickly adapt to new pedagogies, technologies, and engagement methods. This shift significantly impacts Saudi Arabia's Vision 2030, emphasizing education modernization and technological integration. The pandemic has revived interest in women's workforce participation and higher education leadership, with 37% of studies focusing on these issues. With changing gender roles and expectations, Saudi Arabian socio-cultural context warrants this emphasis. This focus on women's engagement in higher education aligns with the national vision of increasing female participation across sectors, emphasizing the strategic importance of addressing these challenges (Karakose, 2023; Sharif et al., 2022).

Additionally, 14.82% of studies have addressed academic staff and research productivity. Disrupted routines, remote working, and modified academic calendars have pressured teachers and researchers significantly. This supports previous research on the importance of leadership and strategic planning during disruptions (Sharif, 2024; Yirci et al., 2023). Entrepreneurship and consumer behavior in education are crucial to understanding COVID-19's effects on higher education, but studies have yet to examine them. According to 18.52% of studies, Saudi Arabian educational system needs to empower women in higher education. The educational sector needs this focus to promote gender equity and give women the support they need (Karakose et al., 2023).

Even though only 7.4% of studies address student well-being and mental health, these issues are crucial. Due to the COVID-19 changes, students need strong mental health support. The focus on technological challenges in 7.4% of studies emphasizes the need for solid digital infrastructures and technological adaptation in higher education.

4.2. Implications and conclusion

4.2.1. Policy implications

According to the findings of our investigation, e-learning and other forms of distance education are essential components of the answer to the problems posed by COVID-19. A push should be made, driven by policy, to improve the digital

infrastructure of Saudi higher education institutions. This will ensure that online learning experiences are high quality and uninterrupted (Bryson and Andres, 2020; Garris and Fleck, 2020; Romero-Ivanova et al., 2020). This necessitates not only the provision of technical resources but also training programs for faculty, particularly for female leaders, to equip them with the skills necessary to use these tools effectively. A push of this nature would ensure that education continues to be accessible, particularly for women who were hampered by socio-cultural or health-related barriers that prevent them from attending physical classes.

After reviewing the literature, we emphasized the significance of putting women in positions of authority within educational institutions. HEIs need to put in place policies that enthusiastically encourage women to take on decision-making responsibilities. The presence of such representation helps to ensure that the specific challenges women facing during crises are given the attention and consideration they deserve. Increasing the number of women holding leadership positions in academic institutions are accomplished through implementing mentorship programs, awareness campaigns, and specialized leadership training for women.

The pandemic has put a mental strain on students, faculty, and particularly on female students juggling multiple responsibilities simultaneously. In higher education institutions, policies must emphasize the development and ongoing maintenance of mental health and well-being programs designed explicitly for women. This may include attending workshops on stress management, maintaining a healthy work-life balance, and emotional well-being, as well as participating in online counselling sessions or support groups. The fluidity of the COVID-19 pandemic makes it imperative to continue research and establish feedback mechanisms. Policies ought to support periodic bibliometric and systematic reviews in order to evaluate the dynamic character of issues and the effectiveness of applied remedies. These studies suggest that HEIs ought to exercise flexibility when making necessary adjustments to their tactics to maintain an environment that is favourable for learning for all students, with a focus on resolving the challenges that women encounter. These policy recommendations aim to construct a higher educational landscape in Saudi Arabia that is more inclusive, supportive, and adaptable, with a particular focus on catering to the needs and aspirations of women both during and after the COVID-19 era.

4.2.2. Managerial implications

The managers of Saudi higher education institutions must recognize the innate potential and capabilities of women occupying academic leadership roles. It is necessary to devise and execute leadership development programs explicitly geared toward women and consider the particular obstacles and requirements women face. Programs like these should cover topics like strategic decision-making, crisis management, and effective communication. They should also emphasize the creation of a supportive network in which women leaders can talk to one another about their experiences, challenges, and solutions, thereby fostering a culture of collective growth and mutual support.

According to our findings, managers are responsible for giving resource allocation that facilitates a seamless transition to and continuation of e-learning a higher priority when allocating resources. This requires resources not only in terms of

technology but also in terms of both human and financial capital to keep the education standard high. Furthermore, because many women juggle multiple roles at once, particularly in times of crisis such as COVID-19, managerial policies ought to be flexible. This flexibility could include allowing provisions for working from home when feasible, modifying work hours, or providing support in childcare facilities or mental health services. While such provisions benefit everyone, they are significant for ensuring that women in leadership positions carry out their responsibilities successfully and without undue stress. To put it briefly, managers in Saudi higher education institutions (HEIs) must adopt a proactive, adaptable, and sympathetic approach to guarantee that the organization is not only receptive to current issues but also anticipates and gets ready for future ones, especially those pertaining to women in leadership positions.

5. Conclusion

The COVID-19 pandemic made transitioning to distance and online education a priority for 37% of the studies reviewed (10 out of 27). This shift forced rapid adaptation of educational practices, technologies, and engagement methods, transforming Saudi Arabia's education landscape. Flexibility is crucial in contexts where health or socio-cultural barriers limit physical attendance, as e-learning has become widespread (Abdulrahim and Mabrouk, 2020; Alghamdi et al., 2021). This shift ensured education continuity and aligned with Vision 2030's broad goals of technological integration in education. Twenty-seven studies examined how COVID-19 affects women leadership and workforce participation in higher education. Saudi women are underrepresented in educational leadership due to socio-cultural challenges, as these studies show. According to the national vision of gender equity across sectors, women in leadership need more empowerment and support (Aldrich and Lotito, 2020; Alotaibi, 2020).

14.82% of studies (4/27) highlighted the pandemic's impact on academic staff and research productivity. Remote work, altered academic calendars, and increased workload have stressed educators and researchers. They need strategic support to overcome these challenges, negatively impacting their productivity and well-being (Alessa et al., 2021; Almaghaslah and Alsayari, 2020). Institutions must prioritize academic staff well-being and support to maintain high research and teaching quality during and after the pandemic. Only 7.4% of studies (2 out of 27) addressed entrepreneurship and consumer behavior in education, another pandemic-affected area. These studies demonstrate how the pandemic has affected entrepreneurial initiatives and consumer behavior among students and staff in educational institutions (Alessa et al., 2021; Sangem, 2020). Learning about these effects is essential for developing post-pandemic strategies to sustain and grow educational institutions.

About 18.52% of studies (5 out of 27) emphasized women in higher education. The results emphasize the need to empower women and encourage student and leadership participation in higher education. This focus promotes gender equity and gives women the support and opportunities they need to succeed in education (Alghofaily, 2019; Alotaibi, 2020). The pandemic has highlighted the need to address gender disparities and help women overcome barriers to higher education. 7.4% of the

studies (2 out of 27) discussed the pandemic's effects on students' well-being and mental health, while 4% discussed technological challenges and adaptation. Strong mental health support systems and digital infrastructures are essential to help students adapt to new educational environments (Abd Kadir, 2022; Azmi et al., 2022a). These studies illuminate the multiple effects of the COVID-19 pandemic on Saudi Arabia's higher education system and lay the groundwork for successful post-pandemic strategies that prioritize stakeholder well-being.

This study relies on secondary data sources, which may not capture the latest developments and nuanced challenges faced by higher education institutions and Saudi women during the COVID-19 pandemic. This analysis only examined 27 articles, which limits its generalizability because a broader range of studies may reveal additional challenges and solutions. The study also ignores regional differences in Saudi Arabian socio-cultural and institutional contexts, which may affect the solutions' applicability. Finally, published studies might overlook new practices and on-the-ground adaptations never documented in academic literature.

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