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Trends and Gender Dynamics in Professional Certification Growth in Saudi Arabia

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Abstract: This study explores the trends and gender dynamics in professional certification growth in Saudi Arabia, a key driver of workforce development and economic transformation. While professional certifications are increasingly valued across various industries, there has been limited research exploring demographic trends and disparities in their attainment. Using publicly available data from the KSA Open Data Platform (n = 990), this study analyzes certification growth between 2020 and 2022, revealing a steady rise in holders, particularly in advanced certifications like the SOCPA Fellowship. However, despite this growth, the findings highlight a persistent gender gap, with men significantly outnumbering women at all levels, especially in advanced qualifications. These trends raise questions about access and equity, emphasizing the need for targeted initiatives to close the gender gap. While constrained by the representativeness and scope of the available data, this study provides a robust foundation for future research to explore the socio-economic impacts of professional certifications in Saudi Arabia, integrating more comprehensive datasets and qualitative approaches to deepen understanding.

Keywords: professional certification; Saudi Arabia; gender imbalance; learning and development

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1. Introduction

In today's world, continuous technological change and the global economy encourage proactive learning and training management to improve individuals' personal performance and modify their skills and knowledge to perform current and future tasks effectively [1]. Therefore, as new technologies and professions emerge, individuals should be capable of adopting and acquiring the latest knowledge and skills through training and certifications [2–5]. Saudi Arabia, like other developed nations, has been undergoing a massive transformation from a traditional economy to a knowledge-based economy, according to the Saudi Vision-2030, with special emphasis on learning and development across all sectors. Professional certifications play a crucial role in this transformation, equipping individuals with the necessary skills to thrive in the new economy [6]. Therefore, to shift dependence on the oil economy, the government is encouraging focus and investment in education, learning, and human capital development, aiming to produce a highly skilled and trained local workforce that can work on both local and global stages [6–8].

Therefore, to diversify its economy and secure employment opportunities in other sectors from oil dependency, Saudi Arabia faces a shortage of skilled local workforce [6].

To fulfill this talent shortage, cost-effective and efficient skills development and training programs to meet the growing demands need to be developed and promoted [9]. Another factor contributing to the demand and growth for professional certifications in Saudi Arabia is the Saudization policy. According to this policy, a significant number of the foreign workforce will be replaced by the national population [10]. In this regard, Saudi Vision 2030's Human Capital Development Program is a significant step towards education and training improvement at all stages, including skills development and professional certifications [6].

This study aims to discuss the key trends, opportunities, and future perspectives of learning and development in Saudi Arabia, particularly the current trends in obtaining professional certifications, their growth, and gender-wise distribution in the last three years, from 2020 to 2022. The significant reason for selecting the data from these three years is posted pandemic situation where most of the young generation in Saudi Arabia and worldwide were attracted towards online learning modes and attached to personalized learning through various capacity building, skills-based, and certain course-based certifications from Coursera, SOCPA, etc. [11]. This study also significantly contributes to current trends in professional development, focusing on the changing needs of individuals, the impact of artificial intelligence (AI) and digital technologies, and Saudi Vision 2023 in supporting educational and economic goals. This study aims to answer the following research questions:

(1) What is the growth rate of professional certifications among individuals in Saudi Arabia during the post-pandemic years (2020–2022)?
(2) How does the gender-wise distribution of professional certification attainment vary during this period?

1.1. Professional Certification Trends

1.1.1. Global Situation

The research on professional certification trends and earning digital skills credentials is in its earlier phases globally. A very limited number of studies are available that have attempted to discuss the growing trends, impact, and job market-associated issues to professional certifications. In 2021, Castano-Mu noz and Rodrigues investigated the enrolment trend in Massive Open Online Courses (MOOCs) and concluded that professionals and workers involved in MOOCs improved their professional development and employment retention [12]. Similarly, Ref. [13] examined the performance of certificate holders over others who did not acquire certificates. The study found that candidates with professional certification remained successful in obtaining more work contracts through online work platforms. In a recent study, Ref. [14] evaluated the impact of online certification on Indian IT skilled workers. They observed that most of the engineering and IT students were opting for online skills certifications to enhance their job market value.

Furthermore, the statistics of online courses and certificates providing companies and independent observers highlight that the professional certificates and digital skills earning trends have grown and expanded exponentially [15]. According to Statista report 2024, the Professional Certificates market has grown significantly, with projected revenue reaching USD 28.28 million in 2024. Over the period from 2024 to 2029, the market is expected to experience a compound annual growth rate (CAGR) of 6.76%, culminating in an estimated market volume of USD 39.23 million by 2029. The number of users is anticipated to rise to 359.6k by 2029, with user penetration growing from 0.7% in 2024 to 0.9% by 2029. The average revenue per user (ARPU) is forecasted to be USD 109.00. Globally, the United States is projected to generate the highest revenue, amounting to USD 1956.00 million in 2024, driven by a user penetration rate of 2.3%, the highest among all regions [16]. Similarly,

according to Coursera Annual Global Skills Report (2024), a significant rise has been seen in online registration for various skills courses and certifications worldwide. Only in GenAI-related courses did Coursera receive a 1060% increase in enrolment in 2024 [17]. This increased number of candidates shows how learners actively participate in the growing trend of online courses and certificates for skills enhancement.

1.1.2. Saudi Arabia

Saudi Arabia has been undergoing a significant economic, scientific, and infrastructure transformation in the wake of its Vision 2030 [18,19]. According to [20], this transformation in the digital learning system has highlighted the skills gap, its problems, and adaptation issues that influenced the productivity, performance, and efficiency of the workforce, particularly after COVID-19 circumstances. In another report, Saudi Jobs Market Needs Assessment Study, shared by [21], a very serious issue of unemployability has been highlighted where almost 60% of the graduates in higher education do not fit into the job market demands and requirements. Hence, the graduates are trying to fill this gap by improving their existing skills by acquiring new market-required skill sets. This situation promoted the demand for professional certification, and the Saudi government also promoted and encouraged various channels to gain these professional credentials.

In this context, learning and development have gained popularity among young and experienced individuals within the country to enhance their skills and improve career development, and ultimately, the professional certification trend has also gained significant growth. According to the Statista Market Insights report released in March 2024, as shown in Figure 1, Saudi Arabia has witnessed a significant increase in enrolment in various online and digital skills programs and certificates. This increase is expected to reach 359.6 thousand by 2029.

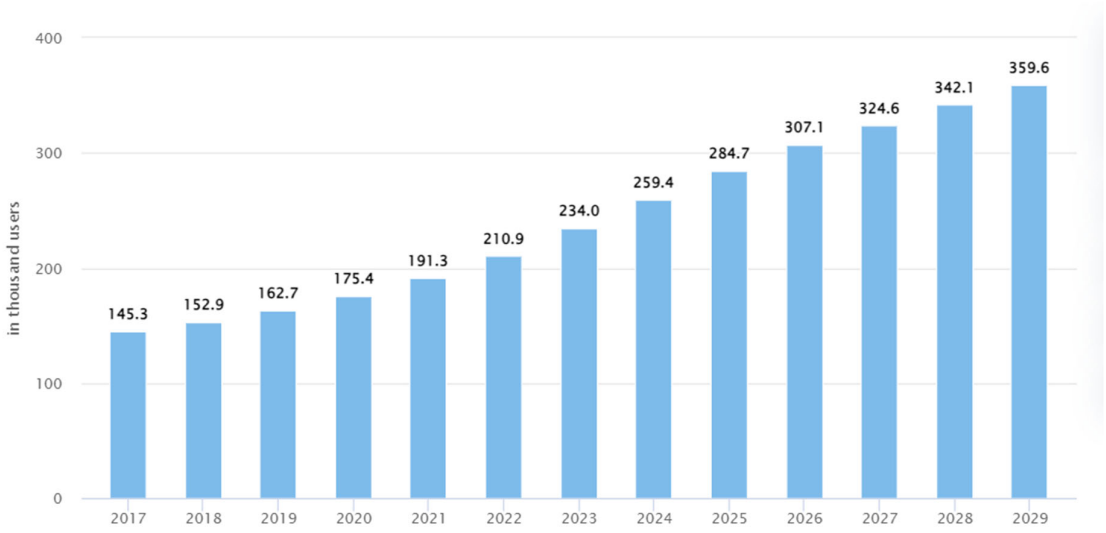


Figure 1. Professional certificate users in Saudi Arabia [16].

Another factor in promoting professional certification trends in Saudi Arabia is the availability of advanced information and technology infrastructure that enables many individuals to learn and earn from various online sources [20,22]. Due to user revenue, as shown in Figure 2, individuals in Saudi Arabia can now access professional certificate programs from top institutions worldwide. This has increased demand for specialized certifications in industries like cybersecurity, data analytics, project management, and digital marketing.

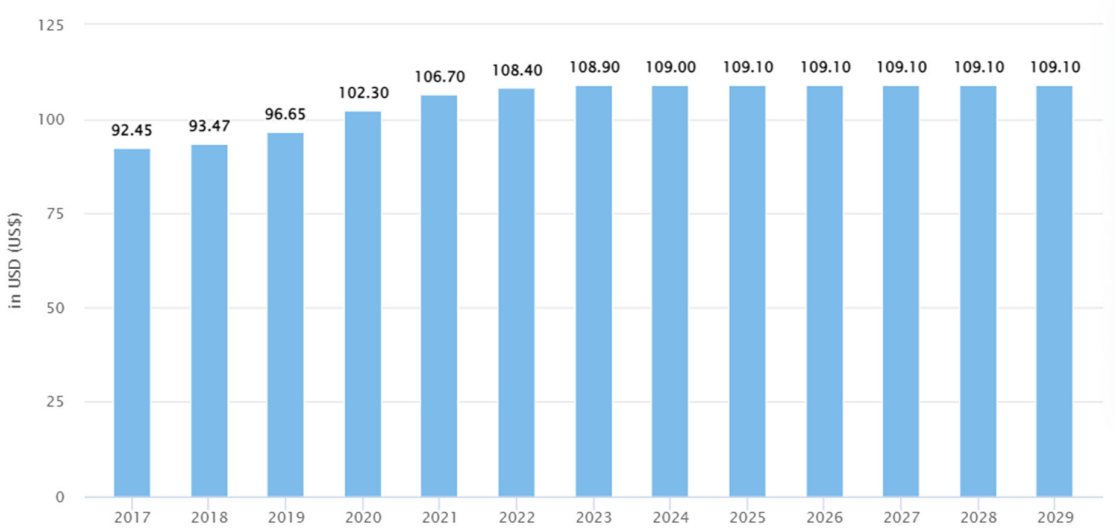


Figure 2. Average revenue per user [16].

In its recent Global Skills Report 2024, Coursera released the rankings of various countries actively involved in leading skills learning courses and certificates and placed Saudi Arabi at 60th place globally with 1.2 million learners. Figure 3 shows both learners and global ranking.

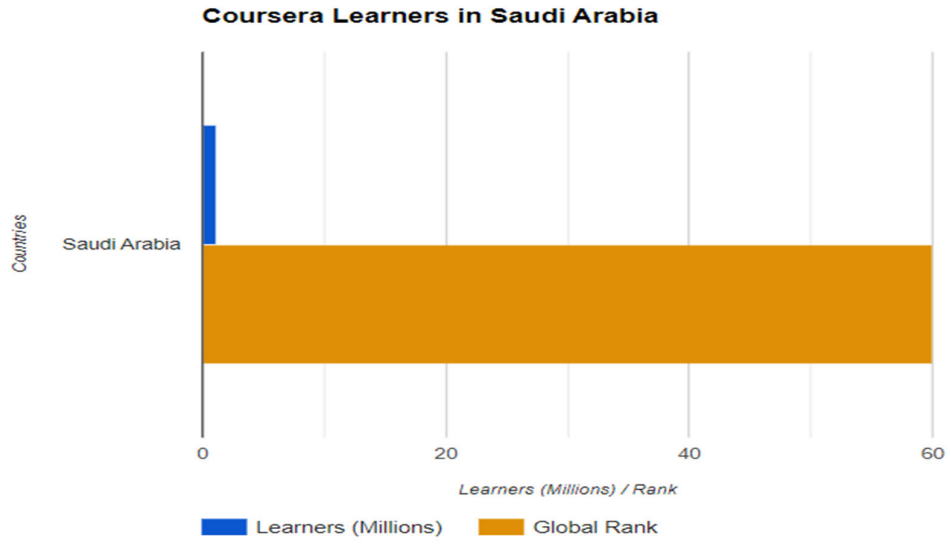


Figure 3. User penetration comparison [17].

Considering the global trends in the professional certificate market, this study aims to comprehensively analyze the Saudi Arabian context through data available at the Saudi Arabia Open Data Platform.

Employment Rate of Saudi Graduates by Gender:

According to the 2021–2022 GOSI states, Saudi male university graduates had a higher employment rate than female graduates. In this context, within one year of their graduation, 42% of Saudi males were employed, whereas females only constituted 24% of the total graduates in the year 2021–2022 [23]. However, this employment rate varies from the degree of graduation and education to specialization. PhD graduates, among both males and females, achieved the highest employment rate, reaching more than 90% in their first year of graduation. Moreover, among major courses, Engineering, Manufacturing, and Construction had the highest employment rate at 82%, with 64% of graduates finding jobs within a year. Health and Welfare followed at 68%, largely due to required post-graduation

training. Meanwhile, Business, Administration, and Law had the most graduates, but only 31% were employed within a year, with the overall employment rate reaching 58% by the end of 2022 [20,22,23].

2. Methodology

A quantitative research approach was employed to analyze and analyze recent trends in the growth of professional certification and gender distribution in Saudi Arabia. The data for this analysis was obtained from the *Saudi Arabia Open Data Platform* https://open.data.gov.sa/en/home, accessed on 10 June 2024, which aggregates official statistics from government institutions. The specific dataset used, titled "Number of Certificate Holders by Gender and Year" (dataset link, https://open.data.gov.sa/en/datasets/view/1028edae-2e55-441d-bcc5-c57cd2b45bf9, accessed on 14 November 2024), provides annual information on the number of certificate holders disaggregated by gender. The study focused on 2020 to 2022, the most recent 3-year period with complete data available. While the dataset offers valuable insights into trends in certification, it does not provide detailed information on how the data were collected, whether the sample is representative of the overall population, or whether the certifications included reflect all professional certifications in the finance and accounting sector in Saudi Arabia [18]. These limitations should be kept in mind when interpreting the findings.

The data were cleaned and processed using Python. This process involved organizing data by year and gender, handling missing values, filtering, and categorizing certification types [5]. Furthermore, the analysis explored key metrics, including total certificate holders by gender and year, year-over-year growth trend, and gender distribution. Each year's total number of certificate holders was computed by summing male and female values, revealing an upward trend with 843 certificate holders in 2020, 964 in 2021, and 990 in 2022. To visualize these trends, a line chart was created to depict consistent growth over the three years. Gender distribution was further examined by calculating the percentage of male and female certificate holders for each year, and the results were presented using a stacked bar chart, which highlighted shifts in the gender ratio over time [16].

This study specifically examined professional certifications included in the dataset, which were largely concentrated in the accounting and public finance sectors. Among these were the SOCPA Fellowship, a prestigious certification for senior accounting professionals, and the Accounting Technician Certification, an entry-level qualification designed to prepare new graduates for employment in accounting roles. Other certifications analyzed included the SOCPA VAT Certification, which focuses on VAT regulations and compliance; the SOCPA IFRS Certification, which trains professionals in International Financial Reporting Standards; and two certifications targeted at public finance professionals: the Professional Certificate in Governmental Accounting and the Professional Certificate in Governmental Audit [6,9,18]. Each of these certifications addresses specific professional needs, contributing to developing expertise in their respective areas.

However, the study takes theoretical support from the three theories; the first is the Human Capital Theory [24], which views professional certifications as investments in skills and productivity essential for workforce development and economic participation. Secondly, the Social Cognitive Career Theory [25] emphasizes the role of self-efficacy and career aspirations, highlighting the importance of female role models in reducing gender disparities. However, the final theory is the Gender Role Theory [26], which explains how societal norms and stereotypes shape career choices and limit women's participation in male-dominated fields. These theoretical ideologies provide the groundwork for the analysis of this current study by following them as a robust framework for analyzing

certification trends and gender disparities. In this way, this current study offers insights into the interplay between individual agency, structural barriers, and cultural expectations.

3. Findings and Analysis

The analysis of professional certification trends in Saudi Arabia from 2020 to 2022 reveals a consistent growth in the number of individuals enrolling in professional certification programs. This growth highlights Saudi Arabia's broader efforts in advancing skills development and improving workforce capabilities and professional education [6,9]. However, the findings also reveal certain areas where more attention is required by the authorities to ensure equal opportunities. Despite the substantial increase in overall enrolment, a persistent gender imbalance was observed, particularly in higher-level professional certifications and advanced credentials.

The analysis is structured first to explore the overall growth, trends, and public interests in professional certifications during the specified period. This is followed by a detailed examination of gender disparities across various professional certifications and a discussion of the rising demand for specific skills between 2020 and 2022.

Figure 4 illustrates the trend in the number of certificate holders in Saudi Arabia from 2020 to 2022, showing a consistent annual increase. While the data show a steady increase in certification holders, from 843 in 2020 to 990 in 2022, these numbers represent a relatively small proportion of the overall Saudi workforce, which has been growing steadily over the same period. This highlights the need to investigate barriers to certification uptake further.

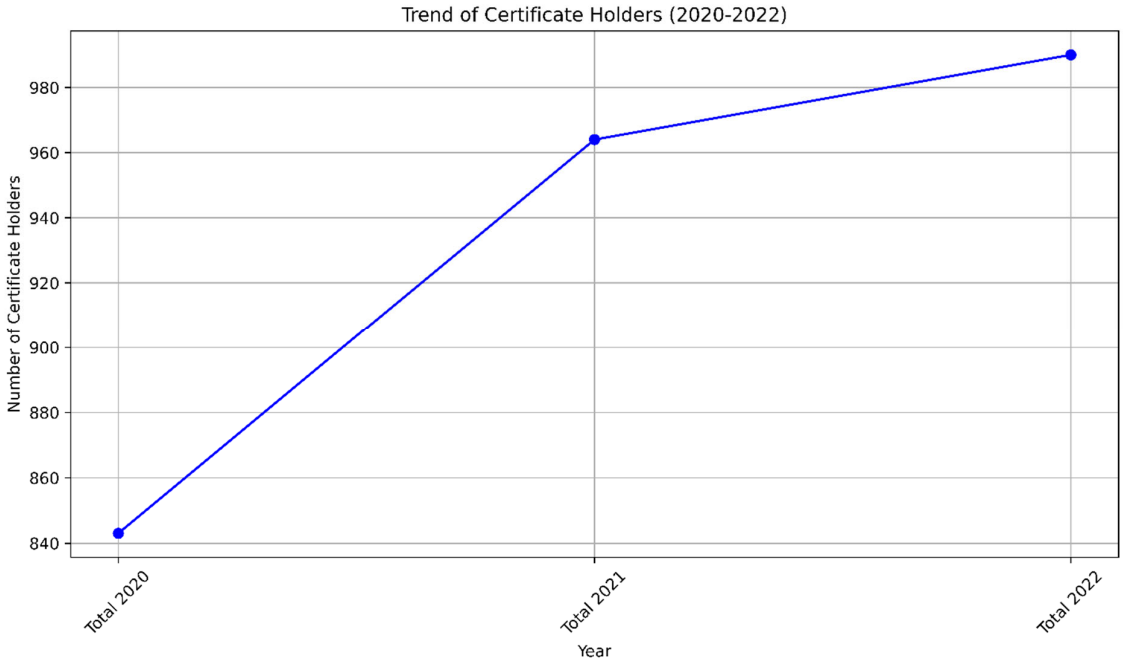


Figure 4. Trend analysis from 2020 to 2022.

Table 1 shows the breakdown of the growth rate for each professional certificate over the three years. The SOCPA Fellowship experienced significant growth, with a 39.42% increase from 2020 to 2021, followed by a more moderate rise of 8.97% from 2021 to 2022. Over the three-year period, this program saw an impressive overall growth of 51.92%, which shows its strong appeal among professionals. The Accounting Technicians certification, on the other hand, encountered a minor decline of 2.54% from 2020 to 2021 but rebounded with a substantial increase of 19.13% from 2021 to 2022, which resulted in an overall growth of 16.10% from 2020 to 2022. The SOCPA VAT certification showed a steady growth of 10.77% from 2020 to 2021, followed by a minor decline of 1.52% from 2021 to 2022, achieving

an overall growth of 9.09% from 2020 to 2022. Conversely, the SOCPA IFRS certification experienced a significant growth of 34.78% from 2020 to 2021 but faced a sharp decline of 29.03% from 2021 to 2022, leading to an overall decrease of 4.35% from 2020 to 2022. The Professional Certificate in Governmental Accounting demonstrated the most impressive growth rates among all certifications analyzed. This certification achieved a remarkable 125% increase from 2020 to 2021, followed by another substantial increase of 122.22% from 2021 to 2022, culminating in an overall growth of 400% from 2020 to 2022. In contrast, the Professional Certificate in Governmental Audit experienced a decrease of 16.67% from 2021 to 2022, although growth data for 2020 to 2021 were unavailable [27].

Table 1. Professional Certificate growth rates.

	Exam	Growth 2020–2021	Growth 2021–2022	Growth 2020–2022
0	SOCPA Fellowship	39.42%	8.97%	51.92%
1	Accounting Technician	−2.54%	19.13%	16.10%
2	SOCPA VAT	10.77%	−1.52%	9.09%
3	SOCPA IFRS	34.78%	−29.03%	−4.35%
4	Professional Certificate in Governmental Accounting	125.00%	122.22%	400.00%
5	Professional Certificate of Governmental Audit	null	−16.67%	null

These findings highlight significant disparities in growth trends across different professional certificates. While some certificates, such as the Professional Certificate in Governmental Accounting, showed exponential increases in enrollment, as Figure 5 highlights the details, others, like SOCPA IFRS, experienced fluctuations, with periods of both growth and decline. These findings reflect the dynamic nature of demand for professional certifications, but the study does not examine specific factors, such as market needs, public interest, and institutional support, which may influence these trends.

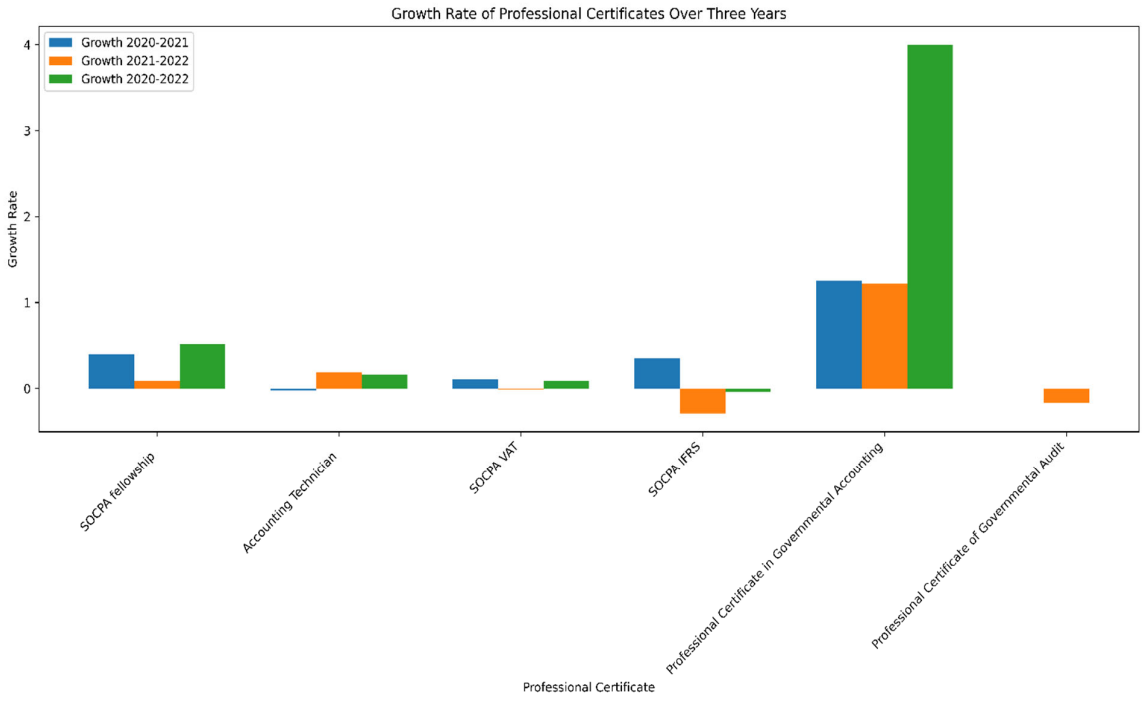


Figure 5. Growth rate of professional certification over three years.

The gender distribution across the professional certificates from 2020 to 2022, as shown in Table 2, reveals a trend of higher male participation across most certifications. The SOCPA Fellowship had a male-to-female ratio of 66.83% to 33.17%, while the Accounting Technicians certification showed a similar distribution with 67.57% male and 32.43% female certificate holders. The SOCPA VAT presented a slightly more balanced distribution, with 61.11% male and 38.89% female certificate holders. Certifications such as SOCPA IFRS and Professional Certificate in Governmental Accounting showed a significant gender disparity, with 75% and 87.88% male participation, respectively. The Professional Certificate of Governmental Audit had the highest male dominance, with 90.91% male and only 9.09% female certificate holders [27]. These findings indicate a persistent gender imbalance across professional certificates, with some certificates showing a more pronounced gender disparity than others.

Table 2. Gender distribution.

	Certification	Total Male 2020–2022	Total Female 2020–2022	% Male
0	SOCPA fellowship	272	135	66.83
1	Accounting Technician	250	120	67.57
2	SOCPA VAT	1161	739	61.10
3	SOCPA IFRS	57	19	75
4	Professional Certificate in Governmental Accounting	29	4	87.88
5	Professional Certificate of Governmental Audit	10	1	90.91

Female participation in the accounting sector has steadily increased, supported by educational and employment initiatives under Saudi Vision 2030 [9]. For instance, by 2020, women constituted 35% of ACCA (Association of Chartered Certified Accountants) students in Saudi Arabia, significantly increasing their engagement with the professional certifications AB Magazine (https://abmagazine.accaglobal.com/global/articles/2021/jun/careers/saudi-supports-women-in-accounting.html, accessed on 14 November 2024) and DSpace Repository (https://drepo.sdl.edu.sa/items/2c192c37-b89b-4cd9-81d5-b75709a41ee6, accessed on 14 November 2024). In terms of workforce representation, female labor force participation increased to 33% by 2020, surpassing national targets, with more women entering fields like accounting and auditing IFAC (https://www.ifac.org/knowledge-gateway/discussion/rise-female-accountants-public-sector-saudi-arabia-case, accessed on 14 November 2024) and AB Magazine (https://abmagazine.accaglobal.com/global/articles/2021/jun/careers/saudi-supports-women-in-accounting.html, accessed on 14 November 2024) Efforts led by the Saudi Organization for Chartered and Professional Accountants (SOCPA), including free training courses and partnerships with universities, have also supported this growth. However, women remain underrepresented in advanced roles like auditing, where logistical and socio-cultural barriers have historically posed challenges to DSpace Repository (https://drepo.sdl.edu.sa/items/2c192c37-b89b-4cd9-81d5-b75709a41ee6, accessed on 14 November 2024) and Job Research (https://odad.org/article/employers39-needs-of-accounting-graduates-skills-in-the-saudi-labor-market-analytical-study-wn3hpaya6fwsp1x, accessed on 14 November 2024).

The analysis of gender distribution, as mentioned in Figure 6, highlights a persistent gap, with men significantly outnumbering women in all certifications. However, without additional data on women's employment status, roles, and access to professional development opportunities in Saudi Arabia, it is difficult to interpret the implications of the gap [6].

Further research integrating such data would allow for more nuanced conclusions about gender equity in professional certifications.

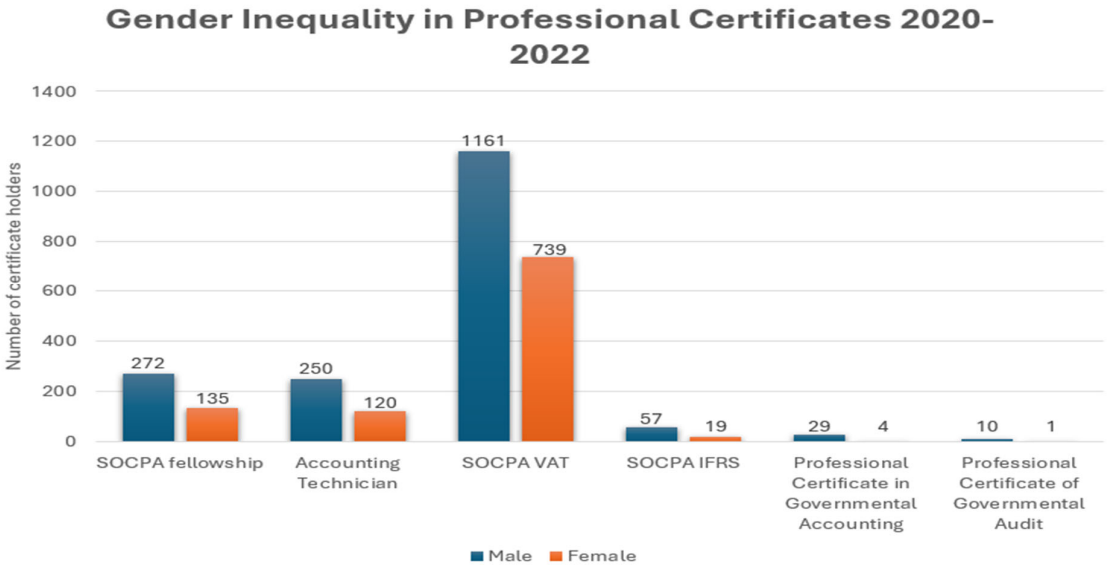


Figure 6. Gender distribution across professional certificates.

A comparison of gender distribution in professional certifications with industry averages from 2020 to 2022 reveals a persistent imbalance, with men consistently dominating most certification programs. In 2021, the labor force participation rate for women in Saudi Arabia stood at approximately 56.1%, reflecting steady progress. However, gender representation in professional certifications paints a contrasting picture. Men continue to have significantly higher representation across most certifications, even in industries where women traditionally dominate, such as healthcare [9,28]. This trend highlights broader disparities emphasized in the *Global Gender Gap Report 2023*, which points to ongoing challenges in economic participation and opportunities for women. By 2022, workforce participation rates reached 67.86% for men and 43.82% for women, aligning with the male-dominated trends observed in the certification data. For instance, as shown in Tables 1 and 2, the SOCPA Fellowship had 66.83% male participants compared to 33.17% female participants. Similarly, the Professional Certificate in Governmental Accounting displayed an even more pronounced disparity, with 87.88% male and only 12.12% female representation [15,27]. While certain certifications and industries may exhibit greater female representation, the overall data indicates that gender imbalance remains a persistent issue.

Targeted efforts are needed to address these disparities and encourage more equitable participation in professional development and certification programs [14,17,22]. Initiatives that promote gender diversity, particularly in male-dominated fields, could help bridge this gap and ensure more inclusive access to professional opportunities. The data reveals that gender imbalance becomes increasingly pronounced as the level of certification rises. For instance, males account for 67.57% of lower-level Accounting Technician certification participants. However, this proportion climbs to 66.83% for the higher-level SOCPA Fellowship certification [27]. A similar trend is observed in other certifications, such as the SOCPA VAT, with 61.11% male representation, and the SOCPA IFRS, where male participation increases significantly to 75% [15,27].

Although the number of certifications increased from 843 to 990 over three years, the percentage of women remained below 30%. This low representation underscores ongoing disparities, particularly when compared to the increasing participation of women in other workforce sectors, as indicated by national labor statistics.

4. Discussion

The global development and certification market was valued at USD 359.35 billion in 2022, with a projected growth rate of 4.0% from 2023 to 2030 to reach USD 499.00 billion by 2030. The coaching software industry had a growth rate of 8.4% from 2021 to 2022. The corporate training market size grew from USD 383.14 billion in 2023 to USD 400.94 billion in 2024 at a compound annual growth rate of 4.6%. Based on the industry trends during the same period (2020 to 2022), the global certification market experienced a compound annual growth rate of 4.0% [8,9,22,27]. This indicates a steady increase in the demand for professional certifications across various industries. Additionally, the coaching software industry grew 8.4% from 2021 to 2022, highlighting a specific area within professional development that experienced significant growth [8].

Comparing these industry trends to the growth rates of the professional certificates, we analyzed that the Professional Certificate in Governmental Accounting showed an exceptional overall growth of 400% from 2020 to 2022, far exceeding the industry average [15]. Moreover, the SOCPA fellowship and Accounting Technician certificates also showed positive growth rates, with the SOCPA fellowship having an overall growth of 51.92% and the Accounting Technician 16.10%, both of which are above the industry CAGR of 4.0%. Similarly, SOCPA VAT, despite being the most popular certificate based on the number of holders, had a more modest overall growth rate of 9.09%. Although this growth was above the global industry average of 4.0%, it was not as pronounced as the increases seen in other certifications [16,21,27].

These findings suggest that certain professional certificates, especially those with significant growth rates like the professional certificate in governmental accounting, outperform the broader industry trends. This indicates a high demand for specialized skills and knowledge areas within specific fields. On the other hand, certifications such as SOCPA VAT, while still growing, align more closely with the overall industry growth rates, reflecting steady but less exceptional demand.

Several factors may contribute to the growing gender imbalance. Societal and cultural norms likely play a significant role by shaping gender-specific expectations and influencing the choice of educational and career paths [12,19,29]. These norms may encourage or discourage individuals from pursuing certain fields or certifications. Differences in educational and career aspirations between genders can also contribute to this disparity. Structural barriers within the education system or job market, such as limited access to resources or biases in professional opportunities, may further disadvantage one gender over the other [10]. To better understand the factors driving this imbalance, further research is essential. Conducting surveys or interviews with certificate holders could provide valuable insights into their motivations, experiences, and perceptions. Moreover, examining the educational and career trajectories of individuals seeking certifications could shed light on potential barriers or enablers affecting gender representation. Finally, studying job market trends and industry demands would help elucidate the opportunities these certifications provide and how they vary across genders.

Industry demand and societal expectations significantly impact the gender distribution in professional certification [8,12,28]. Persistent gender stereotypes and discrimination, particularly in leadership roles, create significant barriers for women. Women often face a "double bind", where they are expected to exhibit assertiveness to be seen as competent while maintaining traditional notions of femininity to be perceived as likable. This balancing act can deter women from seeking leadership certifications or roles in male-dominated fields. The lack of fit model exacerbates this issue by perpetuating societal gender roles. Women who deviate from traditional stereotypes are often evaluated more harshly, further discouraging their participation in fields that do not align with societal expectations.

While increasing women's representation at the board level can enhance diversity metrics within organizations, progress in leadership representation could be faster. The pipeline theory suggests that increasing the number of women in male-dominated fields should eventually lead to greater equality in the labor market [9,15]. However, this theory has yet to yield substantial results, as structural and societal barriers continue to hinder women's advancement in these areas.

Gender stereotypes have long been a barrier to women's career progression, subtly shaping the expectations and perceptions of their roles within various industries [30]. These stereotypes often create an environment where women feel discouraged from entering fields traditionally viewed as male-dominated [30,31]. As a result, they are less likely to pursue the necessary certifications or careers in these sectors, perpetuating a cycle of underrepresentation. In industries where women are already scarce, these stereotypes continue to thrive, blocking the path to equitable opportunities. Overcoming them is crucial to fostering a more inclusive environment where women can thrive in every professional domain. Programs such as mentorship initiatives, awareness campaigns, and structural reforms can help dismantle these stereotypes, encouraging women to explore opportunities in fields where their presence has historically been limited [15].

Despite the increasing call for diversity across all career paths, gender discrimination within leadership remains a persistent issue. Though it affects both men and women, it disproportionately hinders women's ability to ascend to leadership roles [17,28]. The barriers they face limit their career growth and make it less likely for them to pursue the professional certifications often required for advancement. This systemic inequality feeds into the cycle of underrepresentation, as leadership roles—often linked to certifications—continue to be predominantly occupied by men. To make progress, a combination of policy reforms, organizational commitment to diversity, and efforts to challenge entrenched societal biases is essential in creating a more level playing field for women in leadership.

The concept of "professional imagination"—the ability to envision and aspire to certain career paths—is heavily influenced by female role models in leadership [15,29,32]. When women see others occupying positions of authority, it bolsters their confidence and ambition, encouraging them to aim for similar roles. Without these role models, however, women's aspirations often shrink, and they may be less likely to pursue the certifications needed to break through into higher positions. The lack of female representation in upper management sends a discouraging message, reinforcing existing gender disparities and stalling women's professional growth [6,30]. Furthermore, human resources (HR) practices—from hiring and training to pay and promotion policies—play a critical role in shaping women's career trajectories. Inequitable HR policies can perpetuate these gender gaps, creating even more obstacles for women. In response, many women see professional certifications as a tool to overcome these barriers, enhancing their qualifications and prospects for career advancement [6].

4.1. Implication and Economic Impact

The continuous emphasis on professional certification in the Kingdom of Saudi Arabia has significant implications for workforce development and the broader economy. The growing number of certification holders reflects a positive trend in addressing skill gaps and aligning with the objectives of Vision 2030. Certifications equip individuals with specialized skills that enhance their employability and productivity. After the pandemic, professional certifications have become even more critical in sustaining job market competitiveness. The surge in online learning during this period has enabled many individuals to acquire new skills suited to the changing demands of the market [9,33].

Certifications also offer tangible proof of competencies, particularly in industries experiencing rapid technological advancements [15]. Additionally, internationally recognized certifications allow Saudi professionals to compete in global labor markets, addressing the growing need for diversified skills. Government initiatives, such as Saudization policies, further emphasize the importance of certifications in building a skilled local workforce capable of meeting industry demands while reducing reliance on expatriates [18].

However, challenges persist, particularly concerning gender disparities in professional certification. While more women have recently joined the workforce, our findings indicate that fewer women than men possess professional certifications, especially at advanced levels. This imbalance presents both challenges and opportunities [34,35]. Addressing the factors behind this gap is essential to fostering greater gender equality in the workplace. Initiatives such as mentorship programs, scholarships targeting women, and policies promoting female participation in male-dominated fields can help bridge this gap [9]. Encouraging gender diversity in certification processes and the workforce promotes inclusivity, expands the talent pool, drives innovation, and accelerates economic progress through diverse perspectives.

4.2. Limitations

This study provides a foundational analysis of the annual growth and gender differences in professional certification in Saudi Arabia from 2020 to 2022. However, several limitations should be acknowledged to better frame the findings and provide guidance for future research.

First, the study is limited by its reliance on a short time frame of only three years. While the aim was to capture trends post-COVID-19, when online learning and professional development gained prominence, this brief period may need to adequately reflect long-term or emerging patterns. Expanding the time frame in future studies would provide a more comprehensive understanding of these trends. Second, the data used for this study were publicly available and quantitative in nature. While such data offer valuable insights, they need more qualitative information to illuminate the underlying motivations, barriers, and perceptions influencing individuals' decision to pursue certifications. Qualitative methods like interviews or surveys could complement the quantitative findings and yield deeper insights. Third, the scope of the study was confined to a specific sector, which limits the generalizability of the results. The need for demographic information about certificate holders, such as age, educational background, and employment status, further restricts the ability to understand the diversity of those pursuing certifications. As a result, the findings may only partially represent the broader population of professionals in Saudi Arabia.

5. Conclusions

The findings highlight a significant gender imbalance in professional certifications, with a consistently higher percentage of male participants compared to females. This imbalance becomes more pronounced as the level of certification increases. This trend suggests that societal expectations, industry demands, and potential barriers to entry disproportionately affect women's participation in higher-level certifications. These barriers may include limited access to resources, cultural norms, or workplace biases discouraging women from pursuing advanced qualifications. Addressing these challenges requires a deeper understanding of the factors contributing to this disparity. Further investigation is necessary to explore the underlying causes and develop targeted strategies that promote gender diversity and equity in professional certification.

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