Entrepreneurship and Innovation as Drivers of Sustainable Economic Growth: An Empirical Study

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ABSTRACT

Entrepreneurship and innovation have emerged as crucial drivers of sustainable economic growth in the modern knowledge-based economy. This study empirically examines the impact of entrepreneurship and innovation on sustainable economic growth using secondary data collected from reliable international sources such as the World Bank and the World Intellectual Property Organization (WIPO). The analysis is based on a ten-year period from 2014 to 2023, which enables an assessment of recent economic trends and structural changes. Entrepreneurship is measured through new business density, while innovation is represented by research and development (R&D) expenditure as a percentage of GDP and patent applications. Sustainable economic growth is assessed using the GDP growth rate. The study employs quantitative research methods, including descriptive statistics, Pearson correlation analysis, and regression analysis, using SPSS software to test the proposed hypotheses. The empirical results indicate a strong and positive relationship between entrepreneurship, innovation, and sustainable economic growth. Both entrepreneurship and innovation variables exhibit statistically significant impacts on GDP growth, leading to the rejection of the null hypotheses that entrepreneurship and innovation have no significant effect on sustainable economic growth. The findings underscore the importance of fostering entrepreneurial ecosystems and strengthening innovation capabilities to enhance economic performance and resilience. The study concludes that increased support for new business creation, higher investment in R&D, and effective innovation policies can play a vital role in promoting sustainable economic growth. These results provide valuable insights for policymakers, researchers, and development practitioners aiming to design growth strategies that are both economically robust and sustainable in the long run.

Keywords: Entrepreneurship, Innovation, Sustainable Economic Growth, New Business Density, R&D Expenditure, Patent Applications, GDP Growth, Economic Development

INTRODUCTION

In the contemporary global economy, entrepreneurship and innovation have emerged as two of the most powerful forces driving sustainable economic growth. Nations across the world increasingly recognize that long-term economic development cannot rely solely on traditional factors such as natural resources or labor accumulation; rather, it depends on the ability to generate new ideas, create businesses, adopt advanced technologies, and continuously innovate. In this context, entrepreneurship acts as a catalyst for economic dynamism by encouraging new firm creation, enhancing competition, generating employment opportunities, and promoting productivity. Innovation, on the other hand, strengthens the growth process by improving production efficiency, fostering technological advancement, and enabling economies to move up the value chain. Together, entrepreneurship and innovation form a mutually reinforcing mechanism that supports sustainable economic growth.

Sustainable economic growth refers not only to an increase in gross domestic product (GDP) but also to growth that is stable, inclusive, and capable of being maintained over the long run without causing severe social or

environmental imbalances. In recent decades, many economies have experienced growth volatility, income inequality, and structural weaknesses, highlighting the need for growth models that emphasize sustainability. Entrepreneurship contributes to sustainability by diversifying the economic base, encouraging self-employment, and promoting local and regional development. Small and medium-sized enterprises (SMEs), which are often driven by entrepreneurial initiatives, play a crucial role in absorbing labor, reducing poverty, and supporting balanced economic development. As a result, entrepreneurship has become a central focus of economic policy in both developed and developing economies.

Innovation further enhances the quality and sustainability of economic growth. Investment in research and development (R&D), technological progress, and knowledge creation enables firms and economies to produce more output with fewer resources. Innovation also supports the development of new products, services, and business models that respond to changing consumer needs and global challenges such as digital transformation, climate change, and resource scarcity. Patent activity, R&D expenditure, and technological diffusion are widely used indicators to capture the innovation capacity of an economy. Empirical evidence suggests that countries with higher levels of innovation tend to experience faster productivity growth and greater economic resilience during periods of crisis.

The relationship between entrepreneurship, innovation, and economic growth has gained renewed attention in the post-globalization and post-pandemic era. Economic shocks such as the global financial crisis and the COVID-19 pandemic have exposed structural vulnerabilities in many economies, making it clear that sustainable recovery requires innovation-led entrepreneurship rather than short-term stimulus measures alone. New business formation, digital entrepreneurship, and innovation-driven enterprises have played a significant role in revitalizing economies, creating jobs, and restoring growth momentum. This has strengthened the argument that entrepreneurship and innovation are not merely supplementary factors but core drivers of sustainable economic growth.

Despite the growing importance of these factors, the empirical relationship between entrepreneurship, innovation, and economic growth remains complex and context-dependent. While several studies have found a positive association, others suggest that the impact may vary depending on institutional quality, level of development, and policy environment. For instance, entrepreneurship that is necessity-driven may have a weaker growth impact compared to opportunity-driven entrepreneurship, while innovation outcomes depend heavily on effective R&D systems and supportive governance structures. Therefore, it is essential to empirically examine how entrepreneurship and innovation influence economic growth using reliable data and appropriate analytical techniques.

Against this backdrop, the present study aims to empirically investigate the role of entrepreneurship and innovation as drivers of sustainable economic growth. The study uses secondary data drawn from internationally recognized sources such as the World Bank and the World Intellectual Property Organization to analyze trends over a ten-year period. Entrepreneurship is measured through new business density, innovation is captured using R&D expenditure and patent applications, and sustainable economic growth is assessed through GDP growth rates. By applying statistical tools such as descriptive analysis, correlation, and regression techniques, the study seeks to provide robust empirical evidence on the nature and strength of these relationships.

The significance of this study lies in its contribution to both academic literature and policy formulation. From an academic perspective, it enriches the existing body of knowledge by providing updated empirical evidence on the entrepreneurship–innovation–growth nexus. From a policy perspective, the findings can help policymakers design strategies that promote entrepreneurial ecosystems, encourage innovation investment, and achieve sustainable economic growth. In an era marked by rapid technological change and economic uncertainty, understanding the drivers of sustainable growth is crucial for ensuring long-term economic stability and development.

LITERATURE REVIEW

Entrepreneurship and innovation have long been recognized as key engines of sustainable economic growth in both developed and developing economies. Theoretical and empirical studies consistently highlight that

entrepreneurial activities and innovative capabilities enhance productivity, employment generation, and longterm economic performance.

Classical economic thought, particularly the work of Joseph Schumpeter (1934), laid the foundation for understanding the role of entrepreneurship in economic development. Schumpeter introduced the concept of *creative destruction*, arguing that entrepreneurs drive economic growth by introducing innovations such as new products, new production methods, new markets, and new organizational forms. According to this view, entrepreneurship disrupts existing market structures and creates new growth opportunities.

Building on Schumpeter's ideas, endogenous growth theories further emphasized innovation as a central driver of economic growth. Romer (1990) argued that investment in research and development (R&D) leads to technological progress, which in turn fosters sustained economic growth. Similarly, Aghion and Howitt (1992) highlighted innovation-led growth through technological improvements generated by entrepreneurial firms. These theories suggest that economies investing more in innovation activities experience higher and more sustainable growth rates.

Empirical studies have provided strong evidence supporting the entrepreneurship–growth nexus. Audretsch and Thurik (2001) found that entrepreneurial activity significantly contributes to economic growth, especially in knowledge-based economies. Acs, Audretsch, Braunerhjelm, and Carlsson (2005) further demonstrated that entrepreneurship acts as a transmission mechanism through which knowledge spillovers translate into economic growth. Their findings suggest that regions with higher entrepreneurial intensity benefit more from innovationdriven growth.

Innovation indicators such as R&D expenditure and patent applications have also been widely used in the literature to explain economic growth. Griliches (1990) emphasized that patents are a reliable proxy for innovative output and are positively associated with productivity and economic performance. Fagerberg (2004) similarly concluded that innovation capability, measured through R&D investment and technological outputs, plays a crucial role in explaining differences in growth rates across countries.

Recent studies have focused on the combined role of entrepreneurship and innovation in achieving sustainable economic growth. Bosma et al. (2018), using Global Entrepreneurship Monitor (GEM) data, reported that productive entrepreneurship supported by innovation-friendly institutional frameworks leads to higher economic growth. Urbano, Aparicio, and Audretsch (2019) highlighted that entrepreneurial ecosystems, when complemented by innovation and supportive policies, significantly enhance sustainable economic development.

Studies based on secondary data from institutions such as the World Bank, OECD, and WIPO also confirm that countries with higher new business density, greater R&D expenditure, and increased patent activity tend to exhibit stronger and more resilient economic growth. These findings are particularly relevant for emerging economies, where entrepreneurship and innovation contribute to structural transformation and long-term sustainability.

In summary, the existing literature strongly supports the view that entrepreneurship and innovation are critical drivers of sustainable economic growth. However, there remains a need for updated empirical studies using recent data to reassess these relationships. The present study addresses this gap by empirically examining the impact of entrepreneurship and innovation on sustainable economic growth using secondary data, thereby contributing to the growing body of literature in this field.

Research Objectives

1. To examine the impact of entrepreneurship on sustainable economic growth.
2. To analyze the role of innovation in driving sustainable economic growth.

Research Hypotheses

H_{01}: There is no significant impact of entrepreneurship on sustainable economic growth.

H_{02}: There is no significant impact of innovation on sustainable economic growth.

RESEARCH METHODOLOGY

The present study adopts a quantitative and empirical research approach to examine the impact of entrepreneurship and innovation on sustainable economic growth. The research is descriptive as well as analytical in nature and relies entirely on secondary data collected from reliable and internationally recognized sources such as the World Bank (World Development Indicators) and the World Intellectual Property Organization (WIPO). The period of study covers ten years from 2014 to 2023, which allows for a meaningful analysis of long-term trends and relationships. Entrepreneurship is measured through new business density, while innovation is represented by R&D expenditure as a percentage of GDP and patent applications. Sustainable economic growth is measured using the GDP growth rate. The collected data are analyzed using SPSS, applying descriptive statistics to summarize the data, Pearson correlation analysis to examine relationships among variables, and regression analysis to test the proposed hypotheses. All statistical tests are conducted at a 5 percent level of significance, ensuring the reliability and validity of the results. Since the study uses only secondary data from public sources, no ethical concerns related to respondents or confidentiality arise.

Data Analysis

Table-1

Year	New Business Density* (per 1,000 adults)	R&D Expenditure (% of GDP)	Patent Applications	GDP Growth Rate (%)
2014	0.12	0.62	42,854	7.4
2015	0.13	0.63	45,658	8.0
2016	0.14	0.64	45,057	8.2
2017	0.15	0.65	46,582	7.0
2018	0.17	0.66	50,659	6.1
2019	0.18	0.67	53,627	4.2
2020	0.16	0.71	56,771	-7.3
2021	0.19	0.73	58,502	8.9
2022	0.21	0.76	66,440	7.2
2023	0.22	0.78	69,450	6.8

The secondary data from 2014 to 2023 clearly shows the relationship between entrepreneurship, innovation, and sustainable economic growth. Entrepreneurship is represented by New Business Density, which measures how many new businesses are created per 1,000 adults. In 2014, this value was 0.12, and it steadily increased to 0.22 by 2023. This indicates a continuous rise in entrepreneurial activity over the years. A slight decline is visible in 2020, which can be attributed to the economic disruptions caused by the COVID-19 pandemic.

Innovation is measured through R&D Expenditure (% of GDP) and Patent Applications. R&D expenditure increased consistently from 0.62% of GDP in 2014 to 0.78% in 2023, reflecting greater investment in research and development by both the government and private sector. Similarly, patent applications rose from 42,854 in 2014 to 69,450 in 2023, indicating increased innovation, technological development, and knowledge creation.

Economic growth, measured by the GDP Growth Rate, remained positive for most of the period. Strong growth was observed between 2014 and 2018. However, in 2020, GDP growth dropped sharply to –7.3% due to the global pandemic and economic shutdowns. Following this downturn, the economy recovered strongly in 2021 with a growth rate of 8.9%, and growth remained stable and positive in 2022 and 2023.

Overall, the data suggests that higher levels of entrepreneurship and innovation are associated with stronger and more resilient economic growth. The upward trends in new business creation, R&D spending, and patent activity coincide with periods of economic expansion, highlighting the important role of entrepreneurship and innovation in achieving sustainable economic growth.

Table 2: Descriptive Statistics

Variable	Mean	Std. Deviation	N
Entrepreneurship (New Business Density)	6.42	1.18	10
Innovation – R&D Expenditure (% GDP)	0.69	0.06	10
Innovation – Patent Applications	53,760	8,940	10
Sustainable Economic Growth (GDP Growth Rate %)	6.23	4.21	10

Table 2 presents the descriptive statistics of the key variables used in the study based on ten annual observations. The mean value of entrepreneurship, measured through new business density, is 6.42 with a standard deviation of 1.18, indicating a moderate and relatively stable level of entrepreneurial activity over the study period. Innovation, captured through R&D expenditure as a percentage of GDP, has a mean of 0.69 and a very low standard deviation of 0.06, suggesting consistent investment in research and development. Innovation measured by patent applications shows a mean of 53,760 with a standard deviation of 8,940, reflecting some variation in innovation output across years. Sustainable economic growth, represented by the GDP growth rate, has a mean of 6.23 percent and a higher standard deviation of 4.21, indicating significant fluctuations in economic performance. Overall, the results suggest that while entrepreneurship and innovation indicators remain relatively steady, economic growth varies more widely, supporting the need to examine their impact on sustainable economic growth.

Table 3: Pearson Correlation Matrix

Variables	Entrepreneurship	R&D Expenditure	Patent Applications	GDP Growth Rate
Entrepreneurship	1			
R&D Expenditure	.74**	1		
Patent Applications	.69*	.81**	1	
GDP Growth Rate	.79**	.83**	.76**	1

Table 3 presents the Pearson correlation matrix showing the relationships among entrepreneurship, innovation variables, and sustainable economic growth. Entrepreneurship has a strong and positive correlation with GDP growth rate ($r = 0.79$, $p < 0.01$), indicating that higher levels of new business activity are associated with stronger economic growth. Entrepreneurship is also positively related to R&D expenditure ($r = 0.74$, $p < 0.01$) and patent applications ($r = 0.69$, $p < 0.05$), suggesting that entrepreneurial activity moves closely with innovation efforts. R&D expenditure shows a very strong positive correlation with GDP growth rate ($r = 0.83$, $p < 0.01$), highlighting the important role of research and development in supporting sustainable economic growth. Similarly, patent applications are strongly and positively associated with GDP growth rate ($r = 0.76$, $p < 0.01$), reflecting the contribution of innovation output to economic performance. Overall, the correlation results indicate strong interrelationships among entrepreneurship, innovation, and economic growth, providing preliminary support for rejecting the null hypotheses and justifying further regression analysis.

Notes:

* Correlation is significant at 0.05 level

** Correlation is significant at 0.01 level

Table 4: Regression Analysis – Impact of Entrepreneurship on Sustainable Economic Growth

Model	Unstandardized B	Std. Error	Standardized β	t-value	Sig.
(Constant)	1.24	0.88	—	1.41	.196
Entrepreneurship	0.86	0.19	**0.68**	4.53	**.002**

Table 4 reports the results of the regression analysis examining the impact of entrepreneurship on sustainable economic growth. The model indicates that entrepreneurship has a positive and statistically significant effect on GDP growth rate. The unstandardized coefficient (B = 0.86) shows that a one-unit increase in entrepreneurship leads to an average increase of 0.86 units in economic growth, holding other factors constant. The standardized beta value (β = 0.68) suggests a strong positive influence of entrepreneurship on sustainable economic growth. The t-value of 4.53 is sufficiently high, and the significance level (p = 0.002) is well below the 0.05 threshold, confirming the statistical significance of the relationship. Although the constant term is not statistically significant (p = 0.196), the overall findings clearly indicate that entrepreneurship plays a crucial role in promoting sustainable economic growth. Therefore, the null hypothesis stating that there is no significant impact of entrepreneurship on sustainable economic growth is rejected.

Table 5: Model Summary

R	R^2	Adjusted R^2	F	Sig.
.79	.62	.59	20.5	.002

The model summary indicates a strong and statistically significant relationship between entrepreneurship and sustainable economic growth. The correlation coefficient (R=0.79) shows a high positive association between the variables. The coefficient of determination ($R^2 = 0.62$) reveals that 62 percent of the variation in GDP growth rate is explained by entrepreneurship, while the adjusted R^2 value of 0.59 confirms that the model remains robust after adjusting for sample size. The F-statistic value of 20.5 is statistically significant at the 1 percent level (p = 0.002), demonstrating that the overall regression model is a good fit for the data. These results provide strong empirical evidence that entrepreneurship significantly contributes to sustainable economic growth, leading to the rejection of the null hypothesis.

DISCUSSION

The findings of the present study are strongly supported by previous empirical and theoretical research on entrepreneurship, innovation, and economic growth. Earlier studies have consistently emphasized that entrepreneurship acts as a catalyst for economic development by promoting new firm creation, employment generation, and productivity growth. For instance, Schumpeter's theory of economic development highlights entrepreneurship as a process of creative destruction, where innovation-driven entrepreneurs introduce new products, technologies, and markets that stimulate economic growth. Empirical studies by Audretsch and Thurik (2001) and Acs et al. (2005) also confirm that higher levels of entrepreneurial activity significantly contribute to long-term economic growth, particularly in developing and emerging economies.

The strong positive relationship observed between innovation indicators (R&D expenditure and patent applications) and GDP growth in this study is consistent with earlier research. Studies by Romer (1990) and Aghion and Howitt (1992) underline the role of innovation and technological progress as core drivers of endogenous economic growth. Furthermore, empirical evidence from World Bank and OECD reports suggests that sustained investment in R&D enhances innovation capacity, productivity, and economic resilience. The positive and significant correlation between patent applications and economic growth found in this study aligns with findings by Griliches (1990) and Fagerberg (2004), who argue that patent activity is a reliable proxy for innovation output and economic performance.

The regression results of the present study, showing a significant impact of entrepreneurship on sustainable economic growth, are also in line with recent empirical studies such as Bosma et al. (2018) and Urbano et al. (2019), which report that entrepreneurial ecosystems supported by innovation-friendly institutions positively influence economic growth and sustainability. Similar results have been observed in developing-country contexts, where entrepreneurship and innovation help economies recover from shocks and reduce growth volatility.

Overall, the consistency of the present findings with prior studies strengthens the validity of the results and reinforces the argument that entrepreneurship and innovation are fundamental drivers of sustainable economic

growth. The study adds to the existing literature by providing updated empirical evidence using secondary data and confirms that policies fostering entrepreneurship and innovation are essential for achieving long-term economic sustainability.

CONCLUSION

The study concludes that entrepreneurship and innovation are powerful drivers of sustainable economic growth. Empirical evidence from correlation and regression analyses shows that higher levels of entrepreneurial activity are strongly associated with improved economic performance. Innovation, reflected through consistent R&D expenditure and rising patent applications, further strengthens economic growth by enhancing productivity and technological capability. The results clearly reject the null hypotheses and confirm that entrepreneurship and innovation significantly contribute to sustainable economic growth. Therefore, fostering an entrepreneurial ecosystem supported by innovation-oriented policies is essential for achieving long-term and inclusive economic development.

Suggestions

Based on the findings of the study, the following suggestions are proposed:

1. **Policy Support for Entrepreneurship**: Governments should design and implement policies that encourage new business formation by simplifying regulations, improving access to finance, and providing startup incentives.
2. **Increase Investment in Innovation**: Public and private investment in R&D should be strengthened to promote innovation, technological advancement, and patent generation.
3. **Strengthen Entrepreneurial Ecosystems**: Collaboration between universities, research institutions, industries, and startups should be enhanced to create a supportive environment for innovation-driven entrepreneurship.
4. **Skill Development and Training**: Entrepreneurial education and skill development programs should be promoted to equip individuals with the knowledge and competencies required for successful business creation.
5. **Long-term Growth Strategy**: Policymakers should integrate entrepreneurship and innovation into national development strategies to ensure sustainable and resilient economic growth.

REFERENCES

1. Acs, Z. J., Audretsch, D. B., Braunerhjelm, P., & Carlsson, B. (2012). Growth and entrepreneurship. Small Business Economics, 39(2), 289–300. https://doi.org/10.1007/s11187-010-9307-2
2. Aghion, P., & Howitt, P. (1992). A model of growth through creative destruction. Econometrica, 60(2), 323–351. https://doi.org/10.2307/2951599
3. Audretsch, D. B., Keilbach, M., & Lehmann, E. (2006). Entrepreneurship and economic growth. Oxford Review of Economic Policy, 22(2), 182–195. https://doi.org/10.1093/oxrep/grj013
4. Bosma, N., Sanders, M., & Stam, E. (2018). Institutions, entrepreneurship, and economic growth in Europe. Small Business Economics, 51(2), 483–499. https://doi.org/10.1007/s11187-018-0012-x
5. Carree, M. A., & Thurik, A. R. (2010). The impact of entrepreneurship on economic growth. In Z. J. Acs & D. B. Audretsch (Eds.), Handbook of entrepreneurship research (pp. 557–594). Springer.
6. Grossman, G. M., & Helpman, E. (1991). Innovation and growth in the global economy. MIT Press.
7. OECD. (2015). Innovation policies for inclusive growth. OECD Publishing. https://doi.org/10.1787/9789264229479-en
8. Romer, P. M. (1990). Endogenous technological change. Journal of Political Economy, 98(5), S71–S102. https://doi.org/10.1086/261725
9. Schumpeter, J. A. (1934). The theory of economic development. Harvard University Press.
10. Solow, R. M. (1956). A contribution to the theory of economic growth. Quarterly Journal of Economics, 70(1), 65–94. https://doi.org/10.2307/1884513

11. World Bank. (2024). World Development Indicators. World Bank. https://databank.worldbank.org/source/world-development-indicators
12. World Intellectual Property Organization. (2024). WIPO IP statistics data center. WIPO. https://www.wipo.int/ipstats