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Human capital development and economic productivity in Saudi Arabia: A review paper evaluating vision 2030 education and labor reforms

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Abstract

This review study evaluates the impact of Saudi Arabia's Vision 2030 education and labour market reforms on human capital development and economic productivity. The focus is on how these reforms align educational outcomes with labour market demands and contribute to economic diversification, with a comparative analysis of other GCC countries. Using a systematic literature review of studies published between 2017 and 2024, the study assessed key indicators such as educational attainment, skill levels, employability, and employment patterns to measure the effectiveness of these reforms. The findings highlight notable advancements in academic quality, curriculum modernization, and female labour force participation, which rose from 19.4% in 2016 to 33.6% in 2022. When compared to other GCC countries, Saudi Arabia's reforms have shown relatively successful results. However, challenges persist in achieving full economic diversification and social stability.

Keywords: Economic productivity, Education reforms, Human capital, Labor market reforms, Saudi Arabia, STEM education, Vision 2030.

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1. Introduction

Vision 2030 Kingdom of Saudi Arabia (KSA), initiated in 2016, is a transformative program aimed at the diversification of the economy, to decrease oil dependence and to develop a sustainable strategy for the growth of various sectors [1]. In this vision there are massive reforms in education and the labour market since these two areas are considered influential in promoting human capital development (HCD) and improving economic productivity (EP) [2]. The government of KSA has accepted that a well-educated and skilled workforce is important for achieving long-term economic growth and competitiveness on the global stage [3].

Vision 2030 has sought to implement reforms in education such as upgrading the curriculum, enhancing teacher training programs and increasing advancement in providing quality education at all levels [4]. Introducing new educational technologies and emphasizing STEM (Science, Technology, Engineering, and Mathematics) aims to equip students with the skills necessary for the 21st-century economy [5]. Government expenditure on education has increased by approximately 7.5%, which shows the government is committed to these initiatives. Several issues are still present concerning achieving a connection between educational goals and labour market demands, such as the unemployment rate in the country, which is 12.6% as of 2021 [6].

Similarly, labour market reforms have been equally ambitious, focusing on job creation for Saudi nationals, increasing workforce participation rate, especially among women, and improving overall productivity [7]. These initiatives include the Nitaqat program that compels the private sector to employ Saudi nationals and various programs for women's employment because their labour force participation rate increased from 19.4% in 2016 to 33.6% in 2022 [8]. Nonetheless, the capacity of private sectors to absorb the increasing number of graduates and the need to change from low productivity to high productivity sectors remains a significant concern in KSA [9].

Although the initiatives have started, a research gap exists in understanding the effect of Vision 2030 on HCD and EP. Several studies have analyzed the reform individually; therefore, there is a lack of comprehensive exploration correlating educational outcomes and the labour market. Exploring the relative effectiveness of the approach of KSA is difficult because the Gulf Cooperation Council (GCC) countries lack similar comprehensive reforms. This review study fills these gaps by examining the impact of Vision 2030 education and labour market reforms on human capital formation and economic efficiency in KSA. This review study seeks to establish the outcomes of the above reforms based on education achievement indicators like skill levels, employability and employment rates. This review study is of significant because the findings can help inform policymaking regarding the efficiency of Vision 2030's education and labour market changes, and the evaluation results can serve as a reference for other GCC countries' similar strategies.

This research aims to examine the effects of Vision 2030 education on human capital in Saudi Arabia and the Vision 2030 labor force execution consequences on career opportunities and economic value-addition in Saudi Arabia compared to other GCC countries.

2. Literature Review

2.1. Education Reforms under Vision 2030

The education system in KSA has been reset by vision 2030 by introducing a new curriculum by upgrading the teachers' training to be compatible with the current economy [10]. Education closely correlates with economic development in KSA, proving that higher government expenditure on education positively impacts the country's economic growth. This connection is vital in realizing the vision made under Vision 2030 since well-educated human resources are pertinent for realizing structural change in the economy [11].

One of the components of these reforms is the problem of upgradation of curriculum with the use of STEM education to make educational outcomes correspond to the labour market's demand [12]. This alignment is relevant for Vision 2030 to succeed since it focuses on achieving the pillars of sustainable development. Efforts have been made to enhance the educational quality and design programs to work with the industries so that graduates possess the requisite skills for the employment opportunities available in the market [13]. Vision 2030 has raised the expectations for a significant transformation of the pattern of education in KSA by improving existing information to emphasize creativity and innovations as a way of elevating job opportunities and this has led to the enhancement of the teacher training systems as well as the improved curriculum of education [14]. It is imperative to make these efforts to make progress towards reaching a knowledge-based economy. The Tatweer project focuses on modifying the processes and approaches to teaching and learning and it is considered as a way to achieve the aforementioned educational goals [15].

2.2. Labor Market Reforms and Economic Productivity

The Policies prepared under Vision 2030 in the labour market reform agenda are directed towards increasing the labour force participation rates, particularly among the Saudi young people and women, and enhancing productivity [16]. One is the Nitaqat program, where many plans have been made to force private sector companies to recruit Saudi nationals [17]. Although there has been some progress in increasing the proportion of Saudis in the workforce, questions relating to skills mismatches and employers' concerns continue to limit the realization of Vision 2030 objectives, especially concerning attaining high productivity and economic diversification rates [18].

These labour market reforms have had some positive, as well as some negative, effects on the economic productivity of the countries. Similarly, in Saudi Arabia, it is strongly established that education, gender equality, decent work, and economic growth correlate with SDGs and the GDP. On the other hand, inadequacies such as poverty and health are retarding growth, meaning that Vision 2030 needs a better mix of economic and social improvements [19].

3. Methodology

3.1. Research Design

This review study adopts a qualitative research design by a systematic literature review to evaluate the impact of Vision 2030 education and labour market reforms on human capital development and economic productivity in Saudi Arabia.

3.2. Search Strategy

The literature search was conducted across several academic databases such as JSTOR, Google Scholar, PubMed and Web of Science. The following keywords were used in the search: "Saudi Arabia Vision 2030," "Human Capital Development," "Education Reforms," "Labor Market Reforms," "Economic Productivity," and "Policy Evaluation." The search was limited to articles published between 2017 and 2024 that ensure the inclusion of relevant and recent studies.

3.3. Inclusion and Exclusion Criteria

The following table shows the criteria concerning the inclusion and exclusion of articles concerning the impact of KSA's Vision 2030 in the education and labour market on HCD and EP. The requirements include tailoring the selection of articles to the nature of these reforms, excluding the works before 2010, limiting the choice to articles in English, and prioritizing sources from peer-reviewed academic journals, government reports, and credible policy analyses. The emphasis is on KSA but some data and facts refer to other countries of the GCC. Here, publications with variables unrelated to Vision 2030, published before 2017 (except when historical data are pertinent), and low credibility are also disregarded. The publications not in English are also not considered unless reliable translations of the work are available (see Table 1).

Table 1.
Inclusion and Exclusion Criteria.

Inclusion	Exclusion
Studies directly related to Vision 2030 education and labour market reforms and their impact on human capital and economic productivity	Studies not related to Vision 2030 or its specific reforms on education and labour markets.
Articles and reports published between 2017 and 2024	Articles published before 2017, unless providing essential historical context
Publications in English	Non-English publications, unless reliable translations are available
Peer-reviewed articles, government reports, credible policy analyses	Non-peer-reviewed articles, opinion pieces, unverified sources
Focus on Saudi Arabia and relevant GCC comparisons	Studies not focusing on Saudi Arabia or GCC countries

3.4. The PRISMA Analysis

This PRISMA flow diagram illustrates selecting studies for a systematic review. The diagram is divided into four stages: Identification, Screening, Eligibility, and Included. Initially, 300 records were identified from databases (250) and registers (50). After removing duplicates (50) and records ineligible due to automation tools (20) or other reasons (30), 200 records remained for screening. During screening, 50 records were excluded, leaving 150 reports sought for retrieval, of which 20 were not retrieved. The eligibility assessment was conducted on 130 reports, with further corresponding reports included (see Figure 1).

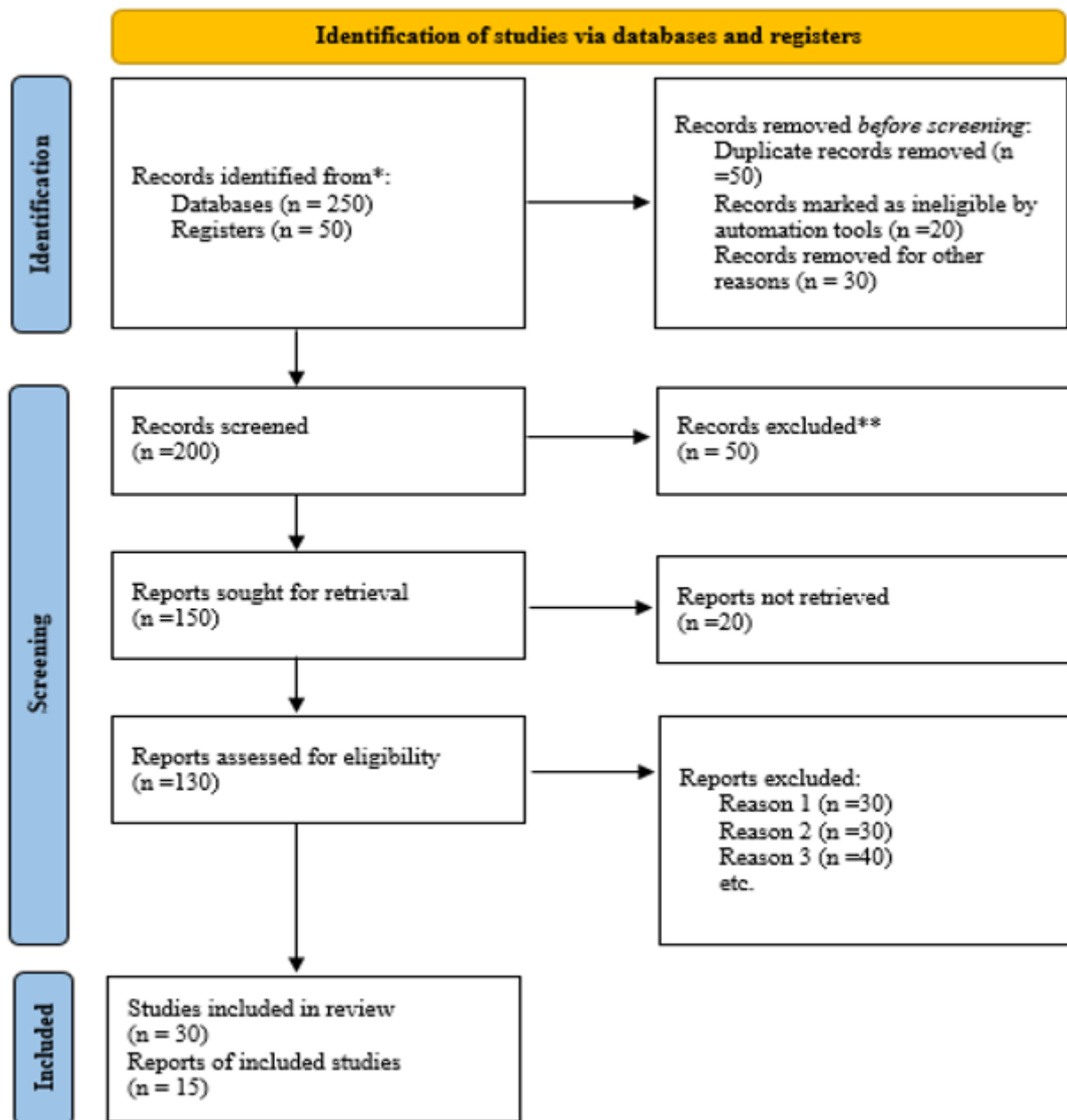


Figure 1.
The PRISMA Model.

3.5. Data Analysis

The data analysis for this review included assessing indicators and metrics relating to human capital development and economic productivity. Some of these are educational level, skill possession, job readiness, job distribution and efficiency/effectiveness measures. Cross-sectional analysis was also done within Saudi Arabia to examine the Vision 2030 reforms effects and compare it with other GCC countries to determine how effective Saudi Arabia's strategies have been. A qualitative assessment was conducted to assess the role of education and labour market changes in the economy's human capital development and efficiency regarding curriculum changes, faculty development, educational technologies, and labour market developments such as the Nitaqat programme and women's employment.

The thematic analysis showed that it was found some current issues that remain to be acute, for instance, the match between the achievement of education and labour demands and private sector readiness to employ young people, the appropriate match between educational and labour market supply and demand, and on the other hand, achievements to be registered such as increase in female labour force participation rate among the population.

4. Results

The Table 2 is focused on various aspects of Saudi Arabia's Vision 2030, particularly concerning education, labour market, and economic diversification. The studies explore themes such as the alignment of higher education with labour market needs, the impact of Saudi policies, productivity growth in education, the role of Sustainable Development Goals (SDGs) in economic growth, challenges faced by the female labour force, and the necessity for educational reforms.

Table 2.
Summary of the Identified Literature.

S. No.	Author	Title	Research Overview
1	Al Taweel [20]	The impact of higher education outcomes on labor market requirements under the vision of Saudi Arabia 2030	This study explores the alignment between higher education outputs and labor market requirements in Saudi Arabia, emphasizing Vision 2030's educational goals. Using structural equation modelling and survey data from 24 universities, it highlights the importance of academic quality, program development, and industry collaboration in meeting labour market needs. The findings suggest a strong link between higher education quality and labor market success.
2	Salam [21]	Saudi Arabia's Labor Market Transitions to Thrive Vision 2030: A Demographic Appraisal	This research evaluates Saudi Arabia's labor market transition from expatriate-dominated to native-oriented, driven by Vision 2030 and rising native youth unemployment. It analyzes survey and census data to assess the impact of Saudization policies on employment rates and labour force composition, noting slow progress attributed to various factors, including skill levels and employer apprehensions. Innovative strategies and improved data quality are essential to meet Vision 2030 goals.
3	Ghulam and Mousa [9]	Estimation of Productivity Growth in the Saudi Higher Education Sector	This study examines the efficiency and productivity of Saudi Arabian higher education institutions from 2008 to 2014 using advanced non-parametric techniques. It finds significant productivity improvements due to increased investment and technological progress driven by government spending and Saudization policies. However, increased female participation in education and academic jobs under Vision 2030 is linked to reduced technological progress in larger public institutions.
4	Singh, et al. [22]	Impact of Sustainable Development Goals on Economic Growth in Saudi Arabia: Role of Education and Training	This study focuses on the correlation between some of the UN SDGs with GDP in Saudi Arabia about education and training as spelt in vision 2030. Applying multiple regression analysis establishes that education, gender parity, greenhouse gases for employment, and decent employment positively correlate with GDP growth, while poverty, hunger, and health have negative effects. The studies indicate that investment in education and training meets the four pillars of sustainable development, namely the economic, social and environmental.
5	Naseem and Dhruva [23]	Issues and Challenges of Saudi Female Labor Force and the Role of Vision 2030: A Working Paper	This paper seeks to establish the factors that hinder FLFP in Saudi Arabia with the help of a regression model that includes the unemployment rate, percentage of urban population, fertility rate, and higher education. From the research, the following is clear: unemployment rate, fertility rate, and proportion of the population living in urban areas affect FLFP though higher education does not. However, Vision 2030 seeks to address challenges that affect women and increase women's economic status.
6	Allmnakrah and Evers [24]	The need for a fundamental shift in the Saudi education system: Implementing the Saudi Arabian economic vision 2030	This paper explores the probable changes that must be made in the education system for the improvement of Saudi Arabia and its vision 2030, focusing on the tatweer project that enabled the improvement of teaching methodology. Second, it has claimed that socio-political transformation and the emergence of the knowledge economy require a qualified population with various types of education. The research acknowledges the role of appropriate methods of initial teacher training, the feedback practice teachers provide, and the improvement of pupils' and students' critical thinking to fulfil Vision 2030 learning goals and objectives.
7	Abdullateef, et al. [10]	Economic Diversification Trends in the Gulf: the Case of Saudi Arabia	This paper examines the pattern of economic diversification in the GCC and, more specifically, Saudi Arabia's goals in transforming the nation's economy in line with Vision 2030 and shifting from an oil-dependent economy to a knowledge-based one. As you can see, it stressed human capital, education, and sectors other than oil and gas, including tourism. Nonetheless, problems like the instability of the oil prices and budget deficits coupled with an inadequate education system slow the diversification process.
8	Aldossari [25]	Vision 2030 and reducing the stigma of vocational	This quantitative study examines changing attitudes toward technical and vocational education and training (TVET) in Saudi Arabia amid socio-economic transformations under Vision 2030. Analyzing survey data

		and technical training among Saudi Arabian students	from 1007 TVET students, it finds significant relationships between perceptions of TVET and factors like gender, family income, and parental education level. The study highlights the growing importance of skilled labour in the private sector as the country shifts from an oil-based economy to one focused on investment.
9	Akinwale [26]	Towards the realization of vision 2030 and beyond in Saudi Arabia: A causality analysis between education and economic growth	This paper examines the short- and long-term relationships between economic growth, government spending on education, and tertiary student enrollment in Saudi Arabia from 1981 to 2016. Using cointegration and error correction models, it finds that education and economic growth are interlinked, with bidirectional causality between GDP and tertiary enrollment in the long run. The study suggests that increased government spending on education and higher tertiary enrollment are crucial for achieving Saudi Arabia's Vision 2030 and sustainable economic development.
10	Esmail [27]	Economic Growth of Saudi Arabia Between Present and Future According to the 2030 Vision	This research analyzes Saudi Arabia's development strategy to diversify income sources and reduce dependence on oil revenues by increasing non-oil investments, production, and manufacturing for exports. The study employs an econometric model using Weighted Least Squares to examine growth factors and their impact on economic growth, projecting a 5.2% annual growth rate. This approach aims to create added value in the Saudi economy, particularly following the decline in oil prices.
11	Rahman and Qattan [28]	Vision 2030 and Sustainable Development: State Capacity to Revitalize the Healthcare System in Saudi Arabia	This research examines Saudi Arabia's Vision 2030 and Sustainable Development Goals 2030 in revitalizing the nation's healthcare system. Using scoping reviews and thematic data analysis, it explores the alignment of national programs with global development targets to improve population health and state capacity. The study emphasizes the need for prudent reforms to achieve these goals and enhance the healthcare system.
12	Mohiuddin, et al. [14]	Potentialities and priorities for higher educational development in Saudi Arabia for the next decade: Critical reflections of the Vision 2030 framework	This study examines how Saudi higher educational institutions (HEIs) are reforming to support Vision 2030's strategic objectives for higher education development. It assesses HEIs' practices and progress from 2016–2020 through academic expert interviews and surveys at top universities. The findings highlight key priorities such as modern curricula, industry-based learning, skilled graduates, faculty development, and international collaborations, all aimed at aligning education with market needs and fostering a knowledge-based society.
13	Kosárová [29]	SAUDI ARABIA'S VISION 2030	This article evaluates the implementation, challenges, and implications of Saudi Vision 2030, focusing on its economic and societal transformation goals. It highlights potential negative impacts, particularly on the social contract, and warns that failure to transform the economy might lead to demands for political concessions, risking regime stability.
14	Mitchell and Alfuraih [4]	The Kingdom of Saudi Arabia: Achieving the Aspirations of the National Transformation Program 2020 and Saudi Vision 2030 Through Education	This research analyzes the Saudi Arabian National Transformation Program 2020 and Vision 2030 documents to identify curriculum orientations and educational goals aimed at achieving a knowledge-based economy. The findings highlight the alignment between national education goals and economic development while maintaining consistency with Islamic beliefs. The study underscores education's critical role in fostering Saudi Arabia's aspirations for a 'Saudiized' knowledge-based economy.
15	Guendouz and Ouassaf [30]	THE ECONOMIC DIVERSIFICATION IN SAUDI ARABIA UNDER THE STRATEGIC VISION 2030	This paper investigates the major macroeconomic factors affecting economic diversification in Saudi Arabia, analyzing strategies and success in moving away from oil dependency using multiple regression analysis from 1991-2016. The study finds a positive correlation between economic diversification and GDP, Gross Fixed Capital Formation, and FDI, while non-oil GDP, non-oil government revenues, and private sector contributions show a negative correlation. The results offer metrics for policymakers to enhance economic diversity under Vision 2030, aiming for a sustainable economy.

Other studies examine economic diversification efforts, shifting attitudes toward vocational training, and the interconnection between education and economic development. The findings underscore the critical role of education, policy innovation, and strategic investments in achieving Vision 2030's goals despite skill gaps, outdated systems, and socio-economic barriers.

5. Discussion

5.1. Theme 01: Impact of Education Reforms

In these aspects, the education reforms that came along with Vision 2030 have greatly affected HCD in Saudi Arabia [31]. Most research revealed that much development has been recorded in diverse education subsectors. Thus, for instance, the alignment between what is offered by universities and colleges and what is demanded in the labour market is already on an upward turn, with great emphasis on quality assurance in education and the training relationship with industries [32]. Incorporating changes within the curriculum, integrating STEM education, and increasing teacher training have all played a role in ensuring that the students acquire the things they need to succeed in today's economy [33]. All these changes are not only necessary for meeting the current demands of the job market but are very important for the country's sustainable economic development as espoused in the United Nations Sustainable Development Goals [34].

5.2. Theme 02: Outcomes of Labor Market Reforms

The labour market under Vision 2030 has laid down objectives more specifically on increasing the efficiency of employment and workforce in the kingdom, with the Nitaqat system as the leading plan [35]. Its main goal is to raise the Labour Participation Rate of Saudization, specifically concerning the private sector employees. However, these results have proven to be varying in their effectiveness [36]. There has been relative progress in transforming the labour market from one dominated by expatriate employees to one oriented towards the native population; nevertheless, this transformation has not happened smoothly and it is characterized by skills mismatching and employers' reluctance to employ locals [37].

5.3. Theme 03: Challenges and Barriers

Numerous socio-economic, cultural, and institutional challenges remain when reaching the goals outlined under Vision 2030 despite considerable advancements in this sphere [38]. Another problem has remained for many years – lack of correspondence between education results and labour market requirements. Despite the improvements in quality due to the reforms implemented, education still has not considered the practical needs of the employment world. This disconnection is obvious in the case of the youth unemployment rate because many unemployed graduates are owing to the difference between the training the youth undergo and the market demand for their skill set [39].

Cultural barriers also present some major difficulties today, especially regarding the rise in the female workforce participation rate [40]. New policies and precedents have been implanted to address the employment of women, but cultures and traditions prejudice confine women from effective operation in the economy. These are barriers that might need the support of policies other than those that aim at procreation and, at the same time, neutralizing the obstacles, it is crucial to work on changing culture, which is a very long and complicated process [41].

Another factor is institutional factors, which include the degree of preparedness of the private sector to employ more graduates as they continue to flock to the market. The Nitaqat program to enhance the proportion of Saudi nationals in the workforce has its share of problems because of skills and employers' regard [35]. The private sector's ability to generate sufficient high-productivity employment opportunities is small, and this constrains the upgrading process from low-productivity to high-productivity industries [42]. Also, the relatively low implementation of technology and innovation, especially in some sectors, can significantly restrain the possibilities of developing the necessary economic diversification [43]. These challenges accentuate the difficulties of Vision 2030 reforms' implementation and stress the need for frequent checks, modifications, and various approaches to tackle socio-economic, cultural, and institutional impediments.

5.4. Theme 04: Comparative Analysis with GCC Countries

Comparing Saudi Arabia and the rest of the GCC nations can help establish how effective Vision 2030's reforms are. Great strides have been made in economic diversification and human capital, but difficulties remain in completely executing the objectives of Vision 2030 in KSA [1]. That is because the UAE has carried out similar reforms but observed different results because of differences in how policies are done and the socio-economic characteristics of the country [44]. Qatar is preferable to Saudi Arabia regarding HCD; however, Qatar has a more significant percentage increase due to its smaller population and higher per capita income than Saudi Arabia. Thus, Kuwait has rapidly diversified its economy more quickly through its concentrated investments in the financial sector compared to Saudi Arabia's diverse sectoral interest [31].

Saudi Arabia and Oman have incorporated Sustainable Development Goals into their respective economic visions; however, Saudi's advanced reforms resulted in significant advancement in education and labour force engagement despite the current issues observed [45]. For example,

Table 3.
Comparative Analysis of GCC Countries.

Aspect	Saudi Arabia	UAE	Qatar	Kuwait	Oman	Bahrain
Economic Diversification	Broad focus on multiple sectors, including tech, education, and healthcare.	Rapid diversification with a focus on high-tech and finance.	High-tech investment and immediate results.	Focus on the financial sector and foreign investment.	Gradual diversification with a focus on tourism and industry.	Moderate progress with a focus on finance and services.
Human Capital Development	Significant investments in education and training; challenges in aligning education with market needs.	Strong focus on integrating technology and innovation in education.	Advanced education and training systems; rapid results.	Enhanced financial and technical training; slower progress.	Steady improvements with gradual reforms.	Significant increases in female participation; moderate results.
Female Labor Force Participation	Increased from 19.4% in 2016 to 33.6% in 2022; ongoing challenges.	Higher participation with ongoing reforms.	Early and substantial improvements.	Moderate increases; extensive reforms.	Steady improvements with gradual impact.	Significant improvements; moderate progress.
Education Reforms	Comprehensive reforms, including curriculum updates and teacher training.	Emphasis on technological integration and innovative teaching methods.	Rapid advancements with targeted investments.	Moderate reforms with a focus on technical education.	Gradual reforms with a focus on market alignment.	Comprehensive reforms with a focus on quality improvement.

Bahrain has made some early major changes in female employment, while Saudi Arabia has carried out extensive changes which have boosted female employment much more [46]. Comparing the educational reforms under the Saudi Vision 2030 and the UAE's National Agenda 2021, it is now established that the focus on integrating technology in the UAE has resulted in quicker improvement in the quality of education [47]. Thus, the effectiveness of policies requires their constant reassessment and change to meet new theoretical and practical challenges and make the best of emerging opportunities, which is proven by the results of comparative analysis [48] (see Table 3).

6. Conclusion

In conclusion, examining the changes in education and labour markets brought about by Saudi Arabia's Vision 2030 strategy is that while there have been improvements in human capital formation and boosting the economy's efficiency, various issues remain. Positive changes have been observed in educational curricula and STEM incorporation, along with improved quality and skills acquisition in teacher's training programs. However, due to the high youth unemployment rate, there are still improper matches between learning outcomes and employment demands. New employment opportunities for Saudi nationals have emerged, especially under the Nitaqat program and the gender parity programs that have seen female participation in the job market grow to 22% from 19%. Compound growth rate of 4% in 2016 to 33.6% in 2022. However, problems regarding the private sector's ability to employ these educated humans and the pace at which high-productivity jobs are created present a big challenge. Comparison with other GCC nations, including the UAE, demonstrates that Saudi Arabia's comprehensive reforms are more effective; however, obstacles remain in the complete diversification of the economy and social unrest. In summary, Vision 2030 has facilitated improved changes, but further development is required for the remaining disparities between education and employment, more so for a better diversified and competitive economy.

7. Future Recommendations and Limitations

As future recommendations, it is suggested to advance the integration of the educational programs with the needs of the labour market further with the help of improved cooperation between academic institutions and industries, increase the importance of vocational and technical education/training, and internship and apprenticeship. Furthermore, there is an enhancement of supply-side support, including the support of entrepreneurship and small businesses, which would generate employment diversity. Favourable changes in the female workforce should be complemented by policies that will improve gender equity and options. To strengthen and sustain the process of economic diversification, the Nitaqat program should be continuously evaluated and further adjustments should be made to the attractive foreign investments in sectors of high production yield. Finally, through data analyses and AI, decision-making can be enhanced, particularly on reforms in education and employment based on current economic and social issues. The current study has some limitations. For instance, the study relied mainly on secondary data, which means that the information gathered may not have captured the recent trends and the actual happenings concerning Vision 2030. Also, the limitation is derived from the type and quality of data available, which might limit the assessment of this initiative's effect. The study also quantitatively analyses the factors and may not pay much attention to cultural and social changes. Finally, it is noteworthy that Saudi Arabian educational and labour market reforms are still developing actively. Therefore some of the results may lose their relevance relatively soon, which becomes another argument in favor of the continuous survey and evaluation of the situation.

References

- [1] H. M. Alshuwaikhat and I. Mohammed, "Sustainability matters in national development visions—Evidence from Saudi Arabia's Vision for 2030," *Sustainability*, vol. 9, no. 3, p. 408, 2017. <https://doi.org/10.3390/su9030408>
- [2] H. O. Musibau, A. H. Yusuf, and K. L. Gold, "Endogenous specification of foreign capital inflows, human capital development and economic growth: A study of pool mean group," *International Journal of Social Economics*, vol. 46, no. 3, pp. 454-472, 2019.
- [3] B. H. Mohamed, I. Ari, M. b. S. Al-Sada, and M. Koç, "Strategizing human development for a country in transition from a resource-based to a knowledge-based economy," *Sustainability*, vol. 13, no. 24, p. 13750, 2021.
- [4] B. Mitchell and A. Alfuraih, "The Kingdom of Saudi Arabia: Achieving the aspirations of the National Transformation Program 2020 and Saudi vision 2030 through education," *Journal of Education and Development*, vol. 2, no. 3, p. 36, 2018.
- [5] S. Fajrina, L. Lufri, and Y. Ahda, "Science, technology, engineering, and mathematics (STEM) as a learning approach to improve 21st century skills: a review," *International Journal of Online & Biomedical Engineering*, vol. 16, no. 7, 2020. <https://doi.org/10.3991/ijoe.v16i07.14101>
- [6] M. B. Khan and M. Khan, *Research, innovation and entrepreneurship in Saudi Arabia*. Basel: Vision, 2020.
- [7] O. Durand-Lasserve, "Nationalization of the private sector labor force, quotas, matching and public jobs, an illustration with Saudi Arabia," *The Quarterly Review of Economics and Finance*, vol. 86, pp. 98-117, 2022. <https://doi.org/10.1016/j.qref.2022.06.004>
- [8] S. Albelali, "Female labour in Saudi Arabia under the Nitaqat programme: A gendered power relations approach," University of Portsmouth, 2020.
- [9] Y. Ghulam and W. I. Mousa, "Estimation of productivity growth in the Saudi higher education sector," *Technological Forecasting and Social Change*, vol. 149, p. 119741, 2019. <https://doi.org/10.1016/j.techfore.2019.119741>
- [10] S. T. Abdullateef, R. Musa Alsheikh, and B. Khalifa Ibrahim Mohammed, "Making Saudi vision 2030 a reality through educational transformation at the university level," *Labour and Industry*, vol. 33, no. 2, pp. 225-240, 2023. <https://doi.org/10.1080/10301763.2023.2184166>
- [11] M. S. Abdellatif, A. I. Idris, M. H. A. Al-Abyadh, and A. S. F. Al-Budaiwi, "Digital citizenship skills and the attitudes towards sustainable development among university students," *Kurdish Studies*, vol. 12, no. 1, pp. 2715-2732, 2024.

- [12] U. C. Okolie, H. E. Nwosu, and S. Mlanga, "Graduate employability: How the higher education institutions can meet the demand of the labour market," *Higher Education, Skills and Work-Based Learning*, vol. 9, no. 4, pp. 620-636, 2019.
- [13] M. A. Camilleri and A. C. Camilleri, *The sustainable development goal on quality education*. Cham, Switzerland: Springer, 2020.
- [14] K. Mohiuddin, O. A. Nasr, M. N. Miladi, H. Fatima, S. Shahwar, and Q. N. Naveed, "Potentialities and priorities for higher educational development in Saudi Arabia for the next decade: Critical reflections of the vision 2030 framework," *Heliyon*, vol. 9, no. 5, 2023.
- [15] S. Alghamdi, "Curriculum innovation in selected Saudi Arabia public secondary schools: The multi-stakeholder experience of the Tatweer project," University of Sheffield, 2019.
- [16] P. J. Comyn, "Skills, employability and lifelong learning in the sustainable development goals and the 2030 labour market," *International Journal of Training Research*, vol. 16, no. 3, pp. 200-217, 2018. <https://doi.org/10.1080/14480220.2018.1576311>
- [17] J. R. Peck, "Can hiring quotas work? The effect of the Nitaqat program on the Saudi private sector," *American Economic Journal: Economic Policy*, vol. 9, no. 2, pp. 316-347, 2017.
- [18] M. Taweel, "Technical and vocational education and training to address skills mismatch and unemployment: The case of Saudi Arabia," Kingston University, 2018.
- [19] O.-D. Müller, "Between democracy and inclusiveness conditions for development progress in the United Arab Emirates," 2021. <https://hdl.handle.net/2445/178817>
- [20] I. R. Al Taweel, "The impact of higher education outcomes on labor market requirements under the vision of Saudi Arabia 2030," *International Journal of Advanced and Applied Sciences*, vol. 7, no. 6, pp. 110-115, 2020. <https://doi.org/10.21833/ijaas.2020.06.014>
- [21] A. A. Salam, *Saudi Arabia's labor market transitions to thrive vision 2030: A demographic appraisal*, in *The Palgrave Handbook of Global Social Problems*: Springer, 2022.
- [22] H. P. Singh, A. Singh, F. Alam, and V. Agrawal, "Impact of sustainable development goals on economic growth in Saudi Arabia: Role of education and training," *Sustainability*, vol. 14, no. 21, p. 14119, 2022.
- [23] S. Naseem and K. Dhruva, "Issues and challenges of Saudi female labor force and the role of Vision 2030," *International Journal of Economics and Financial Issues*, vol. 7, no. 4, pp. 23-27, 2017.
- [24] A. Allmnakrah and C. Evers, "The need for a fundamental shift in the Saudi education system: Implementing the Saudi Arabian economic vision 2030," *Research in Education*, vol. 106, no. 1, pp. 22-40, 2020. <https://doi.org/10.1177/0034523719851534>
- [25] A. S. Aldossari, "Vision 2030 and reducing the stigma of vocational and technical training among Saudi Arabian students," *Empirical Research in Vocational Education and Training*, vol. 12, no. 1, p. 3, 2020.
- [26] Y. O. Akinwale, "Towards the realisation of Vision 2030 and beyond in Saudi Arabia: A causality analysis between education and economic growth," *Journal of Applied Economic Sciences*, vol. 13, no. 58, pp. 937-945, 2018.
- [27] H. A. H. Esmail, "Economic growth of Saudi Arabia between present and future according to 2030 vision," *Asian Social Science*, vol. 14, no. 12, p. 192, 2018. <https://doi.org/10.5539/ass.v14n12p192>
- [28] R. Rahman and A. Qattan, "Vision 2030 and sustainable development: State capacity to revitalize the healthcare system in Saudi Arabia," *INQUIRY: The Journal of Health Care Organization, Provision, and Financing*, vol. 58, p. 0046958020984682, 2021.
- [29] D. Kosárová, "Saudi Arabia's vision 2030," presented at the Security Forum, 2020.
- [30] A. A. Guendouz and S. M. Ouassaf, "The economic diversification in Saudi Arabia under the strategic vision 2030," *Acad Account Financ Stud J*, vol. 24, pp. 1-23, 2020.
- [31] B. C. Olopade, "Government expenditure, human capital and poverty reduction: A comparative study of Nigeria and Saudi Arabia", Doctoral Dissertation, PhD Thesis, Covenant University, 2020.
- [32] V. Raghupathi and W. Raghupathi, "The influence of education on health: An empirical assessment of OECD countries for the period 1995–2015," *Archives of Public Health*, vol. 78, pp. 1-18, 2020.
- [33] D. J. Shernoff, S. Sinha, D. M. Bressler, and L. Ginsburg, "Assessing teacher education and professional development needs for the implementation of integrated approaches to STEM education," *International Journal of STEM Education*, vol. 4, pp. 1-16, 2017.
- [34] T. A. Tsalis, K. E. Malamateniou, D. Koulouriotis, and I. E. Nikolaou, "New challenges for corporate sustainability reporting: United Nations' 2030 Agenda for sustainable development and the sustainable development goals," *Corporate Social Responsibility and Environmental Management*, vol. 27, no. 4, pp. 1617-1629, 2020.
- [35] A. Basahal, C. Forde, and R. MacKenzie, "Labour market localisation policies and organizational responses: an analysis of the aims and effects of the Saudi Nitaqat reforms," *International Journal of Organizational Analysis*, vol. 31, no. 4, pp. 1024-1036, 2023.
- [36] M. Lopesciolo, D. Muhaj, and C. Pan, "The quest for increased Saudization: Labor market outcomes and the shadow price of workforce nationalization policies," *CID Research Fellow and Graduate Student Working Paper Series*, 2021.
- [37] S. E. Sullivan and A. Al Ariss, "Making sense of different perspectives on career transitions: A review and agenda for future research," *Human Resource Management Review*, vol. 31, no. 1, p. 100727, 2021.
- [38] C. Zimm, F. Sperling, and S. Busch, "Identifying sustainability and knowledge gaps in socio-economic pathways vis-à-vis the sustainable development goals," *Economies*, vol. 6, no. 2, p. 20, 2018.
- [39] F. Pompei and E. Selezneva, "Unemployment and education mismatch in the EU before and after the financial crisis," *Journal of Policy Modeling*, vol. 43, no. 2, pp. 448-473, 2021.
- [40] A. Al-Asfour, H. A. Tlaiss, S. A. Khan, and J. Rajasekar, "Saudi women's work challenges and barriers to career advancement," *Career Development International*, vol. 22, no. 2, pp. 184-199, 2017.
- [41] M. B. Ogunbanjo, "Gender in Global Politics," *NIU Journal of Humanities*, vol. 6, no. 2, pp. 65-83, 2021.
- [42] E.-j. Quak and J. Flynn, "Private sector development interventions and better-quality job creation for youth in Africa," *Linking business performance with productivity growth and sustainable job creation. Evidence Synthesis Paper. Institute of Development Studies*, 2019.

- [43] K. De Roest, P. Ferrari, and K. Knickel, "Specialisation and economies of scale or diversification and economies of scope? Assessing different agricultural development pathways," *Journal of Rural Studies*, vol. 59, pp. 222-231, 2018. <https://doi.org/10.1016/j.jrurstud.2017.04.013>
- [44] S. L. Vasilievna and F. E. Dmitrievna, "Transformations in socio-economic development of the Gulf group states," *Экономика региона*, vol. 13, no. 2, pp. 570-578, 2017.
- [45] K. M. Pitychoutis and F. Spathopoulou, "From Tradition to Technology: Societal and Educational Impacts on Job Preferences in Oman," in *Forum for Linguistic Studies*, 2024, vol. 6, no. 3, pp. 274-293.
- [46] F. M. A. M. Ali, "The impact of economic transformations on the development of the status of women in the Arabian gulf-the case of Qatar and Bahrain," 2020.
- [47] A. Alfozan, "The Saudi vision 2030 and the experiences of Saudi female secondary school principals in al qassim region during times of education reform," The University of Arizona, 2022.
- [48] P. Söderholm, "The green economy transition: The challenges of technological change for sustainability," *Sustainable Earth*, vol. 3, no. 1, p. 6, 2020.