E-ISSN: 3108-4176

APSSHS

Academic Publications of Social Sciences and Humanities Studies
2022, Volume 3, Page No: 27-39
Available online at: https://apsshs.com/

Annals of Organizational Culture, Leadership and External Engagement Journal

Saudi Arabia's Employment Future: Forecasting Unemployment and Confronting Downward Resistance by 2030

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Abstract

As governments navigate the challenges of globalization, safeguarding the livelihood of domestic residents, especially in the labor market, remains complex. This study aims to (1) project the unemployment rate for Saudi workers by 2030, (2) examine the relationship between the unemployment rate, gross domestic product (GDP), and population growth, and (3) identify the factors contributing to the downward resistance of the unemployment rate in Saudi Arabia's labor market. The study analyzes data from the Saudi Arabian Monetary Authority (SAMA) for the period from 1999 to 2019 using statistical tools such as SPSS 20 and AMOS. The findings show that by 2030, the unemployment rate in Saudi Arabia is expected to reach 10.99%, exceeding the target outlined in the Saudi Vision 2030 by nearly 3%. Furthermore, the study shows a negligible relationship between the unemployment rate and both population growth and GDP, with a combined effect of only 4.2% on the unemployment rate.

Keywords: Saudi Labor Market, Saudi Vision 2030, Unemployment Rate, GDP, Population Growth, Economic Forecasting.

How to cite this article: Sharahiley S. Saudi Arabia's Employment Future: Forecasting Unemployment and Confronting Downward Resistance by 2030. Ann Organ Cult Leadersh Extern Engagem J. 2022;3:27-39. https://doi.org/10.51847/wAoDOcwBkr

Received: 25 April 2022; **Revised:** 28 July 2022; **Accepted:** 02 August 2022
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Introduction

The relationship between globalization and unemployment has been an evolving subject of debate among economists and policymakers, both in developed and emerging economies [1-3]. In the case of the Kingdom of Saudi Arabia (KSA), this issue is particularly pressing, as the country continues to navigate the effects of globalization while addressing domestic labor market challenges [4]. Globalization, as conceptualized in multidimensional theories, encompasses not only economic integration but also social and political shifts that impact labor markets globally [5-7]. While globalization is often linked to higher unemployment, especially in developing nations, scholars such as Sahoo and Sahoo [8] argue that unemployment is the result of complex interactions between the economic policies, social dynamics, and political structures of a nation [9].
In many advanced economies, strong social protections and more regulated labor markets help mitigate the negative effects of unemployment, leading to lower unemployment rates [10]. However, the situation is markedly different in developing economies, where the absence of such safeguards can result in persistently high unemployment. This challenge is evident in the case of Saudi Arabia, where the unemployment rate has remained high compared to its global counterparts. As reported by the SAMA, Saudi unemployment stood at 12.7% in 2018, with a slight reduction to 12% by 2019 [11]. In contrast, unemployment rates in countries such as the United States, Japan, and several European nations have been considerably lower in the same period.

The persistent unemployment in Saudi Arabia, despite efforts to reduce it, raises important questions: How does Saudi Arabia manage its unemployment rate, and what factors contribute to its persistence? Economic theories suggest a strong link between economic growth and unemployment reduction [12-14]. As such, understanding the underlying causes of unemployment in Saudi Arabia, particularly in light of its economic ambitions under Vision 2030, is essential for shaping effective policy responses.

This study aims to: 1) forecast the future unemployment rate of Saudi nationals by 2030 using the autoregressive integrated moving average (ARIMA) model; 2) investigate the relationships between unemployment, gross domestic product (GDP), and population growth in Saudi Arabia; and 3) analyze the reasons behind the downward resistance of the unemployment rate in the Saudi labor market.

The remainder of this study is structured as follows: Section 2 provides a comprehensive review of the literature. Section 3 explains the research methodology employed, followed by the presentation of results in section 4. In section 5, the findings are discussed in the context of Saudi Arabia's broader economic goals, and the final section concludes with policy implications and recommendations.

Literature Review

This section aims to review the relevant literature to identify the gaps in existing research and to establish the foundation for this study. The literature review addresses the following key areas: 1) the role of globalization in shaping unemployment rates, 2) the unemployment dynamics within the Saudi labor market, and 3) the impact of Saudi labor market reforms such as Saudization and the Nitaqat program.

Globalization and Unemployment

Globalization's impact on unemployment rates has long been a subject of debate. Globalization theory integrates various dimensions including economic, social, political, and even cultural factors that contribute to labor market shifts across borders [15, 16]. Robertson [17] posits that globalization leads to a world that is "compressed," intensifying global awareness and creating a more interconnected world economy. However, as argued by Giddens [18], globalization is heavily influenced by capitalist forces, and its consequences—such as changes in employment patterns—are shaped by factors such as political and military power, as well as industrial growth.

Literature on globalization presents two dominant views regarding its impact on unemployment. On one hand, some scholars argue that globalization increases unemployment rates, particularly in developing economies. For instance, Gozgor [19] and Tavera [20] both found that globalization had a negative impact on employment in emerging economies, though the effects were statistically insignificant. Similarly, Daly *et al.* [21] and Lim and Burgoon [22] found that globalization often correlates with higher unemployment, particularly in economies where social protections are weak or labor markets are less regulated.

On the other hand, there is a growing body of research suggesting that globalization can, in certain contexts, decrease unemployment. Soomro *et al.* [23], in their comparative study of 16 countries, found that globalization helped to reduce unemployment in emerging economies, largely through increased foreign investment and economic liberalization. Awad and Yousef [13] found that globalization, through the liberalization of trade and investment, contributed positively to employment growth in Malaysia. The contrasting findings in the literature suggest that globalization's impact on unemployment may depend on factors such as the structure of the labor market, the level of foreign investment, and the strength of domestic economic policies.

These competing perspectives create a complex framework for understanding globalization's role in the Saudi labor market. Saudi Arabia, with its oil-dependent economy and large reliance on foreign labor, presents a unique case for examining how globalization shapes domestic employment outcomes.

Unemployment in the Saudi Labor Market

Despite Saudi Arabia's vast wealth from oil exports, unemployment has remained a persistent issue, particularly among the Saudi national workforce. Data from the SAMA indicates that the unemployment rate in Saudi Arabia stood at 12.7% in 2018, with only marginal improvements in subsequent years [11]. This unemployment rate remains significantly higher than in many other advanced economies. For instance, unemployment in the United States was 3.9% in 2018, and Japan's rate stood at just 2.4%.

The unemployment issue in Saudi Arabia can be attributed to several factors. While the country has a rapidly growing population, a large proportion of the workforce is still dependent on oil-related industries. Additionally, the country's labor market is highly reliant on foreign workers, particularly in non-oil sectors such as construction, retail, and services. This over-reliance on foreign labor has created a disparity in job opportunities for Saudi nationals. Moreover, the mismatch between the

skills of young Saudi graduates and the demands of the labor market exacerbates the problem of unemployment. These factors highlight the need for more comprehensive labor market reforms to absorb the growing number of job seekers.

Saudization and the Nitaqat Program

In response to these challenges, the Saudi government has introduced several initiatives aimed at reducing unemployment among nationals, notably Saudization and the Nitaqat program. Saudization refers to the policy of increasing the employment of Saudi nationals in place of foreign workers, and the Nitaqat program was launched in 2011 to enforce this by classifying companies based on their compliance with Saudization quotas.

However, the implementation of these policies has been met with mixed results. On one hand, Saudization has led to an increase in the number of Saudis employed in certain sectors, particularly in government and private services. On the other hand, the Nitaqat program has been criticized for causing inefficiencies in the labor market. For instance, companies facing Saudization quotas have sometimes resorted to hiring underqualified Saudi nationals, which has led to lower productivity in certain industries. Moreover, Saudization policies have contributed to a rise in labor costs, as Saudi workers are generally more expensive than their foreign counterparts.

Some studies suggest that Saudization policies have unintentionally caused a reduction in job creation in certain sectors. The Nitaqat program has led some businesses to scale back operations or hire fewer employees, as they are forced to comply with Saudization requirements. Furthermore, these policies have created a mismatch between the skill sets of Saudi nationals and the needs of the labor market, which has led to underemployment and higher unemployment rates among educated Saudi youth.

The literature reviewed reveals a complex relationship between globalization and unemployment, particularly in emerging economies like Saudi Arabia. While globalization can offer opportunities for economic growth, it can also contribute to rising unemployment rates, especially in countries with unregulated labor markets or weak social protections. In Saudi Arabia, the government's efforts to reduce unemployment through policies such as Saudization and the Nitaqat program have had mixed results. While these initiatives have increased the employment of Saudi nationals, they have also led to inefficiencies in the labor market, such as skill mismatches and higher labor costs. As Saudi Arabia continues to address its unemployment challenges, further research is needed to understand the full impact of these policies and to explore alternative approaches to achieving sustainable employment growth in the face of globalization pressures.

Unemployment in the Saudi Labor Market

The issue of unemployment in the Saudi labor market has been widely discussed, with various factors contributing to its persistence. Early works by Rosser and Sheehan [24] explored the relationship between unemployment and inflation in Saudi Arabia, developing a forecasting model using the ARIMA technique. Their work underscored the significance of forecasting models to understand economic variables in Saudi Arabia. In a similar vein, Madhi and Barrientos [25] highlighted the importance of Saudization policies, which were introduced to reduce the country's dependency on foreign workers. They suggested that by increasing the number of career opportunities for Saudi nationals, these policies would stimulate domestic employment growth.

Mellahi [26] also emphasized the evolving human resource management (HRM) frameworks in the private sector, which could pave the way for more sustainable, lifelong employment for Saudi citizens. However, he cautioned that such developments need to align with the international standards set by the World Trade Organization (WTO) to avoid any conflict with global economic norms. In light of these challenges, the United Nations' World Economic Situation and Prospects report (2017) discussed how global economic recessions have forced WTO members to adapt their economic strategies to ensure long-term stability.

More recently, Alkhateeb *et al*. [27], using auto-regressive distributed lag (ARDL) modeling, explored the link between oil prices and employment in Saudi Arabia from 1980 to 2015. Their findings indicated a negative relationship between oil prices and employment, suggesting that fluctuations in oil revenue had a direct impact on the unemployment rate. They recommended that the Saudi government should consider saving oil revenue during prosperous times to safeguard the labor market during economic downturns.

Another significant contribution comes from Nurunnabi [28], who argued that shifting from an oil-dependent economy to a knowledge-based economy is essential for maintaining labor market stability in Saudi Arabia. The transition would help diversify employment opportunities and reduce the country's reliance on foreign labor. Similarly, Alghamedi [29] noted that Saudization efforts—aimed at replacing foreign workers with national workers—could help raise the national employment rate. He also stressed the importance of educational reforms and the creation of middle-class jobs to ensure that displaced foreign workers can be replaced by skilled Saudi nationals.

Kimbrough [30] and Nazer [31] both discussed inflation as another critical factor influencing unemployment. They found that inflationary pressures can exacerbate unemployment by raising the cost of living and reducing the purchasing power of

consumers. In this context, Saudi Arabia's unemployment rate saw a decline during the 1990s, which was partly due to inflationary factors.

The Nitaqat (Stages) program has also played a crucial role in addressing unemployment in the Saudi labor market. This program categorizes private sector companies into four ranges—green, yellow, platinum, and red—based on their compliance with Saudization targets. Alshanbri *et al*. [32] observed that companies in the green category had met acceptable Saudization rates, while those in the yellow and red categories were underperforming and were expected to improve their Saudization rates within a specified time frame. This classification has encouraged companies to focus on hiring Saudi nationals to improve their compliance status.

Further, the Nitaqat program has been credited with enhancing women's participation in the Saudi labor market. Al-Asfour *et al.* [33] found that the program facilitated greater job opportunities for women, contributing to gender equality in the workplace. Rajkhan [34] echoed this, noting that the Saudi government is committed to promoting women's rights, but also highlighted the challenges companies face in replacing skilled foreign labor with qualified nationals.

Despite the apparent benefits of the Nitaqat program, Alsheikh [35] noted that motivating Saudi nationals to take advantage of the employment opportunities offered by the program remains a challenge. While the program is socially accepted, many businesses still struggle to find qualified Saudis to fill positions that were previously held by foreign workers.

In summary, while several studies have used models like ARIMA to forecast employment trends in Saudi Arabia, they have often focused on specific groups, such as the general employment rate or women's labor force participation [27, 34]. However, a comprehensive study using ARIMA to forecast the unemployment rate of Saudi nationals in 2030 has yet to be conducted. This study aims to fill this gap by forecasting the unemployment rate of Saudi workers in 2030, assessing whether the rate will meet the Saudi government's target of 7 percent as outlined in Saudi Vision 2030 [36]. Furthermore, this study will investigate the causal relationship between the unemployment rate, GDP, and population growth. Using semi-structured interviews, the study will also aim to provide empirical data to justify these causal relationships—an area that has been largely overlooked in previous research (**Table 1**).

Table 1. Summary of techniques used to forecast the unemployment rate

Authors	Techniques	Results	Country
Mahipan *et al.* [37]	Box-Jenkins and artificial neuron network	The forecast values are consistent with the actual value and tend to decrease	Thailand
Dumicic *et al* [38]	Smoothing methods (holt' winters additive methods) and (holt' winters multiplicative methods)	For Spain- Double smoothing method, For Croatia and Italy- Holts' Winters Multiplicative models are relevant	European Countries
Mihaela [39]	Regression-based resampling technique	Improve accuracy in forecasting the unemployment rate	Romania
Nkwatoh [40]	ARMA (autoregressive moving average) ARCH (autoregressive conditional heteroscedasticity) GARCH (general autoregressive conditional heteroscedasticity)	ARIMA/ARCH is relevant for decision-making	Nigeria
Kurita [41]	ARFIMA (autoregressive fractionally integrated moving average)	Satisfactory representation of data	Japan
Wilson and Perry [42]	Spectral analysis against ARIMA	Spectral analysis achieves higher levels than ARIMA	Australia

Research Methods

Various forecasting techniques can be employed to predict the unemployment rate, but this study specifically utilizes the ARIMA model. The ARIMA model is widely recognized for its ability to capture autocorrelation within a time series by directly modeling this correlation. One of the key advantages of ARIMA is its strong theoretical foundation and its flexibility in application, making it particularly suitable for forecasting time series data like unemployment rates.

To assess the relationship between unemployment rate, GDP, and population growth, this study employs bivariate analysis. This method will help establish whether and how the variables are related to each other. Additionally, structured equation modeling (SEM) is used to provide a graphical representation of these relationships. Since all the variables—unemployment rate, GDP, and population growth—are observed scale variables, SEM is an appropriate technique for visualizing the direct and indirect relationships among them.

Data Types: Secondary and Primary Data

This study makes use of both secondary and primary data. Secondary data is sourced from published statistical reports on GDP, population growth, and unemployment rate in Saudi Arabia. The data spans a period of 20 years, from 1999 to 2019, as shown in **Table 2**. This data is crucial for forecasting the unemployment rate in 2030 and for examining the relationships between GDP and population growth concerning unemployment fluctuations.

The secondary data serves the dual purpose of:

1. Forecasting the unemployment rate in 2030 based on historical trends.
2. Investigating the effects of GDP and population growth on the unemployment rate, exploring whether increases or decreases in these factors are correlated with unemployment fluctuations.

In addition to secondary data, the study also employs primary data collected through semi-structured interviews. These interviews provide qualitative insights that will help clarify the causal relationships between the variables under study. The primary data is especially useful in understanding the contextual factors that influence unemployment beyond the quantitative data alone.

Statistical Tools and Software

For the analysis of secondary data, the study uses the statistical software SPSS version 20 to perform the necessary statistical tests and modeling. Specifically, SPSS is used for bivariate analysis and other correlation assessments between the unemployment rate, GDP, and population growth. For SEM analysis, AMOS 16 is used, which is integrated with SPSS to allow for the creation of sophisticated models that capture the relationships between these variables.

The combination of secondary data analysis through ARIMA and bivariate analysis, complemented by primary data from interviews, provides a comprehensive methodology to forecast unemployment rates and analyze the factors influencing labor market dynamics in Saudi Arabia.

Table 2. The unemployment rate in the Saudi labor market over 20 years

Year	Unemployment rate	GDP	Population growth
1999	8.1	-3.8	2.1
2000	8.1	5.60	2.3
2001	8.3	-1.20	2.6
2002	9.7	-2.80	2.8
2003	10.4	11.20	2.9
2004	11.0	8.00	3
2005	11.5	5.60	2.9
2006	12.0	2.80	2.8
2007	11.2	1.80	2.8
2008	10.0	6.20	2.8
2009	10.5	-2.10	2.8
2010	11.2	4.76	2.9
2011	12.4	10.00	3
2012	12.1	5.40	3.1
2013	11.7	2.70	3
2014	11.7	3.65	2.8
2015	11.5	4.11	2.6
2016	11.6	1.67	2.3
2017	12.8	-0.74	2
2018	12.7	2.43	1.8
2019	12.26*	0.46	2.1

(Source: SAMA reports 1999-2019)

* Average of unemployment rate in 2019 for Q1, Q2, and Q3: researcher's calculation

Primary Data: Semi-Structured Interviews

In addition to using quantitative data, the researcher incorporated **semi-structured interviews** as part of the qualitative research methodology. This method was selected to gain in-depth insights and detailed justifications regarding the factors that influence unemployment in the Saudi labor market. Semi-structured interviews are ideal for exploring questions of **'how,' 'who,'** and **'why,'** allowing participants to provide comprehensive responses [43]. This approach offered the flexibility needed to dive deeper into the reasons behind participants' employment decisions and behaviors.

One of the key benefits of using semi-structured interviews is their flexibility, which enables the researcher to adapt the interview questions as the conversation progresses. This flexibility also allows the researcher to ask **follow-up questions**

based on responses, providing the opportunity to explore additional aspects not covered in the original interview guide. As Horton *et al*. [44] highlight, this adaptability allows for a deeper understanding of participants' motivations and the contradictions in their responses. It is particularly useful for uncovering the complex factors that contribute to the **high unemployment rate** in the Saudi labor market.

For this study, the researcher conducted **37 semi-structured interviews** with a diverse group of individuals. These included participants who had left the private sector to join the public sector, as well as those who, despite having qualifications, declined opportunities in the private sector. The interviewees were aged **18 to 24 years.** To ensure that the participants had relevant experience, the researcher contacted **human resources (HR) departments** in public organizations and reviewed **curriculum vitae (CVs)** to identify individuals with prior experience in the private sector. The participants came from various public institutions such as universities, public hospitals, and government agencies like the **Ministry of Finance** and the **Commission of Investment.**

The primary goal of interviewing these individuals was to understand the factors behind their decision to choose the public sector over the private sector. These interviews provided the researcher with valuable insights into why many qualified Saudi nationals are reluctant to work in the private sector, contributing to the overall **high unemployment rate.** The researcher also interviewed **officials from the Saudi Ministry of Labor and Social Development** to gain a **legal perspective** on the matter. A key question was why many qualified individuals are still waiting for public sector opportunities, despite waiting for several years after graduation (some participants had been waiting for up to **four years).**

By conducting these semi-structured interviews, the researcher aimed to complement the **quantitative findings** with qualitative data, offering a fuller explanation of the unemployment situation in Saudi Arabia. These interviews helped provide context and justification for the findings from the statistical analysis.

Table 3 summarizes the details of the conducted interviews for this study.

Table 3. Semi-structured interviews

Participants	Number	Average duration/hour
Colleges' deans	4	1.5
Faculty members	7	2
Managers	5	1.5
Employees	8	2
Unemployed participants (aged from 18 to 25 years old)	10	1
Official members of the Ministry of Labor	3	1.5
Total	37	9.5

Results

This section provides an analysis and interpretation of both the secondary and primary data collected for the study.

Analysis and Discussion of Secondary Data

This section focuses on analyzing and discussing the secondary data, aimed at addressing the key research objectives.

Forecasting the Unemployment Rate of Saudi Nationals by 2030: ARIMA Model

The main objective of this study was to forecast the unemployment rate for Saudi nationals by 2030, using the ARIMA model based on a 20-year data series. The data, collected annually from 1999 to 2019, were sourced from the SAMA. To implement the ARIMA model, SPSS 20 software was employed.

The following steps were followed in applying the ARIMA model:

1. Testing the significance of the ARIMA model
2. Forecasting the unemployment rate using ARIMA

As outlined by Nath *et al*. [45] and Chakraborty *et al.* [46], the ARIMA model has been widely used due to its stability, particularly with long-term historical data. For instance, it has proven effective in predicting Federal Reserve monetary policies. Because of its reliable structure, the ARIMA model was selected as the most appropriate tool for this study's forecasting purpose.

Testing the Significance of the ARIMA Model

The ARIMA model is specified by three parameters (p, d, q):

- p: Represents the number of autoregressive terms, also known as the lag order.
- d: Indicates the number of differences needed to make the series stationary.

- q: Denotes the number of moving average terms, or the window of the moving average.

According to Nath *et al.* [45], the ARIMA model's general forecasting equation is as follows:

By applying the ARIMA model, the researcher assessed the significance of the factors influencing unemployment in Saudi Arabia. This model, with its structured approach, proved to be an effective tool for analyzing past trends and generating a reliable unemployment forecast for 2030.

$$Xt = \mu + \phi 1\ Xt\text{-}1 + \ldots + \phi p\ Xt\text{-}p - \theta 1 et\text{-}1 - \ldots - \theta q et\text{-}q$$

Equation 1: The Forecasting Equation under the ARIMA Model

Time Series Modeler

Table 4. Model description

Model Description	Model Type
Model ID	Unemployment Rate
Model_1	ARIMA(1,0,0)

Table 5. ARIMA model parameters

Parameters	Estimate	SE	t	Sig.
Unemployment rate - model_1				
Constant	10.539	1.312	8.033	0.000
AR (Lag 1)	0.899	0.094	9.520	0.000

As shown in **Tables 4** and **5**, the ARIMA model parameters are statistically significant (P-value < 0.05), indicating that the model is well-suited for predicting the unemployment rate from 2020 to 2030.

ARIMA Forecasting

The forecasted unemployment rate for Saudi Arabia from 2020 to 2030 is provided in Table 6.

Table 6. Forecast

Model	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Unemployment Rate - Model_1	11.85	11.72	11.60	11.49	11.40	11.31	11.23	11.16	11.10	11.04	10.99
UCL (upper confidence limit)	13.52	13.97	14.22	14.38	14.48	14.55	14.59	14.61	14.62	14.62	14.61
LCL (lower confidence limit)	10.18	9.47	8.98	8.60	8.31	8.07	7.88	7.71	7.58	7.46	7.37

The forecast predicts a gradual decrease in the unemployment rate over the next decade, with the rate dropping from 11.85% in 2020 to 10.99% in 2030. The UCL and LCL provide a range of potential values, indicating the uncertainty of the forecast (**Figure 1**).

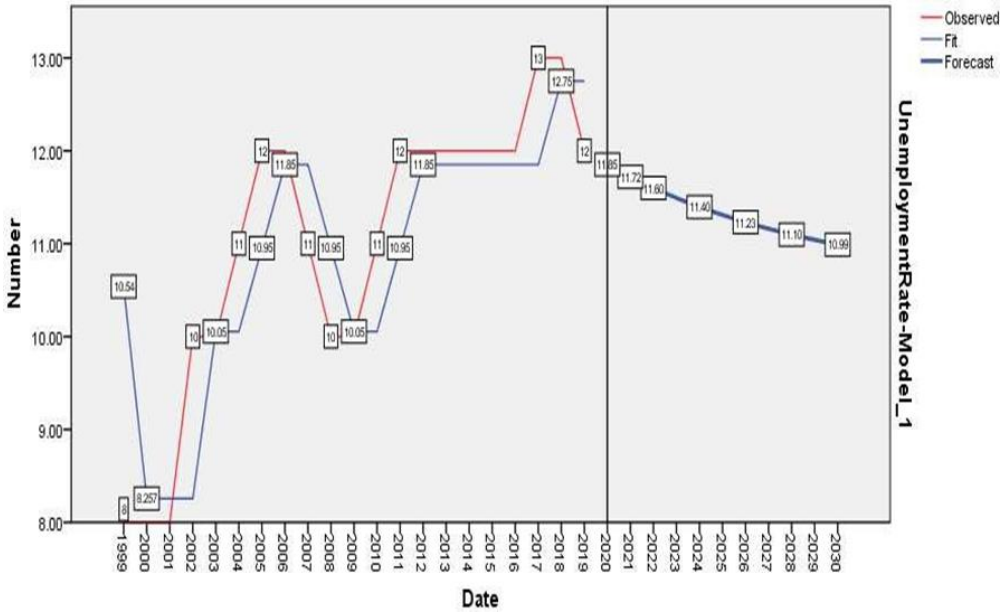

Figure 1. Forecast of unemployment rate

Discussion

The forecast for the Saudi unemployment rate suggests a decline to approximately 10.99% by 2030, which is roughly 3% higher than the target of 7% set by Saudi Vision 2030. The ARIMA model, which aligns with historical data from 1999 to 2019, demonstrates that the predicted trend for the next decade shows a steady reduction in unemployment, settling around 11%. This confirms the model's applicability for long-term predictions.

The forecasting table provides confidence intervals for this prediction, represented by the UCL and LCL. The UCL reaches 14.61%, indicating a potential upward deviation from the expected unemployment rate due to factors that might adversely affect the economy. This discrepancy highlights the importance of keeping essential variables, such as government policies and economic stability, under control to prevent the unemployment rate from overshooting expectations.

On the other hand, the LCL, which is 7.37%, closely matches the target set in Saudi Vision 2030. This implies that if the right measures are taken to support employment policies, the unemployment rate could align with the government's goals. The identification and mitigation of factors influencing the unemployment rate would be vital for achieving this goal, warranting further research into areas like labor market conditions, economic reforms, and demographic changes in Saudi Arabia.

Relationship Between Unemployment Rate, GDP, and Population Growth: Bivariate Analysis and Structural Equation Modeling (SEM)

Bivariate Analysis: (Using SPSS 20)

The bivariate analysis reveals that there is no statistically significant correlation between the unemployment rate, GDP, and population growth. The results show the following p-values:

- Unemployment rate vs. GDP: 0.407
- Unemployment rate vs. population growth: 1.000

Both p-values exceed the typical significance level of 0.05, indicating that neither GDP nor population growth has a meaningful direct effect on the unemployment rate in this study. This suggests that while these variables might intuitively seem linked to employment, other unexamined factors could play a more crucial role in shaping the unemployment landscape in Saudi Arabia.

Thus, the lack of a significant correlation between these variables suggests the need for further investigation. It is likely that additional factors—perhaps related to sectoral shifts, labor market policies, or external global influences—should be explored to better understand the drivers of unemployment in Saudi Arabia. Further research is necessary to identify and analyze these complex relationships (**Tables 7** and **8**).

Table 7. Descriptive statistics

Descriptive statistics			
	Mean	Std. deviation	N
Unemployment rate	11.00	1.549	21
GDP	3.14	4.053	21
Population growth	2.71	.463	21

Table 8. Correlations

		Unemployment rate	Gross domestic product (GDP)	Population growth
Unemployment rate	Pearson correlation	1	0.191	0.000
	Sig. (2-tailed)		0.407	1.000
	N	21	21	21
GDP	Pearson correlation	0.191	1	0.369
	Sig. (2-tailed)	0.407		0.099
	N	21	21	21
Population growth	Pearson correlation	0.000	0.369	1
	Sig. (2-tailed)	1.000	0.099	
	N	21	21	21

Structured Equation Modelling (SEM) – (Software used AMOS 16) (Figure 2)

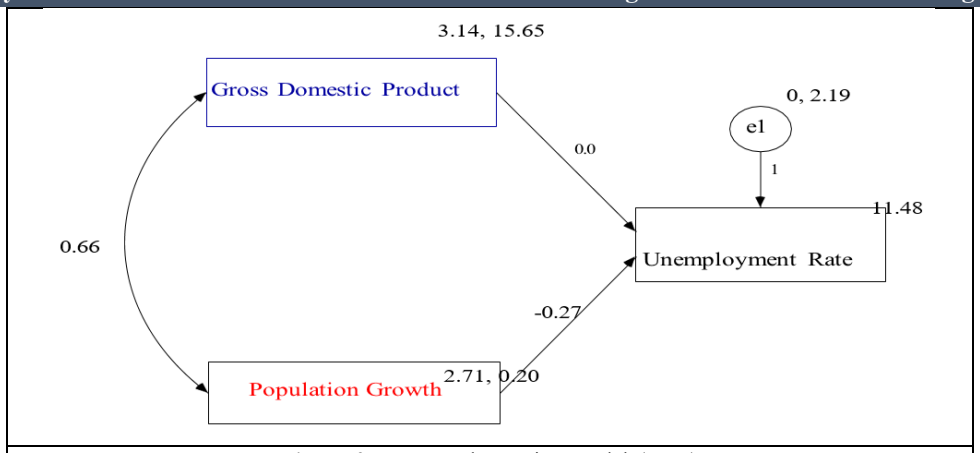

Figure 2. Structured equation model (SEM)

Text View of Structured Equation Modelling (SEM) – Screenshot of output view

Tables 9-14 present the calculations of SEM (regression weights, standardized regression weights, covariance, correlations, variances, and squared multiple correlations).

Table 9. Regression weights

	Estimate	S.E.	C.R.	P	Label
Unemployment _Rate > … GDP	0.085	0.080	0.940	0.347	
Unemployment _Rate > … population growth	-0.273	0.788	-0.347	0.729	

Table 10. Standardized regression weights

	Estimate
Unemployment _rate > … GDP	0.221
Unemployment _rate > … population growth	-0.082

Table 11. Covariance

	Estimate	S.E	C.R	P	Label
GDP <--> population growth	0.660	0.426	1.549	0.121	

Table 12. Correlations

	Estimate
GDP <--> population growth	0.369

Table 13. Variances

	Estimate	S.E.	C.R.	P	Label
GDP	15.646	4.948	3.162	0.002	
Population_growth	0.204	0.065	3.162	0.002	
el	2.189	0.692	3.162	0.002	

Table 14. Squared multiple correlations

	Estimate
Unemployment _Rate	0.042

Structured Equation Modeling (SEM) Analysis

Structured equation modeling (SEM) provides a graphical representation of the linear regression model that depicts the relationships between dependent and independent variables. In this model, the unemployment rate is the dependent (unobserved) variable, while the GDP growth rate and population growth rate serve as the independent (observed) variables. The regression coefficients presented in Table 9 reveal that GDP only influences the unemployment rate by 8.5%, while population growth has a 27.3% impact on the unemployment rate but in the opposite direction. This suggests that as population growth increases, the unemployment rate tends to rise, contrary to the expected relationship.

The correlation between GDP and population growth is 36.9% (**Table 11**), and their combined influence on the unemployment rate, as represented by the squared multiple correlations (R-Square), is only 4.2%. This indicates that the relationship between these variables is weak, and the independent variables (GDP and population growth) explain only a small fraction of the variation in the unemployment rate.

In conclusion, GDP and population growth are not significant factors influencing the unemployment rate in Saudi Arabia. As a result, these variables are of limited utility when forecasting the future unemployment rate, particularly in alignment with the Saudi Vision 2030 goals.

Primary Data Analysis: Semi-Structured Interviews

This section analyzes the primary data collected through semi-structured interviews, which were conducted to explore the factors contributing to the persistently high unemployment rate in Saudi Arabia, despite the forecasted rate of 10.99% being slightly above the target set by Saudi Vision 2030. These interviews offer valuable insights into the socio-economic reasons behind the reluctance of Saudi workers to join the private sector, further explaining the high unemployment rate.

According to the Saudi Gazette (2018), over 73,000 Saudi workers left private-sector jobs in 2018. The responses from the semi-structured interviews shed light on the reasons behind this trend. Several common themes emerged from the interviews, revealing a preference for working in the public sector rather than the private sector due to factors like job security, career advancement opportunities, work-life balance, and better benefits.

For instance, a dean of a public college shared that despite a lucrative position in the banking sector, he left his job for a career in higher education due to professional development opportunities and the chance to further his education. He stated:

"I worked as a banker for about four years with a handsome salary and perks. However, I left this job and joined a public university because of the opportunity for advancement and professional development. Now, I am a PhD holder and a dean of a college. I wouldn't have achieved this if I stayed in my previous job" (Interview, August 2019).

Similarly, an academician emphasized the importance of job security and career development as key reasons for transitioning to a public university, noting the benefit of having vacations as part of the public sector job package.

"Moving to the public university was a wise decision because I gained job security, career development, and vacations" (Faculty member, Saudi University, June 2019).

An employee in the public health sector also mentioned how the flexible work schedule offered by the public sector was a major factor in his decision to leave a private-sector sales management position:

"Previously, I worked as a sales manager in a private company but didn't feel comfortable. I decided to join a Saudi public hospital because I wanted to balance my work and personal life. The flexible work schedule attracted me to this workplace" (Public Health Sector Employee, August 2019).

These interviews underscore the broader social and personal motivations influencing unemployment in the Saudi labor market, where factors like career growth, job security, and work-life balance in the public sector play a crucial role in shaping employment decisions. These insights suggest that improving private sector job conditions, offering better work-life balance, and fostering professional development opportunities may help reduce the unemployment rate and align it more closely with the targets of Saudi Vision 2030.

One unemployed individual stated, "I'm 24 years old and graduated with a diploma in 2016. I had several chances to work in the private sector but turned them down. I want to work in the public sector for job stability, and I'm willing to wait for the right opportunity" (Interview, November 2019). Another participant explained, "I have a good life with my family, and they provide for me, so I don't see the need to struggle in the private sector. My friends agree—it requires too much work and long hours" (Interview, July 2019). A third participant shared, "I want a public sector job to be closer to my aging family. They need my support, and I want a stable job where I can be there for them" (Interview, October 2019).

The reluctance of Saudi nationals to work in the private sector, in combination with a 10.99% unemployment rate, can be linked to the negative influence of neoliberalism, as discussed by Wagner [47]. The attitudes of Saudi job seekers represent a cultural barrier that hinders the private sector's ability to fully absorb local talent. The findings from this study also underscore the limited success of Saudization and Nitaqat programs, which were intended to reduce unemployment. These programs have not succeeded in attracting enough Saudis to the private sector, as evidenced by the lack of appealing work conditions in the private sector [48, 49]. The private sector's failure to offer a balanced work environment with career growth opportunities makes it less attractive for Saudi nationals.

Moreover, another factor contributing to high unemployment may be the limited development of entrepreneurship within the Saudi labor market. According to Drucker [50], countries like the United States reduced unemployment by nurturing entrepreneurship and small businesses. Ricardo [51] also argued that creating more job opportunities is a key solution to unemployment. Sharahiley [52] recently found that Saudi students lack entrepreneurial skills despite having a positive outlook on starting businesses. The country also faces a shortage of entrepreneurs, highlighting the need for greater efforts to cultivate an entrepreneurial culture in Saudi society. This strategy could help reduce unemployment by providing alternative paths to employment.

The evidence suggests that current Saudization and Nitaqat policies are not sufficiently addressing unemployment. Additionally, a significant portion of the Saudi youth population (36.7% of those aged 15-34 years) remains confined to the public and private sectors [53]. This shows the need for more specialized training programs that would better equip young

Saudis with the skills employers demand. The Saudi Ministry of Education has proposed converting community colleges into applied colleges that offer programs tailored to the needs of the labor market [54]. This initiative could be a key step in reducing unemployment by ensuring that Saudi youth are adequately prepared for the workforce.
Ewing *et al.* [12] emphasized that governments play a critical role in lowering unemployment. The findings of this study suggest that Saudi job seekers' reluctance to enter the private sector, combined with ineffective labor laws, contributes to high unemployment. These factors are likely influenced by the current labor policies, which still fail to create enough incentives to attract Saudi nationals into the private sector.

Conclusions

This research aimed to forecast the unemployment rate in Saudi Arabia's labor market in alignment with Saudi Vision 2030, utilizing the ARIMA forecasting model. The statistical data analyzed were found to be significant, fitting the ARIMA (1,0,0) model, which was used to predict the unemployment rate for the period from 2020 to 2030 (see **Table 6**). The study primarily focused on the unemployment rate as the dependent variable, while considering other exogenous variables, as shown in the bivariate analysis (**Tables 7** and **8**). While these variables affected forecasting accuracy, the ARIMA model proved to be a reliable tool for time series forecasting. This model can be of great value to econometricians and policymakers in Saudi Arabia for further exploration and research in the future.
The ARIMA model was successfully applied to predict the unemployment rate for a specific time frame, achieving the study's objectives. The research measured and analyzed the unemployment rate from 1999 to 2019 and forecasted it for the 2020-2030 period, with a prediction of 10.99%, within a range of an LCL of 7.37% and a UCL of 14.61% (see **Table 6**). Although the forecasted unemployment rate for 2030 is 10.99%, which is approximately 3% higher than the figure projected in Saudi Vision 2030, the study also examined the causal relationship between socioeconomic factors, globalization, and unemployment. The analysis found that while there is a 66% covariance between GDP and population growth (**Table 11**), the unemployment rate did not show a significant relationship with GDP or population growth. This contrasts with other studies that have shown correlations between these factors, such as those by Asif [55] and Ewing *et al*. [12]. Nevertheless, it is notable that the lower limit of the predicted unemployment rate for 2030 (7.37%) aligns with the target outlined in Saudi Vision 2030. This suggests that further investigation into the determinants of unemployment is necessary to ensure alignment with the Vision's goals.
The semi-structured interviews provided deeper insights into the socio-economic and political factors influencing unemployment rates in Saudi Arabia. Respondents, particularly those opting for the public sector, revealed social and cultural factors that contribute to the higher-than-expected unemployment rate. These findings suggest that the reluctance of Saudi job seekers to enter the private sector, due to the perceived benefits of public sector employment, contributes to a higher unemployment rate.
The literature review highlighted two opposing views on globalization: one group believes it increases unemployment, while the other argues it has an adverse impact. This study, however, found that globalization does not significantly affect the unemployment rate in the Saudi labor market. Based on the statistical findings and the literature review, Saudi policymakers must focus on identifying the true determinants of unemployment at the ground level. Moreover, the existing Saudization and Nitaqat programs, while useful, are insufficient in rapidly reducing unemployment. There is a pressing need to implement more practical programs and policies, such as fostering entrepreneurship. Educational and cultural institutions should introduce modern employability skills aligned with labor market needs and promote entrepreneurial opportunities through summits, conferences, and educational events.

Limitations and Scope of the Study

This study has several limitations

1. It is based on secondary data from annual reports provided by the SAMA. As such, the reliability of the findings is contingent upon the accuracy of these secondary sources, which may contain assumptions or biases that diverge from the actual conditions on the ground.
2. The secondary data covers the period until 2019, before the COVID-19 pandemic, which significantly impacted global socio-economic conditions, including in Saudi Arabia. This necessitates updating the study to include the post-pandemic period for a more accurate assessment of the unemployment situation concerning Saudi Vision 2030.

Despite these limitations, the findings of this study provide valuable insight for future research, emphasizing the need to explore factors beyond economic variables such as GDP and population growth. Future studies should focus on identifying the key determinants of unemployment to help shape more effective policies and programs.

Acknowledgments: None

Conflict of interest: None

Financial support: None

Ethics statement: None

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