

The Impact of Innovation and E-Commerce Platforms in Entrepreneurial Growth: Projects from Saudi Arabia

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Abstract

The study aimed to demonstrate the role of innovation and e-commerce platforms in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia. This was achieved by analyzing the opinions of 120 entrepreneurs participating in the study using a questionnaire. A quantitative approach was adopted for the study, and data analysis was conducted using the statistical analysis program SPSS. The study included three axes: innovation, e-commerce, and the challenges associated with adopting these platforms. The results of the analysis showed that the innovation and e-commerce axis received a "very high" rating, indicating a high awareness among entrepreneurs of the importance of adopting modern technologies to improve product quality, increase sales, and reach new customer segments. The results of the challenges axis revealed that the most prominent obstacles were weak technical skills, limited financial resources, and some organizational barriers. However, the items in this axis had a "medium" impact, indicating the possibility of overcoming challenges with institutional support and ongoing training. The study indicates that innovation and e-commerce are key drivers of entrepreneurial growth and are also in line with Saudi Arabia's drive toward digital transformation and enhancing the entrepreneurial environment in the country.

Keywords: Innovation, E – Commerce, Economic Growth, Entrepreneurship, Digital Transformation, Entrepreneurial Projects, Saudi Arabia's Vision's 2030.

1. Introduction

In the modern era of globalization and rapid technological improvement, the importance of technology in promoting innovation and the expansion of entrepreneurial businesses has become more widely recognized. Entrepreneurship refers to a person's ability to identify possible business opportunities, come up with creative ideas, and utilize resources wisely to make money. Significant changes in entrepreneurship have resulted from the introduction of technology, including adjustments to company operations, the provision of goods and services, and contacts with clients and business partners (Hasan & Shaturaev, 2023).

The advent of a wide range of innovative and potent digital technologies, platforms, and infrastructures during the past ten or so years has had a profound impact on innovation and entrepreneurship, with wide-ranging organizational and policy ramifications. The term "innovation" has become widely used in modern business media to describe the disruptive or transformative effects of digital technology on companies (Almani, 2021).

Innovation has frequently been emphasized in recent years as the solution to handling difficult societal issues. Innovation attempts in a variety of ways have grown more widespread. For instance, funding for the creation and testing of innovative technical solutions in fields like ICT, mobility, and sustainable building, as well as socially focused solutions created by and for the user, including more equitable public spaces and services for sustainable lives. Working with ideas like test beds and "living labs," utilizing design thinking and an experimental technique to create new solutions and innovations, has grown in popularity (Kartika, 2024).

Innovation platforms come in a variety of forms, serve several purposes, and are essentially integrated into a municipality's regular operations. Broad synergy between urban development actors and formalized collaboration between research and development stakeholders are the goals of the Innovation Platforms. Public and corporate organizations, academic institutions, non-profits, and their users, clients, and the general public are among the actors involved. The platform should be founded on a shared vision since the topics discussed and the activities done should be based on a broad viewpoint on sustainable urban concerns (Sutrisno, Kuraesin, Siminto, & Irawansyah, 2023).

The majority of research on e-commerce in Saudi Arabia has been on government programs and policies that encourage entrepreneurship and e-commerce. Through better ICT infrastructure that would support dependable and secure payment systems and effective delivery channels to customers, this process necessitates government interventions to define strategic goals and programs aimed at increasing e-commerce to be capable of supporting services. Additional government initiatives include training programs, start-up fund loans, and institutions that provide financial and educational assistance (Sangeeta, 2020).

Numerous aspects of entrepreneurial enterprise have been profoundly impacted by the emergence of technological platforms. The emergence of electronic platforms has fundamentally changed how people interact, communicate, and conduct business. The spread of technology platforms has made it easier to access information, prospective customers, and

global markets. Additionally, the development of technological platforms has improved operational efficacy, mechanized routine tasks, and accelerated commercial operations (Hasan & Shaturaev, 2023).

Research Problem and Questions

E-commerce platforms and innovation are recognized as key success factors in today's business environment, especially for startups. Startups need to constantly innovate to stand out from the competition, gain market share, and achieve sustainable growth in an era marked by rapid technical advancements and intense market competition. Despite its acknowledged significance, little is known about the precise processes by which innovation affects startup success (Almani, 2021).

As scholars and entrepreneurs work to determine the elements that lead to the successful application and administration of innovation in start-up businesses, this ignorance presents both theoretical and practical difficulties. In real life, entrepreneurs must not only come up with creative ideas but also successfully incorporate them into their operations and business plans. It is theoretically necessary to create strong frameworks that can describe the various ways that innovation might result in startup success (Hasan & Shaturaev, 2023).

As well, even though Saudi Arabia has a sizable market, online business, especially e-commerce, is still in its infancy. Preliminary plans to scale up developmental implementations, such as information and communication technology (ICT) development and infrastructure to support complex e-commerce platforms, are part of the Saudi Arabian government's patchwork approach to solving the issue. To create a framework that would protect online buyers and sellers, new rules and legislation are being proposed. Other successful government initiatives are thought to offer trustworthy, helpful, and secure internet payment methods (Almani, 2021).

Accordingly, given the popularity of innovation and due to the importance of e-commerce platforms in promoting Saudi entrepreneurship, this research aims to fill the gap. Accordingly, the research seeks to find the answer to the main question: **“What is the role of innovation and e-commerce platforms in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia?”**

And the main question is divided into the following sub-questions:

- 1) What is the role of innovation platforms in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia?
- 2) What is the role of e-commerce platforms in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia?
- 3) What are the challenges of using innovation platforms in Saudi entrepreneurship development?

1.1 Aim and Objectives

The research seeks “**to investigate the role of innovation and e-commerce platforms in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia.**”

And the main goal is divided into the following sub-objectives:

- Investigating the role of innovation platforms in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia.
- Highlighting the role of e-commerce platforms in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia.
- Highlighting the challenges of using innovation platforms in Saudi entrepreneurship development.

1.2 Theoretical and Practical significance

- This research aims to enrich the information base related to Arab libraries in general and Saudi libraries in particular.
- Since this research provides a means of collecting data that has been verified for validity and reliability, it is hoped that researchers in this field will benefit from it.
- Given the theoretical literature and previous research it provides, it is expected that this research will serve as a starting point for additional research in administrative and economic fields.
- The importance of this research lies in its demonstration of e-commerce and innovation platforms among Saudi entrepreneurs.
- Few studies have been conducted to determine the role of innovation and e-commerce platforms in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia, so this research aims to fill this gap.
- The use of innovation and e-commerce platforms by Saudi company managers.
- This research will be beneficial to Saudi companies and the Ministry of Economy, informing them of how to innovate and use e-commerce platforms in their companies, thus benefiting the Kingdom.
- The importance of this research also lies in its shedding light on entrepreneurship.

2. Literature Review

2.1 Innovation and E-commerce Platforms

In the context of startups, innovation includes a wide range of endeavors, ranging from business model and market innovations to product and process innovations. Product innovation is the process of creating new or greatly enhanced products or services to satisfy changing consumer demands or even open up completely untapped markets. Product innovation is a crucial difference because startups sometimes enter competitive marketplaces

with limited resources. Contrarily, process innovation concentrates on introducing novel or markedly enhanced production or delivery techniques. The viability and scalability of businesses depend heavily on these innovations' capacity to increase productivity, cut expenses, and simplify operations (Löf, 2020).

According to Chirchietti (2017), since it entails rethinking how value is created, given, and captured, often upending established industry practices, business model innovation is a crucial area for entrepreneurs. Startups can differentiate themselves from more established businesses by rethinking their business concepts. Companies such as Uber and Airbnb, for instance, have revolutionized their sectors by launching innovative business strategies that use technology to produce hitherto unseen value propositions.

Numerous studies have looked into particular forms of innovation and how they affect the success of startups. For businesses looking to make a name for themselves in cutthroat marketplaces, product innovation frequently results in a direct rise in market share and customer satisfaction. According to their research, companies that prioritize product innovation can improve customer satisfaction and market responsiveness, thereby fortifying their position in the market. Process innovation is also associated with cost reduction and operational efficiency, both of which are critical to the long-term viability of businesses with little funding (Kartika, 2024).

Startups may increase productivity, cut waste, and optimize their operations with the help of process improvements. As a result, companies are better equipped to manage their resources and maintain growth over time. By allowing them to stand out in the market, business model innovation gives startups a distinct competitive edge. Startups can target unexplored market sectors, develop new value propositions, and challenge established industry conventions by introducing novel business models. Because it can alter market dynamics and establish new benchmarks within industries, this kind of innovation is especially potent (Sutrisno, Kuraesin, Siminto, & Irawansyah, 2023).

According to Almani (2021), startups' capacity for creativity is significantly shaped by their external environment. Important external elements that either support or impede innovation include market dynamics, legal frameworks, and financial accessibility. Customer preferences and competitive pressures are two examples of market dynamics that drive the need for ongoing innovation. Businesses are forced to innovate to preserve their competitive edge due to the fierce rivalry in a certain industry. To stay ahead of the competition and adjust to shifting consumer demands, startups need to constantly innovate. Depending on the regulations' nature and level of support for innovative activity, regulatory frameworks can either promote or impede innovation.

By offering precise rules and rewards for creative endeavors, supportive regulatory frameworks can promote innovation. On the other hand, by creating obstacles and raising the cost of compliance, stringent policies can stifle innovation. For entrepreneurs, startups with sufficient capital are in a better position to make innovative investments and commercialize their concepts. A variety of funding sources, such as government grants, angel investors, and venture capital, are available and are all essential to the innovation ecosystem (Sangeeta,

2020).

Innovation platforms can be an essential component of a municipality's organizational structure and serve a variety of purposes. These platforms aim to establish formal collaboration among research and development parties as well as broad synergies across urban development actors. Public entities, commercial businesses, academic institutions, non-profits, their clients, and the general public are all considered relevant actors. The platform should be founded on a common vision since the problems discussed and the work done should be based on a comprehensive viewpoint on sustainable urban development concerns (Hasan & Shaturaev, 2023).

An innovation platform acts as a gathering place for stakeholders, bringing them together to solve problems. According to this method, innovation platforms can be conceptualized as settings that increase capacity and deal with a range of problems that aren't usually handled by the current institutional framework for a variety of reasons. These platforms support frameworks that allow for the "addressing" and handling of particular issues or difficulties. The platform's potential to handle problems that, for a variety of reasons, no one is currently addressing strengthens the formal hierarchical organization's capacity (Nambisan, Wright, & Feldman, 2019).

2.2 E-commerce Platforms

E-commerce platforms are now essential resources for business owners with little funding who want to enter the market. These platforms provide several services that make starting and operating a business easier, like payment processing, storefront design, and customer management tools. E-commerce platforms democratize access to entrepreneurial opportunities by reducing entry barriers, enabling people from a variety of backgrounds to engage in the digital economy (Islam & Bhuiyan, 2022).

The potential of e-commerce platforms to ease market access by lowering the initial cost needed to launch a firm is one of its main advantages. Because platforms like Shopify, Amazon, and Etsy offer pre-built infrastructure, there is no need for a sizable upfront capital investment. For business owners who might have creative ideas but lack the funds to spend in real storefronts or intensive marketing campaigns, this is very beneficial. Additionally, a variety of marketing tools are available on e-commerce platforms to assist business owners in successfully reaching and interacting with their target consumers (Alfawzan, Tamvada, & Pereira, 2024).

Online browsing and sales are greatly influenced by elements like social network integration, pay-per-click advertising, and search engine optimization (SEO). By leveling the playing field and offering affordable means of promoting their goods and services, these marketing tools help entrepreneurs compete with bigger, more established companies. E-commerce platforms frequently include training materials like webinars, tutorials, and community forums in addition to marketing assistance, assisting business owners in acquiring the abilities necessary to manage a profitable online enterprise. Innovation and adaptability are encouraged in this environment of constant learning, which is essential for maintaining a

competitive edge in the ever-changing digital market (Islam & Bhuiyan, 2022).

Another essential component of the e-commerce ecosystem is social commerce, which is the use of social media platforms to enable online transactions. Social support and social commerce constructions have a big impact on social commerce intentions. Using social media platforms can help new business owners increase revenue, develop communities, and improve consumer interaction. By combining social media with e-commerce features, business owners may reach a wider audience and increase their visibility by utilizing the large user bases of sites like Facebook, Instagram, and Pinterest (Almani, 2021).

Third-party vendors and e-commerce platforms can both gain from each other's market participation. Platforms benefit from new vendors' inventiveness and varied product offerings, which draw in more clients and boost platform loyalty. On the other hand, business owners profit from the platform's existing clientele and technological infrastructure, which enables them to expand into new areas and optimize their processes (Jiang & Qin, 2024). Entrepreneurial marketing methods are profoundly shaped by the adoption of e-commerce technology. Entrepreneurs can now optimize their sales funnels, tailor customer experiences, and apply data-driven marketing techniques thanks to technological advancements. Building relationships with customers and promoting long-term company growth require these skills (Islam & Bhuiyan, 2022).

2.3 The Role of Innovation Platforms in Accelerating the Growth of Entrepreneurial Projects in the Kingdom of Saudi Arabia

Innovation platforms and entrepreneurship have come together in unprecedented ways in the twenty-first century, setting nations up for revolutionary economic growth and social advancement. Rapid platform development has enormous potential for the growth of entrepreneurship, providing a plethora of chances to empower would-be business owners, enhance operational efficiency, and support general economic well-being. The exciting opportunities that innovation platforms present for the growth of entrepreneurship are examined in this article (Mseddi, 2019).

According to Chirchietti (2017), geographical boundaries have been dismantled by innovation, making it easier than ever for business owners to reach international markets. Online marketplaces, digital marketing, and e-commerce platforms enable business owners to present their goods and services to a large, worldwide customer base. Without requiring substantial physical infrastructure, small enterprises and startups can create a global presence, leveling the playing field and opening doors for global trade.

Entrepreneurship driven by innovation has greatly reduced entry barriers in several industries. Thanks to innovation platforms, everyone now has access to vital resources, including cash, distribution channels, and knowledge. For instance, cloud computing gives startups affordable access to storage and processing capacity, allowing them to compete with established businesses. Online learning environments and open-source software give business owners the means to hone their abilities and validate concepts, encouraging an innovative and entrepreneurial culture (Al-Ghamdi & Oreijah, 2021).

Innovative business concepts that defy established industry conventions have been made possible by innovation. Disruptive technologies are being used by entrepreneurs to develop completely new methods of providing customers with extra value. Subscription services, sharing economy concepts, and peer-to-peer platforms are changing industries and providing new chances for entrepreneurs. Entrepreneurs can develop disruptive solutions that alter markets and encourage innovation by utilizing technology breakthroughs (Hasan & Shaturaev, 2023).

Efficiency is the cornerstone of entrepreneurial success, and innovation improves operational processes in unprecedented ways. Automation, artificial intelligence, and data analytics optimize tasks, reduce errors, and enhance decision-making. Entrepreneurs can streamline supply chains, manage inventory, and personalize customer experiences more effectively, leading to improved cost structures and better resource allocation (Kraus, McDowell, Soriano, & García, 2021).

According to Lööf (2020), innovation platforms accelerate the product development cycle, enabling entrepreneurs to bring their ideas to market more quickly. Prototyping, 3D printing, and simulation tools facilitate iterative design processes, reducing the time to market for innovative products. Entrepreneurs can quickly test and refine their concepts, adapt to changing market demands, and stay ahead of the competition, fostering a culture of continuous innovation. It is anticipated that entrepreneurship driven by innovation would have a major social and environmental impact. Entrepreneurs are using technology to tackle urgent global issues like education, clean energy, and healthcare. In addition to creating economic value, social enterprises and sustainable business models that use technology-based solutions are promoting positive change.

2.4 The Role of E-commerce Platforms in Accelerating the Growth of Entrepreneurial Projects in the Kingdom of Saudi Arabia

Due to their expanding applications, e-commerce platforms have multiplied during the last 20 years. The productivity and significance of these applications in the e-business industry are growing quickly. The literature on e-commerce provides information on the most recent ideas related to the efficient running of e-business. Understanding the advantages matrix, the many e-commerce technology applications, and their pertinent consequences for company success, especially for business-to-consumer (B2C) companies, is crucial given the swift changes occurring in the business sector (Almani, 2021).

Reviews of the literature in the area of e-commerce are numerous. In Saudi Arabia, 90% of people have access to the internet. Additionally, according to statistics, up to 80% of people shop online. Following the adoption of information technology, the elements that advertising must have to promote e-commerce are seen as a crucial tool for increasing the efficacy of technology adoption (Jiang & Qin, 2024). One may claim that perceived trust is frequently and continuously influenced by country culture. Saudi Arabian consumers favor doing business with companies that have effective technological systems that improve the efficiency and speed of their service delivery (Aljalalma & Slof, 2022).

E-commerce has an impact on many different areas of the Saudi economy. For instance, over the previous two years, small and medium-sized businesses' (SMEs') earnings in the food, hospitality, and transportation industries have increased by almost 50%. Government income attributable to these sectors has increased by almost 60% during the same period. According to a study evaluating the use of e-commerce in the entertainment industry, the quick expansion of movie theaters and other entertainment venues in Saudi Arabia has been made possible by the accessibility of electronic payment systems, the simplicity of payments, and the superior customer service provided by SMEs in the industry (Jiang & Qin, 2024).

According to Aldhehayan, A., & Tamvada, J. P. (2023), social media, websites, and electronic payment methods like PayPal, credit cards, debit cards, and online bank transfers are important e-commerce platforms. According to a large number of evaluated research studies, e-commerce differs from traditional businesses in several ways, such as ease of use and the complexity of communication between users and firms. These components serve as the foundation for how e-commerce technology affects enterprises.

Customer happiness is, of course, a critical factor that determines whether a business succeeds or fails. Customers may buy with ease and communicate with the business efficiently thanks to an intuitive interface. Websites designed to enable users to shop on their mobile devices demonstrate this. Notably, the expansion and use of the internet in Saudi Arabia is responsible for the potential of e-commerce technology to have a favorable effect on enterprises (Almtiri, Miah, & Noman, 2022).

2.5 The Challenges of Using Innovation Platforms in Saudi Entrepreneurship Development

Even though technology-driven entrepreneurship has great promise, there is still a sizable digital divide, especially in less developed areas. Not everyone has equal access to digital literacy, dependable internet connectivity, and technology. By keeping some communities and demographic groups from fully engaging in the entrepreneurial ecosystem, the digital gap has the potential to worsen already-existing disparities. Addressing the digital divide is crucial to guaranteeing inclusivity and equal opportunity, as technology plays a bigger role in entrepreneurship (Al-Ghamdi & Oreijah, 2021).

Traditional industries and means of subsistence may be displaced by the quick uptake of new business models and technology. While entrepreneurs use technology to increase productivity and convenience, certain industries may experience disruptions that result in job losses and unstable economies. Therefore, to prevent unforeseen negative effects, it is crucial to strike a balance between technological innovation and preserving the health of current industries (Almani, 2021).

The goal of innovation-driven entrepreneurship frequently emphasizes beating rivals and expanding quickly. Other crucial facets of entrepreneurship, such building community ties, sustainable practices, and long-term value generation, may be neglected as a result of this emphasis on expansion and competitiveness. An overemphasis on quick growth can occasionally result in unsustainable practices that harm social cohesiveness and local ecosystems (Nambisan, Wright, & Feldman, 2019).

The human element of business relationships may be compromised by the growth of innovative platforms in entrepreneurship. Face-to-face contacts and the personal connections required to establish trust and strong commercial relationships may be weakened by an over-reliance on digital communications and automation. Furthermore, if entrepreneurs only use technical tools without fostering their natural creativity, it may have an impact on the creative and inventive parts of entrepreneurship (Kraus, McDowell, Soriano, & García, 2021).

A common component of innovation-led entrepreneurship is the collection and analysis of vast volumes of data. Significant ethical and privacy issues are brought up by this, especially in light of the usage of private data for marketing and targeted decision-making. When implementing technology and adhering to data protection laws, entrepreneurs must negotiate intricate legal and ethical frameworks to guarantee that user privacy is maintained (Nambisan, Wright, & Feldman, 2019).

3. Methodology

This research will use the quantitative research method, which examines the phenomenon as it exists in reality by surveying the opinions of the study sample through questionnaires. The research sample will be randomly selected and will consist of 100-150 male and female managers in different Saudi companies. Gender, years of experience, and academic level will be taken into consideration for each individual in the study sample. The researcher will develop the study tool (questionnaire) to collect information related to this study. This tool measures the challenges faced by managers who are using innovation platforms in Saudi entrepreneurship.

To verify the validity of the study tool, the SPSS validity method will be used. To ensure the stability of the research tool, the reliability coefficient will be calculated using the internal consistency method according to the Cronbach's alpha equation (Alpha-Cronbach), which measures the degree of consistency in the research sample members' responses to the items in the questionnaire. Approval will be obtained from a specialized committee at the Ministry of Economy before beginning the survey of the study sample. The research sample will be given absolute freedom to participate or refuse, and all answers and personal data of the study sample will be kept strictly confidential.

3.1 Data Analysis and Coding

This chapter presents a detailed presentation of the results of the statistical analysis of the data collected from the sample of (120) participants, using the study tool, a questionnaire. Statistical processing was conducted using the SPSS statistical analysis program, which is one of the multiple statistical tools for analyzing quantitative data. This chapter focuses on the following topics: demographic characteristics of the sample, data coding and data processing mechanisms, reliability testing of the study tool, descriptive analysis of the study topics, and analysis of the study results to answer the study questions. This chapter aims to provide a comprehensive and objective analysis of the data, which contributes to arriving at accurate results that we can rely on to answer the study questions and provide

recommendations based on the results.

Data were manually coded and converted to an Excel file, which was then digitally converted to SPSS for statistical analysis, as shown in Table (1). The data included two types of variables: demographic variables, which included gender, years of experience, and academic qualifications. The core variables included three axes, each consisting of items. These items were measured using a five-point Likert scale. The five-point Likert scale was used to assess the participants' responses to the questionnaire items, and the interpretive table was used to subsequently analyze the arithmetic means, as shown in Table (2).

Table 1. Coding of Demographic Variables

Variable	Category	Code
Gender	Male	1
	Female	2
Years of Experience in Management	Less than 1 year	1
	1 – 3 years	2
	4 – 7 years	3
	More than 7 years	4
Academic Level	Bachelor's Degree	1
	Master's Degree	2
	PhD	3

Table 2. Likert Scale Coding and Interpretation of Mean Scores

Score	Response Level	Mean Range	Descriptive Level
5	Strongly Agree	4.20 – 5.00	Very High
4	Agree	3.40 – 4.19	High
3	Neutral	2.60 – 3.39	Moderate
2	Disagree	1.80 – 2.59	Low
1	Strongly Disagree	1.00 – 1.79	Very Low

This classification was used for item analysis and axis analysis and for interpreting study participant trends.

3.2 Demographic characteristics of the sample members

Demographic characteristics are an essential part of any questionnaire-based study, contributing to understanding the nature of the study participants and establishing a

background about them. These characteristics are used to interpret the participants' responses and can be used as independent or controlling variables in advanced studies. Three demographic variables were included (gender, years of experience, and educational level). These variables were analyzed descriptively to determine the distribution of sample members and provide an academic interpretation.

3.3 Gender Distribution of the Study Sample

The following table shows the percentages and numerical distribution of participating sample individuals according to gender variability.

Table 3. Distribution of the Sample by Gender

Gender	Frequency	Percentage (%)
Male	52	43.3%
Female	68	56.7%
Total	120	100.0%

As can be seen from Table (3), the participants in the study are divided into two groups by sex, (43.3) males and (56.7) females. This breakdown reflects a relative balance between the sexes and is considered to be a systematically positive indicator, contributing to a diversity of opinions and views, thus enhancing the verity and diversity of the results. From an academic perspective, women in Saudi Arabia are also active part of the entrepreneurial sector and actively participate in innovative projects, with state support and empowerment of Saudi women in the fields of technology and entrepreneurship.

3.4 Years of Experience Distribution of the Study Sample

The following table shows the percentages and numerical distribution of the participating sample individuals according to a variable of years of experience.

Table 4. Distribution of the Sample by Years of Experience

Years of Experience	Frequency	Percentage (%)
Less than 1 year	30	25.0%
1 – 3 years	32	26.7%
4 – 7 years	31	25.8%
More than 7 years	27	22.5%
Total	120	100.0%

Table (4) shows the numerical distribution and percentages of study participants according to years of experience, and shows the four categories of experience that were broadly

representative within the study sample, a positive indicator of the diversity of the participants' scientific backgrounds that enriches the study results and enhances their credibility and realism. The group with (1-3 years) of experience had the highest representation of (26.7%), then the group with (4-7 years) at (25.8%), and then the group with (less than 1 year) at (25.0%). From this distribution it can be concluded that the study included a diverse sample of entrepreneurs, ranging from recent industry experience to those with long years of industry experience. This qualitative representation is also very useful when analyzing themes of study such as innovation and e-commerce, so that participants have different experiences in dealing with technology and adopting solutions apart from the duration of practice and direct contact with the work environment. This distribution reduces the bias that results from being limited to one category only in terms of years of experience and promotes the possibility of generalizing the results to broad segments of Saudi Arabian entrepreneurs.

3.5 Educational Level Distribution of the Study Sample

The following table shows the percentages and numerical distribution of the participating sample individuals according to variable educational level.

Table 5. Distribution of the Sample by Educational Level

Educational Level	Frequency	Percentage (%)
Bachelor's Degree	53	44.2%
Master's Degree	43	35.8%
PhD	24	20.0%
Total	120	100.0%

Table (5) shows the numerical distribution and percentages of sample members by educational level. The results indicate that the majority of sample members hold higher academic qualifications, which enhances the quality of the data collected and demonstrates the study participants' ability to understand the questionnaire content and provide informed and more accurate answers. Those with a bachelor's degree were the highest category, with (53) participants representing (44.2%) of the sample. Those with a master's degree were followed by (43) participants representing (35.8%), while those with a doctorate degree constituted only (20.0%) of the total sample. From a methodological perspective, the diversity of educational levels in the sample enhances the diversity of the practical and intellectual backgrounds of the study participants, adding qualitative depth to the study results. The percentage of participants with master's and doctoral degrees was (55.8%), indicating an advanced scientific and cultural awareness among the sample members. This increases the credibility of responses and the reliability of the resulting statistical analysis. Having a good representation of each educational category also reduces bias in the results and helps explain whether educational level plays a role in participants' perceptions of innovation and e-commerce.

3.6 Reliability Analysis Using Cronbach's Alpha

Reliability testing is a fundamental step in quantitative studies that rely on data collection tools such as questionnaires. Reliability testing refers to the consistency and stability of responses when the tool is used repeatedly under similar conditions. Therefore, a research tool is considered reliable if close and stable scores appear across the items of a single axis. Cronbach's alpha coefficient was used to measure the degree of internal consistency of the items of each axis of the study, and it is the most common measure in social and educational research.

In order to understand the accuracy and reliability of each axis of the study, the following classification of Cronbach's alpha values was used, as shown in Table (6).

Table 6. Interpretation Levels of Cronbach's Alpha Coefficient

Interpretation	Alpha Value
Excellent Reliability	≥ 0.90
Good Reliability	0.80 – 0.89
Acceptable Reliability	0.70 – 0.79
Questionable Reliability	0.60 – 0.69
Poor Reliability	0.50 – 0.59
Unacceptable Reliability	< 0.50

Cronbach's alpha coefficient was calculated for the innovation axis, the e-commerce axis, and the challenges axis to verify the internal consistency between the paragraphs of each axis. The results are shown in Table (7).

Table 7. Cronbach's alpha coefficient for the Study Variables

Study Construct	Number of Items	Cronbach's Alpha	Reliability Level
Innovation	8	0.816	Good Reliability
E – Commerce Platforms	8	0.813	Good Reliability
Challenges	5	0.739	Acceptable Reliability

Based on Table (7), the results of the reliability analysis indicate that the study instrument, the questionnaire, enjoys a good degree of internal consistency, with all three axes exceeding the minimum acceptable Cronbach's alpha coefficient of (0.70). The innovation axis, which contains eight items, achieved a value of (0.816), and the e-commerce axis, which contains eight items, achieved a value of (0.813), both of which fall within the good reliability category. This indicates that the items in the innovation and e-commerce axis are highly consistent and that participants responded consistently. For the challenge's axis, which contains five items, it achieved a Cronbach's alpha value of (0.739), which falls within the acceptable reliability category according to approved standards. Although the reliability value for the challenges axis was lower than that of the innovation and e-commerce axis, it remains within the scientifically acceptable range and is considered sufficient for statistical analysis. The study tool is statistically reliable and consistent, which enhances its validity for collecting accurate data. This gives the researcher confidence to rely on the results of the statistical analysis to answer the study questions and draw conclusions from them.

3.7 Descriptive Analysis of Study Constructs

3.7.1 Descriptive Analysis of the Innovation Constructs

Innovation is an essential element in the sustainability and development of entrepreneurial organizations. It is the factor that enables companies to excel in competitive business environments by offering new products or services that meet market needs in an unconventional way. Innovation contributes to improving the efficiency of an organization's internal performance and adding value to customers, in addition to improving the ability to adapt and expand with technological changes. This study dedicated this axis to measuring the role of innovation in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia through eight items designed to measure the extent to which organizations adopt innovation practices in the workplace. Participants' responses to these items were analyzed using averages and standard deviations, and the items were ranked according to relative importance and interpreted using a five-point Likert scale.

Table 8. Means, Standard Deviations, Ranks, and Descriptive Levels of the Innovation Items

Item No.	Statement	Mean	Standard Deviation	Rank	Descriptive Level
1	The company always strives to provide new products or services.	4.28	0.537	8	Very High
2	The company encourages employees to share innovative ideas.	4.38	0.503	4	Very High
3	The company allocates resources (time and money) to experiment with new work methods.	4.38	0.520	4	Very High

4	The company follows the latest innovation trends and implements them.	4.36	0.482	7	Very High
5	Innovation has improved the quality of the company's products or services.	4.42	0.512	2	Very High
6	Innovation and e-commerce have strengthened the company's ability to expand in the market.	4.38	0.505	4	Very High
7	The company tends to take risks related to growth and innovation.	4.41	0.542	3	Very High
8	The company has a clear policy to constantly experiment with new entrepreneurial ideas.	4.43	0.496	1	Very High

Table (8) presents the results of the innovation axis analysis, which includes eight items measuring the extent to which entrepreneurial companies adopt innovation practices in the Saudi workplace. The results showed that all statements received averages within the "very high" category (4.20-5.00), with values ranging from (4.28) and (4.43). This reflects a high awareness among sample members of the importance of innovation as a pivotal element in the expansion and success of entrepreneurial projects. The item that stated "The company has a clear policy to constantly experiment with new entrepreneurial ideas" came in with an arithmetic mean of (4.43), indicating a culture of innovation that is clearly present in the entrepreneurial environment in Saudi Arabia, and that research and experimentation of new ideas represents a strategic direction within institutions. It indicates organizational maturity that enhances the environment of creativity and encourages continuous renewal. The item that stated "Innovation has improved the quality of the company's products or services" came in second place with an average of (4.42), confirming that innovation is not practiced at the level of ideas alone, but is actually implemented in operational processes and has a direct impact on the quality of outputs. This reflects the transition of innovation from a theoretical level to the level of institutional performance. The item "The company tends to take risks related to growth and innovation" recorded an average score of (4.41), which indicates that companies are ready for the challenges of innovation and the calculated risks involved, a necessary trait in an entrepreneurial environment that requires flexibility and courage in decision making. The results showed a high level of institutional adoption of innovation, as evidenced by statements such as: companies encourage their employees to come up with new ideas, provide resources to experiment with innovative work methods, and follow and implement the latest innovation trends, the arithmetic means for these statements ranged between (4.36 and 4.38). This indicates that innovation practices are comprehensive and institutionalized, encompassing organizational, technical, and behavioral dimensions. They

also involve their employees and allocate the necessary budget for implementation. The item "innovation and e-commerce enhance the company's ability to expand in the market" received an average of (4.38), indicating a deep understanding among entrepreneurs of the importance of integrating innovation with digital tools to achieve growth and reach larger customer segments. The item that refers to "The company always strives to provide new products or services" had the lowest average value of (4.28), although it is within the "high" average estimate level. However, its relative low value may reflect some companies' tendency to improve their existing products more than developing new ones. Given the standard deviation values ranging between (0.482) and (0.542), it reflects a high degree of the homogeneity of participants' responses enhances the reliability of the data and supports the reliance on the results for interpretation and conclusions. The results generally reflect a strong culture of innovation in entrepreneurial ventures in Saudi Arabia, through clear institutional policies, resource allocation, the application of innovation in products and markets, and employee encouragement. These results confirm that innovation is a key pillar in accelerating the growth of entrepreneurial ventures in Saudi Arabia and aligns with the Kingdom's drive toward digital transformation and enhancing the business environment under Vision 2030.

3.7.2 Descriptive Analysis of the E – Commerce Constructs

Descriptive Analysis of the E-Commerce Pillar E-commerce has become a key driver of entrepreneurial growth in the modern era, due to its flexibility in accessing markets, expanding the customer base, reducing operational costs, and improving performance efficiency. Given the rapid digital transformations taking place in the Kingdom of Saudi Arabia, e-platforms have become an indispensable element in building marketing strategies for startups and entrepreneurial projects. This axis includes eight items aimed at measuring the extent to which companies rely on e-commerce tools and platforms and their role in expanding market growth. Participants' responses were analyzed based on arithmetic means, standard deviations, rankings, and scores based on a five-point Likert scale.

Table 9. Means, Standard Deviations, Ranks, and Descriptive Levels of the E –Commerce Items

Item No.	Statement	Mean	Standard Deviation	Rank	Descriptive Level
1	The company has a website used for marketing its products.	4.23	0.546	8	Very High
2	The company uses electronic payment methods in sales processes.	4.28	0.518	2	Very High
3	The company sells its products through e-commerce platforms.	4.26	0.494	4	Very High
4	The company relies on social media to support e-commerce activities.	4.25	0.454	7	Very High
5	E-commerce is a main sales channel	4.26	0.494	4	Very High

	for the company.				
6	Adopting e-commerce has increased the company's sales volume.	4.31	0.499	1	Very High
7	E-commerce has helped the company reach new customer segments.	4.26	0.572	4	Very High
8	Innovation and e-commerce have strengthened the company's ability to expand in the market.	4.28	0.505	2	Very High

Table (9) shows the results of the e-commerce axis analysis, which included eight statements measuring the extent to which entrepreneurial companies in Saudi Arabia rely on e-commerce platforms and their role in supporting expansion and corporate growth. The results showed that all statements received arithmetic means within the "very high" category, with values ranging between (4.23) and (4.31), this indicates broad agreement among sample members on the role e-commerce plays in promoting growth and corporate expansion. The highest mean appeared in the statement that reads " Adopting e-commerce has increased the company's sales volume", with a mean of (4.31), confirming that e-commerce is not a secondary option, but rather has become a directly effective tool for raising income and generating profits. This supports the hypothesis that e-commerce platforms constitute a sales and marketing channel that contributes to improving the commercial performance of entrepreneurial projects. The statement that reads " The company uses electronic payment methods in sales processes" and the statement that reads " Innovation and e-commerce have strengthened the company's ability to expand in the market" had an equal arithmetic mean of (4.28), which is considered an indicator of the successful integration of technological tools and business practices. The use of electronic payment methods reflects the readiness of Saudi companies' digital infrastructure and enhances customer confidence. The combination of innovation and e-commerce is a strategic complement that entrepreneurial projects rely on for expansion and corporate growth. The results showed an arithmetic mean of (4.26), which appeared in several phrases, including "The company sells its products through electronic platforms; e-commerce is a primary sales channel; e-commerce helps companies reach new customer segments" this indicates that e-commerce is not only used as a marketing tool, but has become an essential part of the growth of business models in entrepreneurial companies, reflecting a clear shift. Another statement " The company relies on social media to support e-commerce activities" had an average score of (4.25), highlighting the importance of integrating e-commerce and digital marketing through social media, which has become a key platform for customer engagement and expanding reach. The Statement " The company has a website used for marketing its products" came in last with an average score of (4.23), which is considered "very high." This suggests that some startups prefer to use ready-made platforms instead of creating their own websites due to the cost and ease of managing accounts through ready-made applications. In terms of standard deviation, the values ranged between (0.454) and (0.572), these relatively low values indicate a clear homogeneity among participants regarding the role of e-commerce and confirm a shared awareness of the

importance of digital tools in facilitating transactions and achieving growth. Overall, the results highlight that e-commerce platforms have become a fundamental pillar of the startup business model, contributing to reducing operational costs, reaching new customer segments, and achieving higher sales. This aligns with the goals of Saudi Vision 2030 for digital transformation and supporting a knowledge-based and innovation-driven economy.

3.7.3 Descriptive Analysis of the Challenges Construct

Descriptive Analysis of the Challenges Axis: Despite the entrepreneurial environment's opportunities for growth and expansion, entrepreneurial projects remain vulnerable to challenges that can hinder their ability to adopt innovation or expand digitally. This can be attributed to market changes, technical and regulatory constraints, weak human skills, and limited resources. This axis was designed to measure entrepreneurs' awareness of the challenges they face in adopting innovation and e-commerce platforms, using five items addressing organizational, human, legislative, and financial aspects. Participants' responses were analyzed using means, standard deviations, and rank and score based on a five-point Likert scale.

Table 10. Means, Standard Deviations, Ranks, and Descriptive Levels of the Challenges Items

Item No.	Statement	Mean	Standard Deviation	Rank	Descriptive Level
1	The company lacks sufficient financial resources to implement innovation platforms.	2.63	0.517	3	Moderate
2	Employees lack the necessary skills to effectively use innovation tools.	2.59	0.542	5	Low
3	The company faces resistance to change when adopting innovation practices.	2.64	0.499	2	Moderate
4	There are difficulties integrating innovation platforms with existing systems.	2.63	0.536	3	Moderate
5	Legal or regulatory barriers limit the use of innovation platforms in Saudi Arabia.	2.65	0.529	1	Moderate

Table (10) presents the results of the challenge axis analysis, which includes five streams aimed at measuring the challenges faced by entrepreneurs when using innovation and

e-commerce platforms in entrepreneurial projects in Saudi Arabia. The arithmetic means ranged between (2.59) and (2.65), indicating that the overall presentation falls within the "medium" category, with one statement falling within the "low" category, according to the five-point Likert scale. The highest arithmetic mean was recorded for the statement " Legal or regulatory barriers limit the use of innovation platforms in Saudi Arabia" with an average of (2.65). This reflects the sample members' awareness of the existence of some regulatory or legislative obstacles that hinder the full use of innovation platforms, such as complexities related to licensing or intellectual property protection. The statement " The company faces resistance to change when adopting innovation practices" had an arithmetic mean of (2.64), indicating the presence of organizational challenges within some entrepreneurial companies related to the culture of change or management and employee acceptance of new work practices. These are among the most prominent behavioral challenges in the digital transformation environment. The two statements, " There are difficulties integrating innovation platforms with existing systems" and "The company lacks sufficient financial resources to implement innovation platforms" had a similar mean of (2.63), this indicates that some entrepreneurial projects face financial and technical challenges, whether due to poor technical compatibility between the company's systems and modern platforms or limited budgets. The lowest mean was for the statement "Employees lack the necessary skills to use innovation tools effectively," with a mean value of (2.59), which falls within the "low" category. This result is considered relatively positive because it indicates that the majority of entrepreneurs do not perceive a significant skill gap, nor do they perceive development efforts to improve digital readiness within their organizations. The standard deviation values ranged between (0.499) and (0.542), these are relatively low percentages, indicating a good degree of homogeneity in the sample's responses. Overall, the results reflect that the challenges facing entrepreneurs in implementing innovation and e-commerce platforms are not fundamentally obstructive or profound, but rather represent realistic obstacles that can be addressed through developmental and corrective measures such as providing funding, offering training programs, facilitating system integration, and updating legislative frameworks. These results are in line with the Kingdom's efforts to create an integrated digital entrepreneurial environment within Vision 2030.

3.8 Answering the Research Question

This section presents answers to the three study questions, based on the results of a descriptive statistical analysis of the questionnaire items, which addressed three axes: innovation, e-commerce, and challenges. Averages and standard deviations were used, and each axis was analyzed to arrive at conclusions that accurately answer the study questions.

3.8.1 Answering to Question One: Innovation

“What is the role of innovation platforms in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia?”

The analysis results showed that all items in the innovation axis achieved arithmetic averages within the "very high" level, with values ranging between (4.28 and 4.43). This indicates a strong agreement among sample members that innovation is a key element in promoting the

growth of entrepreneurial projects in Saudi Arabia. The items indicate the existence of clear policies within companies to encourage employees to innovate and allocate resources to experiment with new ideas. The study confirms that innovation actually contributes to improving the quality of products and services, increasing competitiveness, and accelerating market expansion.

3.8.2 Answering to Question Two: E – Commerce

“What is the role of e-commerce platforms in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia?”

The results of the analysis the e-commerce axis showed that all its items scored "very high," with average values ranging between (4.23 and 4.31). This indicates that e-commerce has become a primary channel for companies in marketing, expansion, and sales. Study participants acknowledged that e-commerce has helped increase sales volume, reach new customer segments, and support expansion and growth. The importance of digital platforms, electronic payment methods, and social media sites was emphasized as effective tools for supporting entrepreneurial processes. The study results show that e-commerce platforms are a strategic pillar for accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia.

3.8.3 Answering to Question Three: Challenge

“What are the challenges of using innovation platforms in Saudi entrepreneurship development?”

The results of the challenges axis analysis showed that the arithmetic means ranged between (2.54 and 2.65), indicating that the challenges facing innovation platforms fall within the "medium" level. The most prominent challenges include a shortage of qualified human resources, weaknesses in some technical skills, and the presence of some regulatory and legislative obstacles. The results did not reveal a weak culture of innovation within companies. We can safely say that the challenges are not deep-rooted, but rather can be addressed through continuous training and development and institutional support, which enhances the opportunities for expansion and innovation in entrepreneurial projects.

3.8.4 Answering the study's main question

“What is the role of innovation and e-commerce platforms in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia?”

The study results showed that innovation and e-commerce platforms play a pivotal role in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia. The innovation and e-commerce axis achieved very high arithmetic averages, reflecting entrepreneurial companies' high awareness of the importance of adopting innovation and operating digital platforms to develop and expand their businesses. The results indicated that these platforms contribute to improving product quality, increasing sales, and reaching new customer segments. Despite some challenges, such as a lack of skills or technical difficulties, the impact of these averages is within the "average" level and can be addressed. The study

confirms that innovation and e-commerce together constitute a key factor in supporting and accelerating the growth of entrepreneurial projects, in line with the goals of economic development and digital transformation in the Kingdom of Saudi Arabia.

These results are in line with the Kingdom's Vision 2030, which places digital transformation and innovation as one of the pillars of the national economy and that promotes digital platforms within sustainable development pilots.

4. Dissection and Comparison with Previous Literature

The results of this study indicate that innovation and e-commerce are key factors in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia. There are also challenges with a medium impact that can be effectively addressed. Statistical data show that participants highly agree on the importance of innovation and digital technologies, and they emphasized the existence of a work environment that encourages creativity. These results are largely consistent with previous literature, particularly that proposed by Lööf (2020), who emphasized that product and process innovation are key drivers of startup growth in the face of high competition and limited resources. Kartika (2024) also emphasized the importance of operational innovation in reducing costs and achieving operational efficiency. These findings were confirmed in the following paragraphs, which highlighted the allocation of resources to innovation and the encouragement of experimentation in Saudi companies. Regarding the e-commerce axis, the current study showed that all items in this axis were rated "very high." This is consistent with Chirchietti (2017) and Sutrisno et al. (2023), who demonstrated that the shift towards innovative digital business models enables companies to reach new customer segments and, through technology, deliver unprecedented value propositions. Regarding challenges, the literature has indicated the presence of several obstacles, such as a lack of organizational skills and resources (Kartika, 2024). The results of this study are consistent with the findings of the current study, identifying similar challenges, but at a "moderate" level. This indicates a gradual improvement in the entrepreneurial environment in Saudi Arabia compared to what has been reported in some international literature. Based on all of this, we can say that the study's results support and reinforce the theoretical trends in previous literature. It has demonstrated that the entrepreneurial environment in Saudi Arabia is moving towards levels of maturity in digital innovation, with some challenges that can be addressed.

5. Conclusion and Recommendations;

In light of the findings we obtained through statistical analysis of the study data, it became clear that innovation and e-commerce platforms play a pivotal role in accelerating the growth of entrepreneurial projects in the Kingdom of Saudi Arabia. The opinions of sample members and the results of the statistical analysis revealed a growing interest among entrepreneurs in adopting innovation practices and employing e-commerce tools to expand, improve institutional performance, and increase competitiveness. The results indicate that the majority of entrepreneurial projects adopt clear policies to encourage innovation and creative ideas, allocate the necessary resources to experiment with new methods, and leverage e-platforms to reach new customer segments. Despite some challenges, such as weak technical skills or

legislative restrictions, the impact of these challenges was average, indicating the possibility of addressing them through continuous training and institutional support. Based on this, the study confirms that the business environment in the Kingdom of Saudi Arabia is witnessing a gradual maturation in its awareness of the importance of innovation and digital transformation. This makes it necessary to strengthen and support these trends in order to accelerate growth and achieve sustainable economic development goals.

Based on the study results and statistical data analysis, the researcher recommends the following:

- Promoting a culture of innovation within entrepreneurial organizations: This is done by encouraging employees to present new ideas and providing a supportive work environment for continuous experimentation and development.
- Providing specialized training programs: This is done to enhance the efficiency of human resources in using innovation tools and digital technologies, which contributes to reducing the skills gap.
- Developing digital infrastructure: This is done by enabling startups to access e-commerce technologies more easily, including supporting electronic payment methods and integration with digital platforms.
- Providing financial support for startups: This is done through government funding programs or partnerships with the private sector, with the goal of enabling the implementation of innovative solutions and expanding their market activity.
- Encouraging partnerships with educational institutions and technical entities: This is done to exchange expertise, transfer knowledge, and work to enhance the entrepreneurial environment based on innovation and technology.
- Updating regulatory and operational frameworks: This is done to keep pace with the requirements of digital transformation and remove legal obstacles that may hinder the adoption of innovation and e-commerce.

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