Journal of Posthumanism
2025
Volume: 5, No: 4, pp. 529–546
ISSN: 2634-3576 (Print) | ISSN 2634-3584 (Online)
posthumanism.co.uk

DOI: https://doi.org/10.63332/joph.v5i4.1105

Innovation as a Strategic Tool for Economic Growth: A Case Study of the City of Bisha, Saudi Arabia

Mohamed Jahman Alqarni[1], Hassen Soltani[2]

Abstract

The study aimed to learn the impact of innovation on economic growth from the point of view of Saudi society. The study was conducted on a sample of the community in the city of Bishah, where the study used the analytical descriptive curriculum. The data was collected through a questionnaire distributed to a sample of (1500) members of the Saudi community in the city of Bishah. The responses were analyzed using SPSS software. The results of the study showed that the sample study from Saudi society considers that innovation has a high impact on raising the level of economic growth in Saudi Arabia. The total computational average of this axis was 2.85% with a standard deviation of 0.32, a value that falls into the "high" grade on the study scale. As for the differences between the positives of the sample individuals, the results of the simple linear regression analysis showed that there were no statistically significant differences between the positives of the sample individuals about the selection of the areas of innovation most affecting economic growth. Based on the study's findings, the study made several recommendations, from its mother: The need to develop a comprehensive national strategy for innovation, and the interest of stakeholders in developing qualified human resources in the field of innovation, considering gender differences in the design and implementation of programming and innovative initiatives.

Keywords: *Innovation, Economic Growth, Strategic Tool, Saudi Arabia, SPSS.*

Introduction

For decades, Arab governments have strived to achieve higher levels of economic growth and development through diverse economic plans, programs, and policies. Despite the achievements on the ground, there remains an urgent need to enhance development levels to include all relevant indicators (Omar, 2019).

Innovation is a key driver of progress and economic development and has been widely recognized by policymakers. Most national governments around the world consider innovation performance to be critical to competitiveness and national progress (Cainelli et al., 2004).

According to the United Nations 2030 Agenda for Sustainable Development, private sector investment and innovation are the key drivers of productivity, inclusive economic growth, and job creation. (Abdel-Lawi et al., 2020) In addition, the United Nations Conference on Trade and Development emphasizes that innovation strategies are emerging around the world, and policymakers are supporting these approaches to extend the benefits of innovation to most people (Ferdowsi, 2010).

[1] Department of Business Administration, College of Business, University of Bisha, Saudi Arabia. m.jahman@hotmail.com.
[2] Department of Business Administration, College of Business, University of Bisha, Bisha 61922, P. O. Box 199, Saudi Arabia, Email: hsoltani@ub.edu.sa, (Corresponding Author), https://orcid.org/0009-0002-9406-1017.

UNCTAD suggests that governments should encourage the scaling up and dissemination of successful innovations with active participation from civil society, particularly the private sector, to make innovation outcomes available to marginalized and vulnerable communities (Ramadani and Gerguri, 2010).

Innovation topics have occupied a significant space within economic literature. Analyzing the relationship between growth, economic development, and innovation has received significant attention within the efforts to establish, theorize, and apply knowledge in the field of economic sciences. The roots of this topic extend to the efforts of pioneers of intellectual schools, with their diverse ideologies and orientations. (Saeed, 2013)

Innovation is a vital element in achieving economic development and realizing the Kingdom's ambitious visions. Innovation is considered the driving force that revolutionizes economic sectors, enhances growth, and builds a better future for nations. The Kingdom is aware of this vital role and therefore places a strong emphasis on its investments in innovation and technology (Al-Marzouqi, 2022).

Considering individual initiatives and the technological revolution, the Kingdom of Saudi Arabia has exceeded expectations and achieved significant positions in the field of artificial intelligence and technology. Within this framework, Saudi Arabia is relying on artificial intelligence to develop the digital economy at a time when the Middle East is betting on this technology, with revenues expected to reach 2%, or 320$ billion, of total global revenues by 2030 (PSH, 2023).

The impact of innovation on economic growth is a fundamental topic of interest to many researchers and those interested in economic affairs, especially when studying and understanding the role of innovation in promoting economic growth in countries. This research study aims to explore the impact of innovation on economic growth from the perspective of Saudi society. It will provide a comprehensive overview of how innovation processes can contribute to improving the economic conditions of Saudi society, as well as explore the potential challenges and opportunities that may arise because of this impact. These findings will be useful to decision-makers and officials seeking to promote economic and social development in the Kingdom of Saudi Arabia. By analyzing these aspects, the importance of fostering and supporting a culture of innovation in Saudi society will be highlighted as a means of promoting economic growth and achieving sustainable development.

Research Problem

The Kingdom of Saudi Arabia is one of the countries seeking to achieve sustainable economic development, and therefore, innovation is a key element in achieving this vision. Understanding the Saudi society's perspective on the impact of innovation on economic growth is crucial to better identify societal needs and guide policies toward maximizing the benefits of innovation. Considering the above, this study will attempt to understand the impact of innovation on economic growth from the perspective of Saudi society. Therefore, we pose the following main question: To what extent does innovation impact economic growth in the Kingdom of Saudi Arabia, from the perspective of sample members? Four sub-questions emerge from this question, represented as follows:

- What is the level of impact of innovation on raising economic growth in the Kingdom of Saudi Arabia from the societal perspective?

- What are the most important areas of innovation that Saudi society believes impact economic growth?

- What are the challenges facing the implementation of innovation in the Kingdom of Saudi Arabia?

- Are there statistically significant differences in the level of impact of innovation attributable to the demographic variables of the study sample (gender, age, educational level)?

Research Objectives:

- Determine the level of innovation's impact on raising economic growth in the Kingdom of Saudi Arabia from the societal perspective.

- Identify the most important areas of innovation that Saudi society believes impact economic growth.

- Analyze the challenges facing the implementation of innovation in the Kingdom of Saudi Arabia.

- Examine the presence of statistically significant differences in the level of innovation's impact attributable to demographic variables of the study sample, such as gender, age, and educational level.

Literature Review

Theoretical Framework

Innovation: It is the process by which new ideas are created and successfully implemented. Innovation is a key driver of economic growth and social progress. Research indicates that innovative companies have better performance and are more profitable in the long run compared to less innovative competitors. According to the literature, several factors influence an organization's ability to innovate. One of these factors is organizational culture, where the values of risk-taking, learning from mistakes, and interdepartmental collaboration play an important role in fostering innovation. Technological infrastructure, financial resources, and qualified human resources are also key factors for innovation. Innovation is a key driver of organizational success, but achieving it requires a variety of factors, including organizational culture, infrastructure, and resources. Organizations must understand these factors and invest in them strategically to enhance their innovative capabilities. (Mansour Al Rafid, et al. (2021))

Economic Growth: Economic progress is one of the most urgent financial tools for poverty reduction and improving living standards (DFID, 2008). Good economic progress is defined as the rise in GDP, or real gross domestic product (GDP), per capital. However, it is directly influenced by labor, natural resources, and capital, and indirectly influenced by collective demand, economic and financial institutions, as well as government policies and efficiency (Constantinescu & Boldeanu, 2005). According to Jhingan, 2003, economic growth is the process by which a nation's real per capita income rises over a long period, determined by the increase in the number of services and products manufactured within a country. Thus, the number of improved goods and services over a successive period serves as a basis for increased prosperity through improved levels of people's comfort and reduced disparities in income distribution. From a broader perspective, GDP, often abstracted from economic development, is valued as a balanced practice of increasing the working capacity of individuals (Badiru & Ademola, 2016). Henceforth, to increase public revenues, as classified by the rates of increase

in per capita productivity and total factor output, especially labor output (2018) Dalhatu, & John, (Seth, 2008). Economic growth is important once the degree of development is much greater than population growth because it must lead to an improvement in individual welfare through the creation of jobs and thus a strong demand for labor, which is the central and often sole force for the poor (2008). (DFID)

Sustainable Development Goals and Economic Growth

Sustainable Development Goals and Economic Growth: The Sustainable Development Goals (SDGs) are an important policy document that sets shared objectives for addressing global challenges such as economic, social, and environmental issues. The synergy of the SDGs is a key determinant of policy coherence for sustainable development. The SDGs are indivisible and do not imply that one goal is more important than the others. Therefore, progress towards one goal should not hinder efforts to achieve others. In fact, it is both a significant challenge and a necessary requirement to be able to create coherence between and within the very broad policy areas of the SDGs (Borgnäs, 2017). Despite the envisioned objectives of the SDGs, their implementation and achievements have not been consistent across countries due to the unique requirements of each country. Strategies for achieving the SDGs that are considered feasible in developed countries may not be optimal in developing or least developed countries. Each nation has its own distinct characteristics and needs. Therefore, for the SDGs to be sustainable, these special characteristics must be recognized (Borgnäs, 2017). Considering the unique characteristics and contextual realities in Saudi Arabia in relation to its Vision 2030.

Research findings suggest that a nation must work towards the SDGs, as the SDGs cannot make any one country achieve the SDG agenda. Adrangi and Kerr (2022; Adrangi, 2022) conducted a study in developing countries in Brazil, Russia, India, China, and South Africa (BRICS). The study showed that focusing on GDP-driven growth reduced gender equality and increased greenhouse gas emissions, but reduced mortality rates. The research findings indicated that focusing on GDP growth will not lead to achieving the SDGs because it may lead to unsustainable prosperity.

The Importance of Innovation in Economic Growth:

Innovation is considered a key driver of economic growth, as confirmed by numerous literatures in this field. The ability to develop new products and services or more efficient production and delivery methods represents the primary driver of economic progress and societal well-being.

According to modern economic theories, innovation is one of the key drivers of long-term economic growth. Investments in research and development and the development of new technologies lead to improvements in productivity and efficiency, allowing companies to offer better products and services at lower costs. This, in turn, leads to increased demand and sales, which in turn leads to more investment and employment, and thus economic growth. (Bouchenguir & Kattaf, 2013).

Moreover, innovation plays a vital role in enhancing the competitiveness of a national economy. Innovative companies that offer unique or more efficient products can capture larger market shares, leading to increased exports and economic growth. Innovation also helps create new job opportunities in emerging sectors, contributing to reducing unemployment and improving living standards. (Bouchenguir & Kattaf, 2013)

Research indicates that economies that invest heavily in innovation and research and

development generally enjoy higher levels of economic growth than less innovative economies. For example, studies show that a 1% increase in research and development spending as a percentage of GDP is associated with a 0.05% to 0.15% increase in economic growth rates.

In conclusion, innovation is a key driver of economic growth at both the macro and micro levels. The ability to develop new products, services, and more efficient production methods contributes to increased productivity and competitiveness, leading to more investment, employment, and exports. Therefore, investing in innovation is an investment in the future of the national economy (Maradana, et al., 2017).

Previous studies

The study (Lahouna 2024), Jordan, titled "The Impact of Research and Development on Innovation and Competitive Performance of Firms in Jordan" aimed to investigate the impact of research and development on innovation and competitive performance of firms. The study used a structural equation model as a methodology with data from 142 firms in Jordan. The study showed that research and development have a positive impact on both innovation and competitive performance of firms in Jordan. The study also showed that innovation plays a mediating role in the relationship between research and development and competitive performance.

Al-Essa's study (2021) entitled "The Impact of Innovation on Economic Growth in Arab Countries: A Comparative Analytical Study" aimed to analyze the impact of innovation on economic growth in Arab countries during the period 1942-1948. The study used a multivariate linear regression model with data from 5 Arab countries as a methodology for the study. The study showed a strong positive relationship between innovation and economic growth in Arab countries. The study also showed that the impact of innovation on economic growth varies between Arab countries, depending on the level of economic development, institutions, and government policies.

Eboagu & Adeleye (2019) study titled “Impact of Information and Communication Technology (ICT) on Economic Growth in Africa”. The study aimed to assess the impact of Information and Communication Technology (ICT) on economic growth in Africa. The study reached the following conclusions: The relationship between ICT and economic growth: The study found a strong positive relationship between ICT and economic growth in Africa. Regional differences: The strength of this relationship varies across different sub-regions in Africa. Influencing factors: The study identified some factors that influence the strength of the relationship between ICT and economic growth.

A study by Rubhi Maysa, Hadrouk Ahmed (2019), Algeria. (Titled as “The Impact of Innovation on Economic Growth in Algeria during the Period (1990-2019)”, the study aimed to evaluate the impact of innovation on economic growth in Algeria. The study used the Autoregressive Distributed Lag (ARDL) model to analyze the relationship between innovation variables and economic growth in Algeria. The study showed that there is an inverse and insignificant relationship between patents and per capita GDP in the long and short term, and a direct and significant relationship between capital and per capita GDP in the long term.

Podgorna & Lobachevski (2018) study, titled "Evaluating the Game Strategies of Firms in the Digital Economy," aimed to evaluate the game strategies of firms in the digital economy, with a focus on Ukraine. The study analyzed the strategies of 328 Ukrainian firms from various sectors. The study found that the most common strategies are Customer-centric: This strategy focuses

on better meeting customer needs through the use of digital technology. Innovation: This strategy focuses on developing new products and services using digital technology. This strategy focuses on collaborating with other firms to develop new products and services or access new markets.

Iryna & Ivelyna (2018) study titled "Evaluating the Impact of Innovation on Human Development, with a Focus on Technological Development." The study aimed to evaluate the impact of innovation on human development, with a focus on technological development. The study was applied to 15 ECOWAS countries during the period 2004 to 2014. The study demonstrated the impact of innovation on human development, and the results indicated that technological development supported using the Internet plays an important role in enhancing human development.

What distinguishes the current study from previous studies:

Combining quantitative and qualitative analysis: The current study combines quantitative data collected through a questionnaire with a qualitative analysis of participants' opinions, providing a more comprehensive picture of the perceived impact of innovation on economic growth from the perspective of Saudi society. Focusing on the Saudi context, the current study provides insightful insights into the issues of innovation and economic growth in the specific Saudi context, contributing to enriching local understanding of these topics. Practical significance: The current study provides policy and practical recommendations for promoting innovation and supporting economic growth in the Kingdom of Saudi Arabia, which can contribute to achieving sustainable development.

Methodology

This study relied on a descriptive analytical approach to understand and analyze the impact of innovation on economic growth from the perspective of Saudi society. A field study was conducted on a sample of residents of the city of Bisha. A case study approach was also utilized, focusing on collecting data related to the city of Asir as a model case to understand the mechanisms and dynamics of innovation's impact on economic growth.

The case study approach aims to collect and analyze data related to a specific unit (such as an individual, an institution, or a city) with the aim of arriving at scientific generalizations that can be applied to other similar units. This approach helped to link the theoretical aspect related to the role of tourism in economic development with the field reality in the city of Bisha, which allowed for a deeper understanding of the effects of tourism on various aspects of economic development in the city. The study community consisted of several people residing in the city of Bisha, Kingdom of Saudi Arabia. The study sample consisted of (55) individuals from all members of the study sample, represented by several people residing in the city of Bisha, Kingdom of Saudi Arabia. They were selected using a simple random method by uploading an electronic questionnaire and distributing the questionnaire link to the members of the study sample in the study location, as the researcher was satisfied with this number that was filled out through the link distributed to the study sample, and the responses of this sample are considered valid for statistical analysis.

Specification of the Model

To achieve the objectives of this study and collect relevant information, the researcher used a questionnaire designed based on the study's questions and hypotheses, and drawing on a set of

previous studies. Primary data was collected through a questionnaire developed as the primary tool for this study. A three-point Likert scale was used. For analysis purposes, the Statistical Package for the Social Sciences (SPSS) was used. The questionnaire included two parts:

Part One: Demographic Variables of the Study Sample: This part presents the characteristics of the study sample members in terms of the following demographic variables: (gender, age, educational level, and occupation).

Part Two: Measuring the Role of Innovation in Stimulating Economic Growth in the Kingdom of Saudi Arabia. This section was divided into three axes according to the study questions and their objectives:

Axis One: Measuring the Level of Impact of Innovation on Raising the Level of Economic Growth in the Kingdom of Saudi Arabia from the perspective of society. The study instrument included (14) items to be measured.

Axis Two: Measuring the Defining of the Most Important Areas of Innovation that Saudi society believes impact economic growth. This section included (11) items to be measured.

Axis Three: Identifying the Most Important Challenges Facing the Implementation of Innovation in the Kingdom of Saudi Arabia. This section included (11) items to be measured.

The following figure (1) refers to the independent study model and variables:

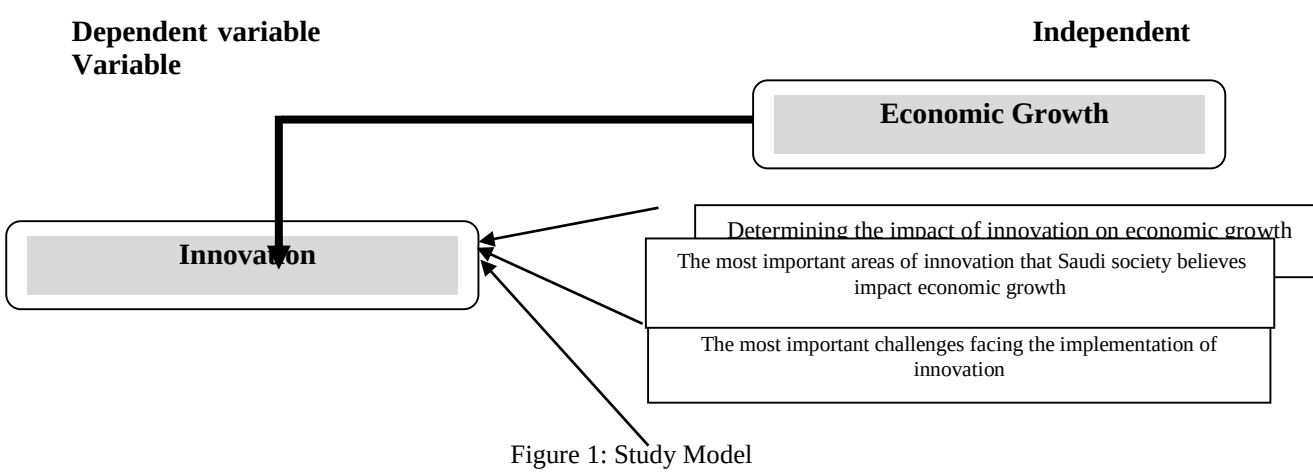

Figure 1: Study Model

Stability of the Study Tool:

To ensure the validity of the study tool's reliability, it was applied twice with a one-week interval on a pilot sample consisting of (10%) of the sample, who were selected from outside the original sample. The internal consistency test, Cronbach's alpha, was used to measure the consistency of the respondents' answers to all questions on the scale, as shown in Table (1).

Number	*Paragraph*	*Cronbach's alpha*	*Number of phrases*
1	Determining the impact of innovation	*.702*	*12*

	on economic growth		
2	The most important areas of innovation that Saudi society believes impact economic growth	*.839*	*11*
3	The most important challenges facing the implementation of innovation	*.812*	*11*

Table (1): Stability of the Study Tool

Source: Statistical Analysis Output

Based on the information provided in Table (1), it is clear that the researcher verified the reliability of the study tool using Cronbach's alpha internal consistency test. The table shows that Cronbach's alpha coefficient values for all questionnaire axes were high, indicating a high degree of reliability. For example, the Cronbach's alpha coefficient for the axis "Determining the level of impact of innovation on raising the level of economic growth" was 2.702, a statistically acceptable value that indicates good internal consistency for this axis. For the axis "The most important areas of innovation that Saudi society believes impact economic growth," the Cronbach's alpha coefficient was 2.839, a high value that indicates a high degree of reliability for this axis. Similarly, the Cronbach's alpha coefficient for the axis "The most important challenges facing the implementation of innovation" was 2.812, which is also a high value that confirms the reliability of this axis.

Empirical Results and Discussion

To answer the study's questions, the researcher used statistical processing using the Statistical Package for Social Sciences (SPSS), which will display the following results:

1. Frequencies and percentages of personal and occupational variables for the study sample members in the study location.

2. Means and standard deviations of the study sample members' responses, representing the independent and dependent study variables.

3. Linear regression analysis test.

This section includes the results of the study, which aimed to identify the impact of innovation on economic growth from the perspective of Saudi society. The results were presented based on the study's established questions.

First: Results related to answering the first question: What is the level of impact of innovation on raising the level of economic growth in the Kingdom of Saudi Arabia from the perspective of society? To answer this question, all arithmetic means and deviations were calculated for the axis, as well as for each paragraph of the axis individually, as shown in Table (3).

Number	*Paragraph*	*Arithmetic mean*	*Standard deviation*	*Level*
4	I believe that innovation plays an important role in stimulating economic growth in the Kingdom of Saudi Arabia.	*2.8182*	*.54742*	High
2	I believe that there is an appropriate	*2.6364*	*.72937*	High

	environment to support innovation in the Kingdom of Saudi Arabia.			
1	I believe that innovation contributes to creating new job opportunities in the Kingdom of Saudi Arabia.	*2.8909*	*.41601*	High
1	I believe that innovation helps improve the standard of living in the Kingdom of Saudi Arabia.	*2.8727*	*.33635*	High
5	I believe that innovation contributes to diversifying the Saudi economy.	*2.9455*	*.22918*	High
1	I believe that innovation helps increase the Kingdom of Saudi Arabia's ability to compete in the global market.	*2.9091*	*.29013*	High
1	I believe that innovation improves the quality of products and services in the Kingdom of Saudi Arabia.	*2.9273*	*.26208*	High
1	I believe that innovation contributes to attracting foreign investment to the Kingdom of Saudi Arabia.	*2.7455*	*.64458*	High
9	I believe that innovation helps improve the efficiency of the public sector in the Kingdom of Saudi Arabia.	*2.8000*	*.40369*	High
40	I believe that innovation contributes to improving the level of healthcare in the Kingdom of Saudi Arabia.	*2.9091*	*.29013*	High
44	I believe that innovation contributes to achieving the goals of the Kingdom of Saudi Arabia's Vision 2032.	*2.9818*	*.13484*	High
42	I believe that innovation contributes to building a better future for the Kingdom of Saudi Arabia.	*2.99*	*.0.01*	High
Total Value		***2.85***	***0.32***	High

Table (2): The Level of Impact of Innovation on Raising the Level of Economic Growth in the Kingdom of Saudi Arabia from the Point of View of Society

Source: Statistical Analysis Output

Based on the results presented in Table (2), it is clear that the total arithmetic means for the axis "Determining the level of innovation's impact on raising the level of economic growth" was 2.85 with a standard deviation of 0.32, a value that falls within the "high" category on the study's scale. This indicates that the study sample from Saudi society believes that innovation has a significant impact on raising the level of economic growth in the Kingdom of Saudi Arabia. All items within this axis were rated "high," confirming this overall result. For example, the arithmetic means for the item "I believe that innovation contributes to building a better future for the Kingdom of Saudi Arabia" was 2.99 with a standard deviation of 0.01, the highest mean in this axis, indicating that Saudi society believes that innovation plays a significant role in building a better future for the Kingdom. Similarly, the arithmetic means for the item "I believe

that innovation contributes to achieving the goals of the Kingdom of Saudi Arabia's Vision 2030" was 2.98 with a standard deviation of 0.13, also one of the highest averages, confirming society's awareness of the role of innovation in achieving the goals of this ambitious economic vision. These results reflect Saudi society's awareness of the importance of innovation and its significant role in stimulating economic growth and improving various aspects of economic and social life in the Kingdom. This provides a suitable basis for developing policies and programs that support innovation at the national level.

Second: Results related to answering the second question: What are the most important areas of innovation that Saudi society believes affect economic growth? To answer this question, the arithmetic means, and standard deviations were calculated for the axis as a whole, as well as for each paragraph in the axis separately, and the table below illustrates this.

Number	*Paragraph*	*Arithmetic mean*	*Standard deviation*	*Level*
1	I believe that financial technology (Fintech) will play a significant role in improving financial services.	*2.3*	*.58*	Medium
4	I believe that health technology (Healthtech) will revolutionize the healthcare sector.	*2.65*	*.60*	High
3	I believe that agricultural technology (Agritech) will contribute to increasing agricultural productivity.	*2.5*	*.480*	High
2	I believe that digital education will become an essential tool in future education.	*2.88*	*.32*	High
5	I believe that artificial intelligence will significantly change our lives in various fields.	*2.88*	*.37*	High
1	I believe that the use of robotics will contribute to improving efficiency in various sectors.	*2.4*	*.62*	High
7	I believe that biotechnology will open new horizons in the fields of medicine and healthcare.	*2.2*	*.40*	Medium
8	I believe that virtual reality (VR) and augmented reality (AR) will become an integral part of our lives.	*2.90*	*.30*	High
1	I believe that smart cities will contribute to improving the quality of life in cities.	*2.7*	*.37*	High
12	I believe that developing innovative technological solutions to enhance the tourism and hospitality sectors is essential.	*2.85*	*.40*	High
44	I believe that creating new and effective entertainment content will contribute to improving our quality of life.	*2.23*	*.43*	Medium

Table (3): The Most Important Areas of Innovation

Source: Statistical Analysis Output

The results in Table (3), which address the second question regarding the most important areas of innovation that Saudi society believes impact economic growth, show that the arithmetic means for most items fall into the "high" category, indicating that Saudi society believes these innovative areas have a significant impact on economic growth. For example, the items "I believe that digital education will become an essential tool in future education" and "I believe that artificial intelligence will significantly change our lives in various fields" each had an arithmetic mean of 2.88, which is among the highest averages in this axis. This indicates Saudi society's awareness of the importance of modern technologies such as digital education and artificial intelligence and their potential impact on economic growth.

Similarly, the item "I believe that health technology (Healthtech) will revolutionize the healthcare sector" had a mean of 2.65, indicating a "high" score, indicating that Saudi society recognizes the importance of innovations in health technology and their potential impact on healthcare development. On the other hand, some areas received a "medium" score, such as "I believe that financial technology (Fintech) will play an important role in improving financial services" with a mean of 2.3, and "I believe that biotechnology will open new horizons in medicine and healthcare" with a mean of 2.2. This may indicate that Saudi society still values the impact of these sectors on economic growth at an average level. Overall, these results demonstrate that Saudi society recognizes the importance of various areas of innovation and their role in stimulating economic growth. This could contribute to strengthening national efforts to develop and implement innovation across various vital sectors.

Third: Results related to answering the third question: What are the challenges facing the application of innovation in the Kingdom of Saudi Arabia?

Number	*Paragraph*	*Arithmetic mean*	*Standard deviation*	*Level*
4	I believe that financial technology (Fintech) will play a significant role in improving financial services.	*2.65*	*.7506*	High
2	I believe that health technology (Healthtech) will revolutionize the healthcare sector.	*2.60*	*.6265*	High
1	I believe that agricultural technology (Agritech) will contribute to increasing agricultural productivity.	*2.69*	*.4663*	High
1	I believe that digital education will become an essential tool in future education.	*2.47*	*.8131*	High
5	I believe that artificial intelligence will significantly change our lives in various fields.	*2.50*	*.8579*	High
1	I believe that the use of robotics will contribute to improving efficiency in various sectors.	*2.25*	*.229*	Medium
1	I believe that biotechnology will open new horizons in the fields of medicine and healthcare.	*2.30*	*.8299*	Medium

1	I believe that virtual reality (VR) and augmented reality (AR) will become an integral part of our lives.	*2.98*	*.1348*	High
9	I believe that smart cities will contribute to improving the quality of life in cities.	*2.25*	*.8123*	Medium
40	I believe that developing innovative technological solutions to enhance the tourism and hospitality sectors is essential.	*2.69*	*.4663*	High
44	I believe that creating new and effective entertainment content will contribute to improving our quality of life.	*2.2*	*.8111*	Medium

Table (4): Challenges Facing the Application of Innovation in the Kingdom of Saudi Arabia

Source: Statistical Analysis Output

Based on the results shown in Table (4), which relate to answering the third question about the challenges facing the application of innovation in the Kingdom of Saudi Arabia, Saudi society sees that there is a group of fundamental challenges in this field.

Most of the items had arithmetic means within the "high" category, indicating that Saudi society is clearly aware of these challenges. For example, the item "I believe that fear of failure hinders innovative initiatives" had the highest arithmetic mean in this axis, at 2.98 with a standard deviation of 0.13. This confirms that fear of failure is one of the most prominent obstacles facing the implementation of innovation in the Kingdom, from the community's perspective. Similarly, the item "I believe that the lack of an appropriate regulatory environment to support innovation constitutes an obstacle to its implementation" had a mean of 2.69 and a standard deviation of 0.46, indicating that society views the absence of an appropriate regulatory environment as another challenge in this regard. Regarding other challenges, the items "I believe that the lack of a clear national innovation strategy causes the dispersion of efforts" and "I believe that the weak culture of innovation in Saudi society hinders the progress of innovation" had means of 2.69 and 2.60, respectively, emphasizing the importance of developing a national innovation strategy and fostering a culture of innovation in society.

Overall, these results demonstrate that Saudi society is aware of the multiple challenges facing the implementation of innovation in the Kingdom, including funding, human resources, infrastructure, the regulatory environment, and community culture. This awareness may help develop appropriate solutions to overcome these challenges and strengthen the innovation ecosystem at the national level.

Hypothesis Testing:

Based on this, the study addressed three sub-hypotheses through which the researchers attempted to identify the impact of innovation on economic growth from the sample's perspective. These are as follows:

H_1: Sample members believe that innovation has a positive impact on raising the level of economic growth in the Kingdom of Saudi Arabia, and that this impact varies according to the different fields of innovation.

H_2 : There are statistically significant differences between the sample members' responses regarding the selection of the fields of innovation that have the greatest impact on economic

growth, due to the variable of educational level.

H_3: There are no statistically significant differences between the sample members' responses regarding some of the challenges in implementing innovation, due to the variable of gender.

Analysis of hypotheses results

H_1: Sample members believe that innovation has a positive impact on raising the level of economic growth in the Kingdom of Saudi Arabia, and that this impact varies according to the different fields of innovation.

To test the hypothesis, the study used a One-Sample Test, and Table (5) shows the test results as follows:

One-Sample T-test						
First sub- hypothesis	*Innovation has a positive impact on raising the level of economic growth in the Kingdom of Saudi Arabia*					
	T	*Df*	*Sig. (2-tailed)*	*Mean Difference*	*95% Confidence Interval of the Difference*	
					Lower	*Upper*
	140.852	54	.000	2.86970	2.8288	2.9105

Table (5): First Sub-Hypothesis

source: The correlation is statistically significant at a significance level of $\alpha = 0.05$

Based on the results of the first hypothesis test shown in Table (5), it is clear that the study used the One Test Sample test to test this hypothesis, which states: "Sample members believe that innovation has a positive impact on raising the level of economic growth in the Kingdom of Saudi Arabia." The test results showed that the calculated t-value was 140.852 with df = 54 degrees of freedom and a significance level of sig = 0.000, which is lower than the significance level adopted in the study ($\alpha = 0.05$). Furthermore, the difference between the mean and the hypothetical value (mean difference) was 2.87, which is a positive value. These results indicate that there is sufficient statistical evidence to accept the first hypothesis, i.e., the sample members believe that innovation has a positive impact on raising the level of economic growth in the Kingdom of Saudi Arabia. Looking at the lower and upper limits of the 95% confidence interval related to this hypothesis, we find that they fall between 2.83 and 2.91, which are also positive values, confirming the statistical significance of this result. This is consistent with the previous results in other parts of the study, which showed that Saudi society recognizes the importance of innovation and its positive impact on economic growth in the Kingdom. Therefore, the results of testing the first hypothesis reinforce and confirm these conclusions. Accepting this hypothesis constitutes an important basis for developing supportive policies and programs. To innovate at the national level, thus contributing to stimulating economic growth in the Kingdom of Saudi Arabia.Table (7), indicates that the value of the correlation factor between the independent variable and the dependent variable was (0.802), as shown, and the value of the determination factor (R^2) was (0.644), so the independent variables were able to be explained (64.4%) by changes in the dependent variable**.**

H_2: There are statistically significant differences between the answers of the sample members regarding the selection of the areas of innovation that have the most impact on economic growth, attributed to the educational level variable. Table (6) shows the test results as follows:

variable	*(B)*	*Std Error*	*(Beta)*		Sig.
fixed	2.147	1.019		2.107	.040
The areas of innovation that most impact economic growth	.232	.382	.083	.607	.546
Dependent variable: educational level					

Table (6): Testing the Results of the Second Hypothesis

Source: Statistical Analysis Output

Based on the results of testing the second hypothesis presented in Table (6), which states that "there are statistically significant differences between the answers of the sample members regarding the selection of the fields of innovation that have the greatest impact on economic growth, attributed to the educational level variable," the following is clear: The study tested this hypothesis using simple linear regression analysis, where the educational level was considered the dependent variable, while the fields of innovation that have the greatest impact on economic growth were the independent variable. The results of the analysis showed that the value of the unstandardized regression coefficient (B) reached 2.232, with a standard error of 0.382. The value of the standard coefficient (β) reached 0.083, and the value of the t-test = 0.607 with a significance level of 0.546. These results indicate that there are no statistically significant differences between the answers of the sample members regarding the selection of the fields of innovation that have the greatest impact on economic growth, attributed to the educational level variable. The significance level value (Sig. = 0.546) is greater than the significance level adopted in the study ($\alpha = 0.05$), which means there are no statistically significant differences. This result indicates that Saudi society, with its various educational levels, agrees on the importance of innovation fields and their impact on economic growth in the Kingdom. This may reflect the unity of vision and perception within Saudi society on this issue, regardless of educational level. Therefore, the second hypothesis cannot be accepted. The results indicate that there are no statistically significant differences between the sample members' responses regarding the selection of innovative fields with the greatest impact on economic growth, attributable to the educational level variable. This result may assist decision-makers in developing and implementing innovative policies and programs targeted at all segments of society, regardless of their educational level.

H_3: The third hypothesis states the following: There are no statistically significant differences between the sample members, responses to some of the challenges in implementing innovation, attributable to the gender variable. Table (7) shows the test results as follows:

variable	*(B)*	*Std Error*	*(Beta)*		Sig.
fixed	.896	.395		2.266	.028

The areas of innovation that most impact economic growth	.310	.149	.275	2.081	.042
Dependent variable: Gender					

Table (7): Testing the Results of the Third Hypothesis

Based on the results shown in Table (7) related to testing the third hypothesis, which states "There are no statistically significant differences between the sample members' responses to some challenges in implementing innovation, attributed to the gender variable," the following is clear: The study tested this hypothesis using simple linear regression analysis, where gender was considered the dependent variable, and the challenges in implementing innovation as the independent variable. The results of the analysis showed that the value of the unstandardized regression coefficient (B) reached 0.310 with a standard error of Std Error=0.149. The value of the standard coefficient reached 0.275 (β), and the value of the t-test = 2.081 with a significance level of Sig. = 0.042. These results indicate the existence of statistically significant differences between the sample members' responses to some challenges in implementing innovation, attributed to the gender variable. The significance level value of Sig. = 0.042 is less than the significance level adopted in the study ($\alpha = 0.05$), which means rejecting the null hypothesis and accepting the alternative hypothesis.

Conclusion

Based on the results presented in the previous sections, the following was revealed:

Regarding the first question about the level of impact of innovation on raising the level of economic growth in the Kingdom of Saudi Arabia, the results showed that the study sample from Saudi society viewed innovation as having a significant impact on raising the level of economic growth. The overall arithmetic mean for this axis was 4.85 with a standard deviation of 2.34, a value that falls within the "high" category on the study's scale. All items within this axis received a "high" rating, confirming this overall result.

Regarding the second question, about the most important areas of innovation that Saudi society believes impact economic growth, the results showed that Saudi society recognizes the importance of various areas of innovation and their role in stimulating economic growth. Most of the arithmetic means for the items in this axis were "high," with a focus on the importance of modern technologies such as digital education, artificial intelligence, and health technology.

Regarding the third question, about the challenges facing the implementation of innovation in the Kingdom of Saudi Arabia, the results showed that Saudi society is aware of a set of fundamental challenges in this area, including fear of failure, the absence of an appropriate regulatory environment, a weak culture of innovation in society, and the lack of a clear national innovation strategy. Most of the arithmetic means for these challenges were "high."

Regarding the first hypothesis, which stated, "Sample members believe that innovation has a positive impact on raising the level of economic growth in the Kingdom of Saudi Arabia," the results of the One Sample t-Test showed that there is sufficient statistical evidence to accept this hypothesis. The calculated t-value was 122.854, with a significance level of 2.222, and the difference between the mean and the hypothetical value was positive, with a value of 4.87. These results confirm that the study sample members from Saudi society believe that innovation has a positive impact on raising the level of economic growth in the Kingdom.

As for the second hypothesis, which stated, "There are statistically significant differences between the sample members' responses regarding the selection of the areas of innovation that have the greatest impact on economic growth, attributable to the variable of educational level," the results of the simple linear regression analysis showed no statistically significant differences. The significance level value was 2.521, which is greater than the significance level adopted in the study. This indicates that Saudi society, at all educational levels, agrees on the importance of areas of innovation and their impact on economic growth.

As for the third hypothesis, which stated, "There are no statistically significant differences between the sample members' responses to some challenges in implementing innovation, attributable to the gender variable," the results of the simple linear regression analysis revealed statistically significant differences. The significance level value reached 2.224, which is lower than the significance level adopted in the study. This indicates that there are differences between the responses of males and females in the sample regarding the challenges facing the implementation of innovation in the Kingdom.

Recommendations and Suggestions

Based on the findings of the research study, the following recommendations and future proposals can be proposed:

First, given Saudi society's awareness of the importance of innovation and its role in stimulating economic growth, policymakers and decision-makers in the Kingdom should enhance national efforts to support and enhance the innovation ecosystem. This can be achieved by developing a comprehensive national innovation strategy that defines the objectives, priorities, and mechanisms needed to develop the infrastructure, legislation, and financing needed to support innovation. Second, based on Saudi society's awareness of the challenges facing the implementation of innovation in the Kingdom, relevant authorities should work to systematically address these challenges. This includes securing the necessary funding for innovation projects, enhancing digital infrastructure, developing an appropriate regulatory environment to support innovation, and encouraging a culture of risk-taking and experimentation among innovators. Third, relevant authorities should focus on developing qualified human resources in the field of innovation through continuous training and development programs, in addition to enhancing coordination and cooperation between the public and private sectors in this field.

Fourth, given the gender differences in perceptions of the challenges facing innovation implementation, policymakers should consider these differences when designing and implementing innovation programs and initiatives to ensure they meet the needs of various segments of society.

Fifth, relevant authorities should work to promote a culture of innovation in Saudi society through awareness and education campaigns targeting various groups and segments, linking innovation to vital and economic issues of importance to citizens. Sixth, given the importance of various areas of innovation in stimulating economic growth, relevant authorities should prioritize their focus on these areas and develop supportive programs and initiatives that align with the Kingdom's needs and development goals. Seventh, researchers should conduct further future studies to further understand the role of innovation in promoting economic growth in the Kingdom and analyze the factors influencing the innovation system from various aspects, contributing to the development of supportive policies and programs.

Acknowledgments: The authors are thankful to the Deanship of Graduate Studies and Scientific

Research at University of Bisha for supporting this work through the Fast-Track Research Support Program.

Conflicts of Interest: The authors declare no conflict of interest.

References

Akasha. (2023) Innovation strategies in sustainable social entrepreneurship for emerging companies in the textile printing and fashion industries. Journal of Architecture, Arts, and Humanities, (9)8, pp. 1088-1105.

Al-Marzouqi, (2022) The impact of technological development on economic growth: The case of the Kingdom of Saudi Arabia. Published on March 20, 2022.

Bouchenguir, and Qattaf. (2013) The role and importance of technological innovation in creating a competitive advantage in the industrial sector.

Mansour Al-Rufaidah, Saad Saad Omair Al-Qahtani, & Saraa. (2024) The role of King Khalid University in stimulating radical innovation in e-learning to achieve sustainability from the perspective of faculty members. Journal of the Faculty of Education (Assiut University), (2)40, pp. 113-69.

Rokia, Rahmouni, and Bakhoush. (2021) Motivation as a mechanism for activating innovation in institutions. Case Study: Al-Salam Electronics (LIGHT-STAR dissertation), Doctoral Program, Arab Tebessi University, Tebessa.

Saeed, B. (2013) The Role of Technology and Innovation in Economic Growth: A Case Study of South Korea. Ibn Khaldoun University, Tiaret.

Sarar, Abdul Aziz (2017) The Emirati Experience in Innovation.

Slitine, S. (2021) The Role of Strategic Analysis in Implementing a Frugal Innovation Strategy in Syrian Industrial Organizations: A Case Study: Joud Company for the Manufacture of Home Appliances. (Tishreen University Journal - Economic and Legal Sciences Series, (2), 43).

Abdel-Lawi, Al-Tayeb, Mahroumi, Lotfi, and Abdel-Lawi, Aqaba (2020) The Impact of Innovation on Economic Development in Arab Countries: A Case Study of Selected Arab Countries for the Period 2007-2016. Journal of Economic Studies, (1),24, 28-3.

Ademola, A. S., & Badiru, A. (2016). The impact of unemployment and inflation on economic growth in Nigeria (1981-2014). International Journal of Applied Research in Economics and Business, 4(1), 47-55.

Adrangi, B. (2022). Indicators of sustainable development and their relationship to GDP: Evidence from emerging economies. Sustainability, 14(2), 658. [Google Scholar] [CrossRef]

Aqoun, Abdul Qader. (2020) Contributing to its investment in enhancing knowledge.

Boldiano, F. T., & Constantinescu, L. (2005). The main determinants affecting economic growth. Economic Sciences, 25(3), 329-338.

Borgnäs, K. (2017). Pointers as “circular argument construction”? Input-output analysis of the changing structure of five country classifications of environmental sustainability. Environment and Development Economics, 22(3), 329-338.

Bouhajeb, M., Mefteh, H., & Ben Ammar, R. (2018). Higher education and economic growth: the importance of innovation. Atlantic Review of Economics (ARoEc), 1.(2)

CAINELLI, G., EVANGELISTA, R. & SAVONA, M. 2004. The impact of innovation on economic performance in services. The service industries journal, 24, 116-130.

Department for International Development (DFID). (2008). Growth: Building jobs and prosperity in developing countries. London: Author.

FERDOWSI, M. A. 2010. UNCTAD–United Nations conference on trade and development. A Concise Encyclopedia of the United Nations. Brill Nijhoff.

GERGURI, S. & RAMADANI, V. 2010. The impact of innovation into economic growth.
Jing'an, M. L. (2003). Advanced macroeconomic theory (11th ed.). Delhi: Vrinda Publication Ltd.
John, M. A., & Dalhatu, A. Y. (2018). The impact of unemployment on economic growth in Nigeria: Application of the self-distributed regression test (ARDL). Sumerians Journal of Business Management and Marketing, 3(2), 1-12. [Note: Include volume number and page range if available]
Kline, S. J., & Rosenberg, N. (2010). An overview of innovation. Studies on science and the innovation process: Selected works of Nathan Rosenberg, 173-203.
Lebel, P. (2008). The role of creative innovation in economic growth: Some international comparisons. Journal of Asian Economics, 19(4), 334-347.
Maradana, R. P., Pradhan, R. P., Dash, S., Gaurav, K., Jayakumar, M., & Chatterjee, D. (2017). Does innovation promote economic growth? Evidence from European countries. Journal of Innovation and Entrepreneurship, 6, 1-23.
Mitra, B., & Mukhopadhyay, K. (2012). Public spending on education, health care and economic growth in selected countries in Asia and the Pacific. Asia-Pacific Development Journal, 19(1), 19–48. [Google Scholar] [CrossRef].
Morcan, M., Caesar, S., & Seres, I. (2014). The impact of education spending on economic growth: The case of Turkey. Procedia - Social and Behavioral Sciences, 109, 925-930. [Google Scholar] [CrossRef]
OMAR, N. S. 2019. Innovation and economic performance in MENA region. Review of Economics and Political Science, 4, 158-175.
Pece, A. M., Simona, O. E. O., & Salisteanu, F. (2015). Innovation and economic growth: An empirical analysis for CEE countries. Procedia Economics and Finance, 26, 461-467
PSH Team. (July 3, 2023). Investing in Innovation and Technology as the Foundation for Achieving the Vision of Saudi Arabia 2030. Retrieved from https://psh-me.com/
Tomba, O. R., Kiss, H. E., Mayo, M., Sarkady Nagy, E., Temesi, A., & Lakner, Z. (2022). Improving a sustainable diet that targets food water footprint reduction: A country-specific study. Sustainability, 14(11), 7042. [Google Scholar] [CrossRef].