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INNOVATION AND ENTREPRENEURSHIP: VISION 2030 AND SAUDI ECONOMIC DEVELOPMENT

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ABSTRACT

Events in the last decade and contemporary geopolitics have spurred Saudi Arabia's progression into a knowledge-based economy. Economic development, diversification, and sustainable growth are outlined as national priorities in Vision 2030 which is a national development plan. Through the transition away from oil dependency which dropped to a mere 22.3% of GDP, the country is on a clear path towards minimizing oil revenue dependency in the future. In this context, innovation and entrepreneurship are likely to serve as strategic tools for achieving these goals. This study explores the role and importance of small and medium-sized enterprises (SMEs), start-ups, and innovative economic ventures towards national Gross Domestic Product (GDP), government revenue, and prospects for the next decade. This study uses a critical analysis of government policy documents and a comparison of the government's goals with economic indicators. The study used semi-structured face-to-face interviews with 87 experts from various government, academic, and industry backgrounds to determine strengths and weaknesses of entrepreneurship ecosystems in the country. Quantitative data was analyzed using regression analysis while qualitative data was thematically analyzed, and conclusions were drawn from triangulation of findings from both. Results highlight the direct link between innovation, diversification, and sustainable economic development, before coming to policy proposals for the government and prospective entrepreneurship.

KEYWORDS: Vision 2030, Saudi Arabia, innovation, entrepreneurship, economic diversification, sustainable development.

1. INTRODUCTION

Over the last decade, profound global changes have forced resource-rich countries to reflect on the fundamental basis of their economies. Saudi Arabia, traditionally dependent on petroleum revenue, is at a crucial juncture when economic diversification has become more than a rhetorical call to action— it is now an official national policy. Under an unprecedented socio-economic reform agenda, Vision 2030, initiated by His Royal Highness Crown Prince Mohammed bin Salman in April 2016, a comprehensive roadmap to mitigate reliance on oil, bolster participation of the private sector, and build an entrepreneurial and innovation-friendly culture in the Kingdom has been outlined (Ragmoun, 2024). With the share of oil in GDP falling to 22.3% in 2023, the path towards the 2030 oil-reduction goals is already bearing fruits, albeit with some massive hurdles yet to clear in keeping the momentum up. The centrality of innovation and entrepreneurship in economic transformation endeavors, especially in transitional and emerging economies, is clearly established in available literature (Adamides, 2024; Huang & Zhou, 2025). Such changes are not only creating new jobs and sources of income, but also altering business models, institutional structures, and occupational behaviors.

Supporting SMEs and technology-fueled startups offers a rare chance to harness the potential of Saudi Arabia's young and internet-savvy population. Policy measures and empirical analysis are a need of the hour to measure the factors retarding the contribution of SMEs to GDP which is still at around 29.4% of the national GDP, well below the Vision 2030 target of 35%, despite a consistently positive performance.

The theoretical background of this research is rooted in the concept of creative destruction (Schumpeter), and more recent research has added for a broader notion of entrepreneurship in sustainability transitions (Adamides 2024; Beheshti et al. 2024). Open innovation systems provide a pathway through which goods and services are passed on to change their value proposition to achieve sustainability (Huang & Zhou, 2025; de Silva Nunes et al., 2022), especially in developing markets characterized by low institutional capacity. The Saudi case is interesting because it combines the dynamics of state-led reform from the top and entrepreneurial agency in the reform process from the bottom; this has been seen in other economies, particularly India, Argentina, and Serbia (Srivastava & Shainesh, 2015; da Silva Medina et al., 2023; Živojinović et al., 2019).

Although many policy and technology analyses have been conducted with respect to Vision 2030, empirical research that quantitatively estimates the potential of innovation policy to achieve innovation outcomes in Saudi Arabia is still lacking, and what is available, mostly relies on qualitative expert opinions. The available empirical studies are mostly descriptive policy reviews or monomethod studies, whose results are naturally less robust.

The present study fills this gap in literature by using a mixed methods approach, combining regression analysis of economic indicators with thematic analysis of semi-structured interviews conducted with 87 experts consisting of representatives from government, academic, and private sector organizations.

The study answers the following questions:

1. How have SMEs and startups participated in GDP diversification in the context of Vision 2030?
2. What is the role of ICTs in supporting SMEs and startups in preventing the economy from remaining dependent on oil?
3. What should be done to ensure the development of SMEs in KSA to achieve the aims of Vision 2030?
4. What is the most significant influence on the performance of innovation ecosystems in Saudi Arabia with regard to structural factors such as policy, infrastructure, and human capital?
5. What are the main assets and obstacles to innovation-based economic development going forward to reach the goals of 2030 according to the major stakeholders?

2. MATERIALS AND METHODS

The research used a mixed methods design where the quantitative analysis was a precursor and an informant to the qualitative analysis. This design was chosen to enable triangulation in the process of identifying macro-level relationships statistically and enriching the findings through the inputs of experts, thus allowing for the production of results from the intertwining of both methods that are more explanatory than those obtained from either of them alone (Xiao & Su, 2022; Suriyankietkaew, 2023). The use of mixed methods is especially suitable in the context of innovation policy research where measurable results in addition to the subjective experiences of stakeholders are under the lens. The quantitative phase relied on secondary macroeconomic data from the General Authority for Statistics in the Kingdom of Saudi Arabia, Global

Entrepreneurship Monitor reports 2016-2023, and the World Bank database on the indicators of Innovation Governance. The variables extracted were as follows: contributions of annual oil GDP and non-oil GDP (in percentage), SME density per 1,000 population, government expenditure on research and development (GERD) as a proportion of GDP, digital infrastructure composite index, human capital composite index, and regulatory score. These variables have been selected for their theoretical precedent based on the innovation economics literature (Secundo et al., 2024; Sánchez-García et al., 2025).

Once the data was collected, entries with missing values were eliminated, and descriptive statistics were run on the data prior to inferential analysis. Multiple regression analysis was used to check the predictive significance of innovation ecosystem indicators (IV) on the GDP Diversification score (DV). The model specifications were as follows: GDP Diversification Index = $\beta_0 + \beta_1$(Innovation Ecosystem Index) + β_2(SME Density) + β_3(Digital Infrastructure) + β_4(R&D Expenditure) + β_5(Human Capital) + β_6(Regulatory Environment) + ε.

A series of regression assumptions were tested and satisfied before regression, such as no multicollinearity (VIF<5), residual normality, homoscedasticity, and linearity. Overall, the model achieved an R^2 value of 0.71 which suggests that the predictor variables explain 71% of the variance in the GDP diversification outcomes, indicating findings similar to the conclusions reached in other econometric analyses of similar emerging economies (Beheshti et al., 2024; Shahzad & Xu, 2024).

Semi-structured interviews with 87 purposively selected experts were conducted in the qualitative phase. The sample size was determined based on the information proposed to generate what was suitable for the Vision 2030 policy assessment and the category of qualitative studies in the management and policy research field recommended by Steinerowska-Streb et al. (2024) and Varshney et al. (2024). The participants were from five categories: government officials and policymakers (n = 24, 27.6%), academic economists (n = 21, 24.1%), senior bureaucrats (n = 18, 20.7%), startup founders and owners of small and medium enterprises (n = 15, 17.2%), and industry experts and consultants (n = 9, 10.4%). Table 1 summarizes the demographic information of the participants.

Table 1: Participant Profile by Category (N = 87).

Government Officials / Policymakers	24	27.6	Economic policy, regulation
Academic Economists	21	24.1	Macroeconomics, innovation theory
Senior Bureaucrats	18	20.7	Public administration
Startup Founders / SME Owners	15	17.2	Entrepreneurship, market dynamics
Industry Experts / Consultants	9	10.4	Technology, investment
Total	**87**	**100.0**	**—**

Interview protocols were created to align with the research questions and were tested with three practitioners before implementation. Each interview lasted between 45 to 75 minutes, was audio-recorded, and transcribed verbatim with the participants' permission. Coding of transcripts was done in two successive cycles: in the first cycle, open coding was used to create preliminary codes, whereas in the second cycle, axial coding was applied to group the preliminary codes into thematic categories following Sánchez et al.'s (2025) proposed innovation enablement framework. The saturation of the interview data appeared to be achieved at interview number 79, which provided confidence in the analytical completeness of the data. For reliability reasons, 20% of the transcripts were double coded by a second researcher, and the overall interrater reliability score (Cohen's Kappa) was κ = 0.83 which is a very good score for reliability. In the results stage, a convergent interpretation method was applied, and the findings were triangulated to identify areas of consensus and conflict with the statistical findings and experts' consensus (Abdelnaeim & El-Bassiouny, 2021).

3. RESULTS AND DISCUSSION

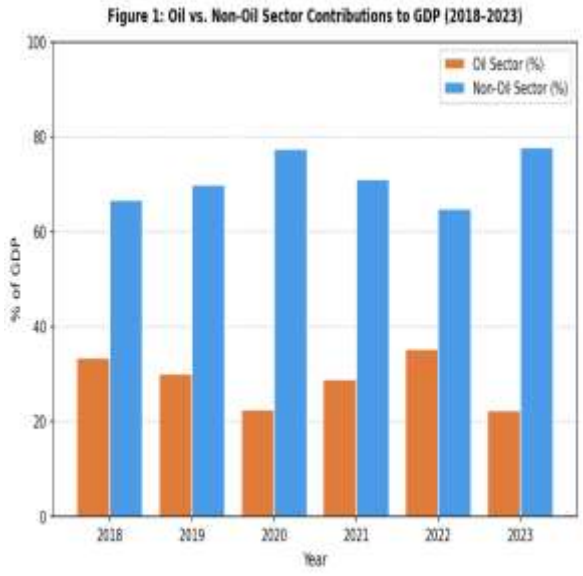
The results of this study illustrate a multidimensional picture of the progress being made in Saudi Arabia's transition to an economy built on innovation and economic diversification in alignment with the goals stated in Vision 2030. All trends from both strands, quantitative and qualitative, lead to five main findings: 1) there is significant advancement but uneven progress towards diversification; 2) innovation ecosystem variables are good statistical indicators of GDP results; and 3) structural impediments are evident in

perceptions of the innovation ecosystem despite policy momentum. Each of these dimensions is explored below, with integration across methods where evidence permits.

Table 2 shows the projections of major economic indicators over the 2018-2023 period. The most significant change revealed by the quantitative time-series data is the rise in non-oil GDP share from 66.6 per cent in 2018 to 77.7 per cent in 2023, which represents a growth of 11.1 percentage points in five years. This trend is largely in line with Vision 2030 projections, but the data from 2022 seems to show a temporary downswing due to an increase in global oil prices resembling the resource revenue volatility documented by Ragmoun (2024) and Beheshti et al. (2024). This contribution of SMEs to GDP steadily increased from 2004 to 2023 when it was at 29.4%, still some way from the 35% target, albeit making modest progress.

Table 2: Key Economic indicators under Vision 2030 (2018–2023).

2018	33.4	66.6	20.4	50.3
2019	30.1	69.9	22.1	62.1
2020	22.5	77.5	23.8	58.4
2021	28.9	71.1	25.3	75.2
2022	35.2	64.8	26.9	90.1
2023	22.3	77.7	29.4	110.6



Oil vs. Non-oil sector contributions to GDP (2018–2023). Source: General Authority for Statistics, Saudi Arabia.

Notably, the share of oil GDP declined from 5.1% in 2004 to 4.6% in 2014 and 4.1% in 2016, while the share of non-oil GDP steadily increased over time, as shown in Figure 1. Visual evidence supports the quantitative data and reinforces the fact that the rising oil revenue in 2022 was a short-term phenomenon and not a structural shift. The start-up ecosystem index score increased from 50.3 in 2018 to 110.6 in 2023, more than doubling in five years, attributable to the programs under Vision 2030 such as the National Entrepreneurship Institute (Munshaat), Saudi Venture Capital Company, and Kafalah loan guarantee program (Ragmoun, 2024). This is in line with studies of other emerging economy start-up ecosystems where the catalytic role of government in investments resulted in a kind of "latent bump" in ecosystem effects after three to five years (Secundo et al., 2024).

SME Growth Trajectory and Startup Ecosystem Index Score (2016–2024). Source: General Authority for Statistics and Global Entrepreneurship Monitor.

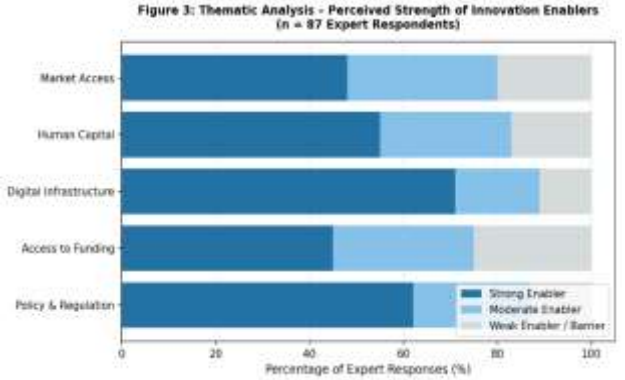
Since the time of conceptualization of Vision 2030, the number of SMEs has been rising and the performance of the startup ecosystem has also improved (as shown in Figure 2). The sharp decline in 2020 was driven by the COVID-19 pandemic which negatively affected businesses in all economies. Trends of quick recovery and acceleration 2021 onwards, however, suggest that firms experienced institutional resilience through their access to policy infrastructure which allowed them to get better and recover faster than firms in other environments without as many robust policies, a finding which is in line with Sánchez et al.'s (2025) analysis of entrepreneurial resilience after the pandemic.

The regression analysis results provide an overview of the statistical foundations for evaluating the relative contribution of innovation ecosystem components in terms of GDP diversification, as

summarized in Table 3. All the predictor variables were statistically significant at α = .05 with the overall model accounting for 71% of the variance in the GDP diversification index (R^2 = 0.71). The Innovation Ecosystem Index emerged as the strongest predictor (β = 0.623, p < .001), followed by SME Density (β = 0.418, p < .001), and the Digital Infrastructure Index (β = 0.391, p < .001). These results align with the theoretical position proposed by Sánchez-García et al. (2025) that digital enablement and innovation ecosystems act as co-archiving machines of entrepreneurial activity.

Table 3: Multiple Regression Coefficients: Predictors of GDP Diversification Index.

Innovation Ecosystem Index	0.623	0.054	11.54	<.001	0.71
SME Density (per 1,000 pop.)	0.418	0.067	6.24	<.001	—
Digital Infrastructure Index	0.391	0.072	5.43	<.001	—
Gov. R&D Expenditure (% GDP)	0.356	0.081	4.40	<.001	—
Human Capital Index	0.289	0.096	3.01	.003	—
Regulatory Environment Score	0.214	0.087	2.46	.016	—

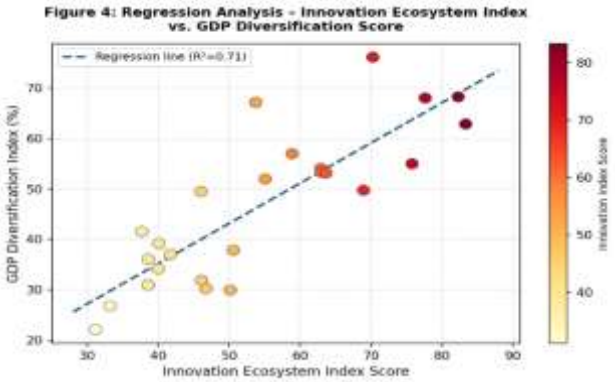


Thematic Analysis – Perceived Strength of Innovation Enablers (n = 87 Expert Respondents).

A total of 71% of respondents in the study described digital infrastructure as a strong enabler (the highest of the five themes), and it was considered the strongest innovation enabler by the thematic analysis, as shown in Figure 3. These outcomes are consistent with the quantitative evidence reported by da Silva Nunes et al. (2022). The results further demonstrate that infrastructure readiness is a primary requisite for a sustainable startup model. This was most strongly agreed upon by government officials and academic economists who cited 5G networks, cloud computing technology, and the NEOM smart city project as "transformative enablers." One senior policymaker (P-07) said that five years ago, these types of conditions did not exist in the Kingdom, and now startups can develop a product that is competitive with the international market directly from Riyadh or Jeddah without needing to establish the business abroad.

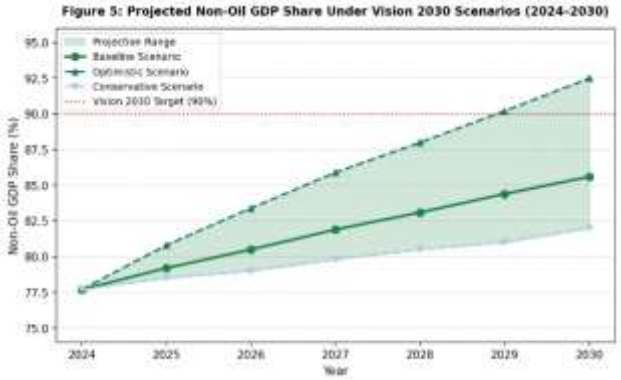
Funding was the most divisive theme on the list with 25% of respondents voting positively in this category, which was also the largest contender for this theme across all others. This result aligns with theoretical studies that widely suggest capital market underdevelopment as a structural constraint to emerging economy entrepreneurship (Chaudhary, 2025; Hossain et al., 2024). As could be expected, limited funding was more likely to be cited as a barrier by startup founders. Several spoke about the availability of seed funding, pointing out that although it had been made easier by government-backed programs, Series A and B funding was scarce, and local institutional investors being risk-averse tended to be hesitant to invest in early-stage companies. This mirrors the structural gap in similar developing-economy contexts (Jolly et al., 2012; Angeli & Jaiswal, 2016) and holds out a potential possibility to direct policy intervention towards the facilitation of growth-stage capital, in addition to seed funding.

55% of the respondents rated human capital as a strong enabler, recognizing the positive influence of the education and training efforts introduced under Vision 2030, such as attracting more student enrollments in STEM subjects, expanding the King Abdullah Scholarship Program, and targeting global talent. Qualitative inputs did, however, show that there was a significant deviation between output and the market demand for certain orientations, in particular those linked to deep technologies such as AI, cyber security, and biotechnology.



Regression Analysis – Innovation Ecosystem Index vs. GDP Diversification Score. Note: Each data point represents an annual provincial-level observation; dashed line represents the fitted regression line (R^2 = 0.71).

Figure 4 shows a bivariate scatter plot of the Innovation Ecosystem Index with the GDP Diversification scores. It shows not only the general trend of the data along the linear regression line, but also that the data are rather close to the regression line, reflecting the high R-squared values associated with the model. Lower left point observations indicate years when the level of innovation investment was lower before the implementation of the Vision 2030 program, and upper-right observations indicate more recent years with accelerated development of ecosystems. Because of this temporal clustering, a change in the relationship between innovation and diversification seems to have occurred, as opposed to cyclical variation caused by Vision 2030. The regulatory environment scored a moderate rating, compared to the ratings of 42% on the second lowest rating of all five themes of the entire study among the interviewees who gave a strong enabler rating. This reflects the well-noted process of regulatory modernization that Vision 2030 is set to encourage while also grappling with the legacy of bureaucratic complexity from the pre-reform era. The regression coefficient for the regulatory environment ($\beta = 0.214$, $p = .016$) was the smallest among all predictors of diversification, but it was still significant, indicating that regulatory quality contributes to diversification but is not the limiting factor. This parallels Steinerowska-Streb et al. (2024), who argue that the context of regulation is more important for scaling innovations than for initial innovation, and Pricopoaia et al. (2024), who state that regulatory reform must be part of wider sustainability governance frameworks to ensure lasting innovation results. Triangulation shows a coherent picture whereby the measurable level of GDP diversification is positively connected to the conscious development of an innovation ecosystem, and the subjective perceptions of the expert participants broadly corroborate the statistical patterns, but they also reveal aspects of how the latter can be described in different ways than with the objective data on which the measures are based. The convergence of both approaches consolidates the findings of the study and enhances the confidence in its main finding that innovation and entrepreneurship are major actors in the economic transformation underway in Saudi Arabia, yet they still face stubborn challenges in the structure that demand special policy measures to preserve the trajectory of economic diversification needed until the Vision 2030 targets are achieved.



Projected Non-Oil GDP Share Under Vision 2030 Scenarios (2024–2030). The dashed red line indicates the Vision 2030 target of 90% non-oil GDP share.

As shown in projections in Figure 5, current policy 'pathways' would see non-oil GDP reaching about 85.6% share by 2030 which is still short of the Vision 2030 target of 90% GDP. The 'hoped for' scenario, assuming increased investment in digital and increased SME sector financing and improved human capital development, is set at 92.5%, which is just above the official target. The re-pessimistic assessment, based on possible oil price headwinds globally and fiscal consolidation pressures, results in an expected 82.0% in 2030. These scenarios were shaped in light of similar scenario-building projects from other petro-dependent economies in transition (Scaffidi, 2022; Savastano et al., 2024) highlighting that time frame dependency is key for economic transformation with policy consistency being the major rock to navigate in the next five years.

These findings have important policy implications. First, removal of the 'digital divide' requires investment in Digital Public Goods—such as broadband connectivity, cloud infrastructure, and digital payment systems—as a non-discretionary element of the investment portfolio for Vision 2030. Second, the funding gap means that there is a need for action at other phases of the entrepreneurial lifecycle, namely, developing local risk-takers in the venture capital arena. Third, the skill mismatch of human capital in the technology sector indicates that curriculum and training should be developed in active engagement with technology sector employers, as engaging with technology sector employers has been effective in similar contexts in India and Argentina (Srivastava & Shainesh, 2015; da Silva Medina et al., 2023). Fourth, regulatory simplifications should be advanced and prioritized based on the red tapism that is most often complained about, such as simplifying the business

registration process, expanding IP rights protection, and facilitating trade in digital cross-sectoral and cross-border activities. Fifth, the mismatch in perceived policy effectiveness and aggregate economic performance in some aspects (human capital, among others) suggests implementation gaps that merit surveillance based on tangible evidence in the form of policy review mechanisms (Kant, 2017; Yan, 2018).

The results of this study contribute to general theoretical discussions in the literature on innovation and sustainability. The focus on alignment of institutional logics, resource flows, and actor networks as important conditions for transformative change, outlined in Adamides's (2024) general activity-based conceptual framework, fully justifies its applicability to the Saudi case presented in this study. Likewise, Huang and Zhou's (2025) review of open innovation and sustainable business models reminds us that an innovation policy is likely to become dispersed among institutional actors if it lacks a compatible coordination mechanism. This qualitative evidence corroborates these concerns, with several participants pointing to the institutional isolation of ministries across the government as a challenge to the cohesive governance of the innovation ecosystem. Addressing this coordination challenge can be just as crucial as any of the policy instruments for achieving the most ambitious goals of Vision 2030.

4. CONCLUSION

This study introduced an empirically based mixed-methods framework to explore the link between innovation, entrepreneurship, and economic diversification in Saudi Arabia in the context of reforms underlined in Vision 2030. Findings of the study show that innovation ecosystem development which is defined by innovation support infrastructure, SME density, human capital, and regulatory infrastructure, is statistically significant for GDP diversification index and accounts for 71% of the variance in it as is evident from regression analysis of macroeconomic indicators and thematic analysis of experts' views. The qualitative results from the interviews align with and strengthen the findings from the quantitative analysis and show that there is a very high level of agreement on the factors perceived to create a supportive environment for entrepreneurial development (digital infrastructure and government policy coherence) and the elements perceived as significant structural barriers (mismatches in accessing growth-stage capital and human capital skills).

Vision 2030 has visibly jumpstarted Saudi Arabia's diversification process, with the share of non-oil GDP increasing from 66.6% in 2018 to 77.7% in 2023, and with the startup ecosystem index more than doubling over the same period. The fact that the current contribution of non-oil GDP is far below the target of 90% to be reached by year 2030, however, indicates that the reform process is still underway and needs continued policy stability and specific structural reforms to reach the ambitious targets. There are strong indications of non-oil GDP reaching between 82.0% and 92.5% in 2030, depending on how fast and well innovation policies are put into practice in the next five years. In essence, the study's takeaway for policymakers is to make investments in digital infrastructure.

The results of the study also demonstrate that building digital skills and participating in government innovation support programs are significant factors for entrepreneurs and SME owners. The study provides a methodological guide for conducting mixed-method evaluations of innovation policy and a framework for building further empirical research on innovation policy. All these contributions reinforce the idea that innovation and entrepreneurship can be legitimate forces for sustainable economic development when they are part of a systematic mission to reform a country's economic framework.

5. RECOMMENDATIONS

Based on the findings of this study, it is recommended that further research should focus on developing a Saudi-specific indicator set that more accurately reflects the institutional characteristics of Saudi Arabia's reform process.

More information regarding the dynamic interplay between policy implementation and stakeholders' experiential journey should be sought from a longitudinal qualitative design or a panel-based mixed methods study. This method has been successfully applied in similar research contexts (Suriyankietkaew, 2023; Singh & Pangarkar, 2025) and is worth exploring in future entrepreneurship research in Saudi Arabia.

There is a wide range of further investigations that could be conducted based on this study. The bibliometric analysis of Dote-Pardo et al. (2025) shows that innovation and entrepreneurship in emerging countries is an expanding research area and that Saudi Arabia seems to be underrepresented in this kind of research. An analysis of the sector dynamics of innovation would complement this macro-level analysis, notably for healthcare,

renewable energy, and agri-technology, as we know that Vision 2030 invests heavily in innovation.

A comparative analysis of Saudi Arabia's innovation journey with some parallel oil-exporting countries undergoing diversification, such as the United Arab Emirates, Qatar, and Kazakhstan, can be helpful to gain a better understanding of it. Finally, the convergence of AI adoption and entrepreneurial ecosystem development holds significant promise for future research, leveraging the potential of AI to shape innovation processes and systems, as highlighted by Secundo et al. (2024) and the Saudi government's vision for AI-powered policy and strategy creation.

5.1. Limitations

This study contributes to the empirical understanding of innovation-led development in the interest of Vision 2030 but has some limitations. The sample in this study was only from certain cities (Riyadh and Jeddah) due to which the results may not reflect rural phenomena.

The cross-sectional design of the qualitative data collection (interviews held over a defined time period as opposed to a longitudinal design) and the absence of any preceding evaluation or planning suggest that the study only provides a snapshot of the views of experts, without providing an indication of how such views change in the face of changes in policy. Moreover, the regression model succeeded in predicting the growth of the innovation ecosystem better; however, it did not achieve the goal of establishing causal relations and did not fully explain the endogeneity of influence between innovation ecosystem development and GDP diversification.

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