

The Influence of Digital Entrepreneurship on the Growth and Sustainability of Startups in Developing Economies.

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Abstract

This study examines the effect of digital entrepreneurship on startup growth and sustainability in developing economies. Using a descriptive-analytical approach, data were collected from 200 startups in Algeria, Tunisia, Egypt, and Jordan and analyzed using SPSS. The results show a strong positive relationship between digital entrepreneurship and startup success ($R^2 = 0.57$, $p < 0.001$). Digital technology use has the strongest impact, followed by business model innovation. Internal digital transformation and digital entrepreneurial leadership show moderate effects. Digital marketing does not exhibit a significant impact. The findings confirm that digital entrepreneurship is a key driver of startup performance in developing economies.

Key words: Digital Entrepreneurship, Startups, Developing Economies, Technological Innovation, Crowdfunding, Business Incubators.

Jel Codes Classification: L26, M13, O43, O16

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تأثير ريادة الأعمال الرقمية على نمو واستدامة الشركات الناشئة في الاقتصادات النامية

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ملخص

تتناول هذه الدراسة تحليل أثر ريادة الأعمال الرقمية على نمو واستدامة الشركات الناشئة في الاقتصادات النامية. وقد اعتمدت الدراسة المنهج الوصفي التحليلي، حيث جمعت البيانات من عينة مكونة من 200 شركة ناشئة تنشط في كل من الجزائر وتونس ومصر والاردن، وتمت معالجتها احصائيا باستخدام برنامج SPSS. وتظهر النتائج وجود علاقة ايجابية قوية وذات دلالة احصائية بين ريادة الأعمال الرقمية ونجاح الشركات الناشئة ($R^2 = 0.57$, $p < 0.001$), كما تشير النتائج الى ان استخدام التكنولوجيا الرقمية يعد العامل الأكثر تأثيرا في تحسين الاداء، يليه الابتكار في نماذج الاعمال. في حين اظهر كل من التحول الرقمي الداخلي والقيادة الريادية الرقمية تأثيرا متوسطا، بينما لم يثبت وجود أثر دال احصائيا للتسويق الرقمي. وخلصت الدراسة الى ان ريادة الأعمال الرقمية تمثل محركا استراتيجيا رئيسيا لتعزيز نمو واستدامة الشركات الناشئة في الاقتصادات النامية.

الكلمات المفتاحية: ريادة اعمال رقمية، شركات ناشئة، اقتصادات نامية، ابتكار تكنولوجياي، تمويل جماعي، حاضنات اعمال، تنمية اقتصادية.

التصنيف: L26, M13, O43, O16

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Introduction:

Over the past two decades, the world has witnessed fundamental changes in the nature of the economy and market behavior as a result of rapid technological developments, including the spread of the internet, smartphones, and innovative digital solutions. These transformations have revolutionized the way businesses are established and managed, leading to the emergence of the concept of digital entrepreneurship as a vital tool for promoting innovation and economic growth. Digital entrepreneurship is defined as the activity of creating and managing new projects that rely primarily on digital platforms and technologies to offer innovative products and services and achieve a sustainable competitive advantage in complex and rapidly changing economic environments.

Digital startups play a pivotal role in promoting innovation, employment, and market development. These companies leverage technological solutions to facilitate access to consumers, reduce operating costs, and improve the quality of products and services. These companies rely on multiple tools, including e-commerce, digital marketing, smartphone applications, data analytics, and artificial intelligence solutions, to expand their customer base and achieve sustainable growth. These digital solutions also provide the ability to adapt to rapid market changes and meet the evolving needs of consumers, enhancing startups' chances of success and reducing the risks associated with traditional businesses.

In developing economies, digital entrepreneurship represents a strategic opportunity to overcome some traditional constraints, such as poor infrastructure, lack of financing opportunities, limited market access, and administrative bureaucracy. Digital solutions provide access to diverse financial resources, including crowdfunding and angel investors, and enable entrepreneurs to build strong networks of professional and technical support. These solutions also enable them to overcome geographical barriers, contributing to the faster and more effective integration of startups into regional and international markets.

Despite the promising opportunities, digital startups in developing economies face significant challenges that impact their growth and sustainability. These challenges include weak digital infrastructure, a lack of specialized technical expertise and skills, difficulty accessing formal financing, and the risks associated with innovation in unstable economic environments. Furthermore, cultural and social factors, such as resistance to change or a lack of digital awareness, may impact entrepreneurs' ability to adopt and effectively leverage new technologies.

Research Problem

The research problem is the contradiction between the significant opportunities digital technology offers startups and the economic, social, and technical constraints that limit their ability to succeed. Therefore, the research focuses on answering the following key questions:

- To what extent does the adoption of digital solutions impact the success of startups in developing economies?
- What are the most prominent challenges facing digital entrepreneurs in this environment?
- What are effective strategies for enhancing the growth and sustainability of digital startups?

Significance of the Study

The importance of the study stems from the need to understand the relationship between the adoption of digital solutions and the success of startups in these complex environments. The research aims to analyze how digital technology can be leveraged to enhance innovation, improve operational performance, and expand market access. It also seeks to provide scientific and practical insights for policymakers, business incubators, and investors to enhance the digital entrepreneurship environment and develop effective strategies to support startups in developing economies.

Study Objectives:

- Analyze the impact of adopting digital solutions on the success of startups in developing economies.
- Identify the economic, technical, social, and cultural challenges facing digital startups.
- Explore effective strategies to enhance the growth and sustainability of digital startups.
- Study the relationship between digital innovation, competitiveness, and enterprise growth in the business environment.

Previous Studies:

- A study by Miller, P., & Bound, K. (2018) study entitled: "The Startup Factories: The rise of accelerator programs in emerging economies."

The study aimed to demonstrate the impact of business incubator and accelerator programs on the success of digital startups in developing economies. The core of the research focused on identifying the extent to which these programs enhance entrepreneurs' skills, provide the necessary resources, and connect projects to markets and investors. The researchers used a field study approach and analyzed data from several business accelerators in Asia and Africa. After analyzing the results using statistical and qualitative tools, the study concluded that startups that benefited from incubators achieved higher growth rates and better sustainability compared to companies that did not benefit from these programs, emphasizing the importance of supporting these programs by governments and private institutions.

- A study by Kshetri, N. (2019) entitled: Crowdfunding in Developing Economies: Drivers and Challenges.

The study aimed to identify the role of crowdfunding in supporting entrepreneurial projects in developing economies and to identify the factors that enhance or hinder the success of digital startups. The study focused on analyzing how crowdfunding is used as an alternative tool to traditional financing, as well as its impact on project sustainability and growth. The researcher relied on secondary data analysis and interviews with entrepreneurs and startups. After interpreting the results, he concluded that crowdfunding contributes significantly to overcoming financial constraints and increasing companies' growth opportunities, but it requires a supportive regulatory environment to ensure its effectiveness.

- A study by Muhammad Ali Al-Zahrani and Hind Abdullah (2019), titled: The Impact of Digital Entrepreneurship on the Performance of Small and Medium Enterprises in the Kingdom of Saudi Arabia.

The study aimed to measure the impact of adopting digital technologies and technological innovation on the performance of small and medium enterprises (SMEs), and the extent to which these tools contribute to improving operational efficiency and increasing

market share. The study focused on identifying the most significant challenges facing companies in adopting modern technology. The researchers used questionnaires and interviews to collect data from 75 SMEs. After analyzing the results using SPSS, the study concluded that effective adoption of digital tools enhances competitiveness and achieves sustainable growth, emphasizing the importance of digital training programs and government support.

- A study by Alvarez, S., Urbano, D., & Gómez, J. (2020), titled "Innovation and Digital Entrepreneurship in Emerging Markets: Opportunities and Threats."

The study aimed to explore the relationship between digital innovation and startup success, highlighting opportunities and threats in emerging markets. The research focused on how startups adopt flexible business models and modern technology to enhance competitiveness. The researchers analyzed case studies and quantitative data from 80 startups. After processing the results, the study concluded that digital innovation is a key driver of success, but requires support from business incubators and specialized training programs to overcome technical and social obstacles.

- A study by Kuratko, D., & Audretsch, D. (2021), titled "Digital Tools and Entrepreneurial Performance in Emerging Economies."

The study aimed to demonstrate the impact of using digital tools on the performance of startups in developing economies, and the extent to which these tools contribute to improving operational efficiency and market access. The core of the research focused on identifying how digital platforms, e-marketing, and data analytics can be used to support business growth. The researchers relied on a questionnaire approach and interviews with 100 startups. After analyzing the data using SPSS, the research concluded that the effective use of digital tools enhances companies' competitiveness and increases opportunities for sustainability and growth, while emphasizing the importance of continuous training for entrepreneurial cadres.

- A study by Ali Abdullah Al Shamsi, Fatima Hassan (2021), titled: The Impact of Digital Innovation on the Success of Startups in the United Arab Emirates.

The study aimed to analyze the relationship between the adoption of digital innovation and the level of success of startups in the UAE, and the extent to which digital tools contribute to improving operational performance and expanding market access. The research focused on identifying the most important digital technologies used, such as e-commerce, digital marketing, and data analytics, and their role in enhancing the competitiveness of startups. The researchers used questionnaires and interviews with 50 startups. After analyzing the data using SPSS, the study concluded that adopting digital innovation significantly contributes to the growth and sustainability of companies, emphasizing the need for training programs and institutional support to facilitate the effective implementation of digital solutions.

- Study: World Bank (2022), titled: Digital Entrepreneurship Challenges in Developing Countries.

The study aimed to identify the challenges facing digital startups in developing economies, focusing on digital infrastructure, financing, and technical skills. The research focused on assessing the main obstacles that limit entrepreneurs' ability to efficiently leverage digital innovation. The researchers used secondary data from international bank reports and field surveys. After analyzing the results, the study concluded that weak digital infrastructure

and a lack of technical competencies are the most significant impediments, emphasizing the need to develop a regulatory environment that supports digital investment.

- A study by Nguyen, H. T., Le, P. H., & Tran, D. T. (2025) entitled: University-based entrepreneurship education and green innovation performance: Evidence from ASEAN countries.

The study aimed to demonstrate the impact of university entrepreneurship education on enhancing green innovation performance among startups and the extent to which it contributes to developing the entrepreneurial spirit among university students in ASEAN countries. The core of the research focused on identifying the relationship between entrepreneurship education and sustainable innovation, as well as assessing how educational institutions can contribute to preparing entrepreneurs capable of facing environmental challenges. The researchers used a questionnaire as the primary tool to collect data from a sample of students and young entrepreneurs. After analyzing the data using the statistical software program SPSS, the study reached a number of conclusions, most notably the need to integrate entrepreneurship education programs with environmental innovation initiatives to enhance the performance of startups and ensure their sustainability in competitive markets.

The Current Study's Position in Relation to Previous Studies

The current study, *"Digital Entrepreneurship and the Success of Startups in Developing Economies,"* aligns with numerous Arab and international studies that emphasize the vital role of digital transformation in enhancing startup performance and supporting economic growth.

Points of Agreement

- It agrees with Nguyen et al. (2025) and Kuratko & Audretsch (2021), who highlight the positive impact of digital technologies on operational efficiency and startup competitiveness.
- It is consistent with the findings of the World Bank (2022) and Kshetri (2021), which indicate that digital entrepreneurship in developing economies still faces structural obstacles such as weak technological infrastructure and insufficient funding and institutional support.
- At the Arab level, it aligns with Al-Zahrani & Hind (2019) and Al-Shamsi & Hassan (2021) in emphasizing that adopting digital tools improves company efficiency and sustainability in a fast-changing competitive environment.
- It also shares with Abdul Rahman Hussein and Nawal Mohammed (2020) the importance of digital culture and social awareness as key factors influencing the success of digital entrepreneurs.

Points of Difference

- The current study distinguishes itself by integrating technical, social, and economic analyses of digital entrepreneurship, rather than limiting its focus to technological aspects alone.
- It differs from many foreign studies that concentrate on specific regions like Asia or Latin America, as it examines the phenomenon within Arab developing economies, a context that remains understudied.

- The study proposes a comprehensive explanatory model combining digital innovation, institutional support, and human factors, whereas previous research often addressed these elements separately.
- Finally, it adopts an applied analytical approach aimed at offering practical recommendations for policymakers and support institutions, moving beyond the descriptive nature of some earlier studies.

Research Gap

The literature review reveals that most studies have focused on the experiences of advanced economies, while studies in developing contexts remain limited and often focus on technical challenges without addressing the holistic relationship between administrative and technological dimensions.

Hence, the importance of this study in analyzing the direct impact of digital entrepreneurship on the success of startups within a developing economic environment, with the aim of presenting an analytical model applicable to Arab countries.

I-Theoretical Framework of the Study

I-1 Basic Concepts of Digital Entrepreneurship

I-1-1 The Concept of Digital Entrepreneurship

Digital entrepreneurship is one of the most prominent contemporary transformations in economic and administrative thought, representing a combination of traditional entrepreneurship and technological innovation. Hull et al. (2007, p. 12) defines it as “the process of creating new ventures that rely on digital technologies to generate added value through innovative products or services.” Kraus et al. (2019, p. 353) view it as “a pattern of entrepreneurship that uses digital platforms and smart applications to create new business models and expand the scope of competition in markets.”

Nambisan (2017, p. 1030) notes that digital entrepreneurship is not merely the use of technology; rather, it represents a radical shift in the way entrepreneurial activity is practiced, as the digital entrepreneur relies on knowledge, data analysis, and artificial intelligence to identify opportunities and build value. In the Arab context, Al-Sharabi (2020, p. 44) explains that digital leadership has become one of the most important tools for economic development in developing economies, as it contributes to creating job opportunities, improving the productivity of institutions, and enhancing the competitiveness of local markets by investing in technology in resource management, marketing, and services.

I-1-2 Characteristics of Digital Entrepreneurship

Digital entrepreneurship has several characteristics that distinguish it from traditional entrepreneurship, the most important of which are:

- **Reliance on technology:** It relies on the use of digital tools at all stages of the project, from ideation to implementation (Nguyen et al., 2025, p. 141309).
- **Innovation and flexibility:** The digital environment allows for the rapid testing of new business models and their adaptation to market changes (Kraus et al., 2019, p. 356).

- Global reach and lack of geographical restrictions: Digital enterprises can easily access new markets via the internet, without the need for extensive infrastructure.
- Data reliance: Decision-making in digital companies is based on the analysis of big data and consumer behavior.
- Organizational and leadership transformation: Success in digital entrepreneurship requires leadership characterized by innovation, transformational thinking, and the ability to manage change (Teece, 2018, p. 45).

I-1-3 Dimensions of Digital Entrepreneurship

Digital entrepreneurship is a modern concept that emerged with the technological revolution and the shift toward a digital economy. Technology has become a key driver for creating new business models and developing management, marketing, and production methods. Digital entrepreneurship represents a strategic direction that combines the spirit of initiative and innovation, on the one hand, and the use of digital tools and platforms, on the other, to achieve growth and sustainability.

In this context, a set of key dimensions can be identified that characterize digital entrepreneurship and clarify the mechanisms of its impact on the success of emerging companies (Sharabi 2020, p. 48).

- Use of digital technology: The degree of reliance on electronic platforms, online sales systems, and digital analytical tools.
- Business model innovation: The extent to which a company can develop new digital products or services that meet market needs.
- Internal digital transformation: The application of technology in administrative, production, and marketing processes.
- Digital entrepreneurial leadership: The level of leaders' adoption of the concepts of innovation, risk-taking, and change management in a digital environment.
- Digital marketing and customer engagement: The efficient use of social media and electronic channels to build relationships with consumers.

4-1-3 Determinants of Digital Entrepreneurship in Developing Economies

In developing economies, digital entrepreneurship faces challenges related to technical infrastructure, financing, and human resources. Elia et al. (2020, p. 8) assert that the weak regulatory and legislative environment limits the growth of digital startups in developing countries, especially in the absence of government support and digital transformation policies.

Al-Hashemi (2021, p. 62) also notes that the limited digital culture and lack of IT skills among young entrepreneurs represent major obstacles to the development of digital entrepreneurial projects. On the other hand, the experiences of countries such as Malaysia and India demonstrate that the presence of comprehensive digital policies contributes to accelerating innovation and improving the competitiveness of startups (Isenberg, 2011, p. 14).

I-2 Startups

I-2-1 Defining Startups: Startups are defined as newly established enterprises seeking to develop an innovative product or service under conditions of uncertainty. Blank and Dorf (2012, p. 29) define it as "a temporary organization created to design a repeatable and scalable business model." Ries (2011, p. 20) views a startup as "a human experiment used to test entrepreneurial hypotheses in an unstable market," meaning it is based on the principles of rapid learning, experimentation, and adaptation to change.

In developing economies, startups represent a driver of economic development, providing opportunities for young people and reducing unemployment rates. However, they face multiple challenges related to poor access to finance and limited technological uptake (Elia et al., 2020, p. 9).

I-2-2 Determinants of Startup Success

The determinants of success vary from one environment to another, but studies indicate that there are key common factors that contribute to the sustainability of startups, the most important of which are:

- Continuous innovation and creativity: Innovation is the core of startup success in digital markets (Kraus et al., 2019, p. 359).
- Effective Leadership: Teece (2018, p. 46) asserts that transformational leadership helps create a flexible organizational culture that supports continuous change and experimentation.
- Digital Transformation: Nambisan (2017, p. 1034) notes that adopting digital tools in marketing, operations, and management increases the chances of success in a competitive environment.
- Entrepreneurial Skills: These include analytical, creative, and technical skills, and are essential for managing growth and market expansion.
- Finance and Resources: The ability to obtain finance remains one of the most important success factors in the early stages of a venture's life (Elia et al., 2020, p. 10).

I-3: The Relationship Between Digital Entrepreneurship and Startup Success

Recent studies indicate a strong positive relationship between digital entrepreneurship and startup success, as adopting digital technologies leads to improved financial performance and increased operational sustainability.

Nguyen et al.'s (2025, p. 141309) study showed that organizations that adopted digital entrepreneurship education demonstrated higher innovation performance and greater organizational effectiveness in ASEAN countries.

In the Arab context, Al-Awadhi's (2022, p. 88) study showed that digital transformation contributes to increasing the competitiveness of startups by between 30% and 45% as a result of improving the efficiency of marketing and production processes.

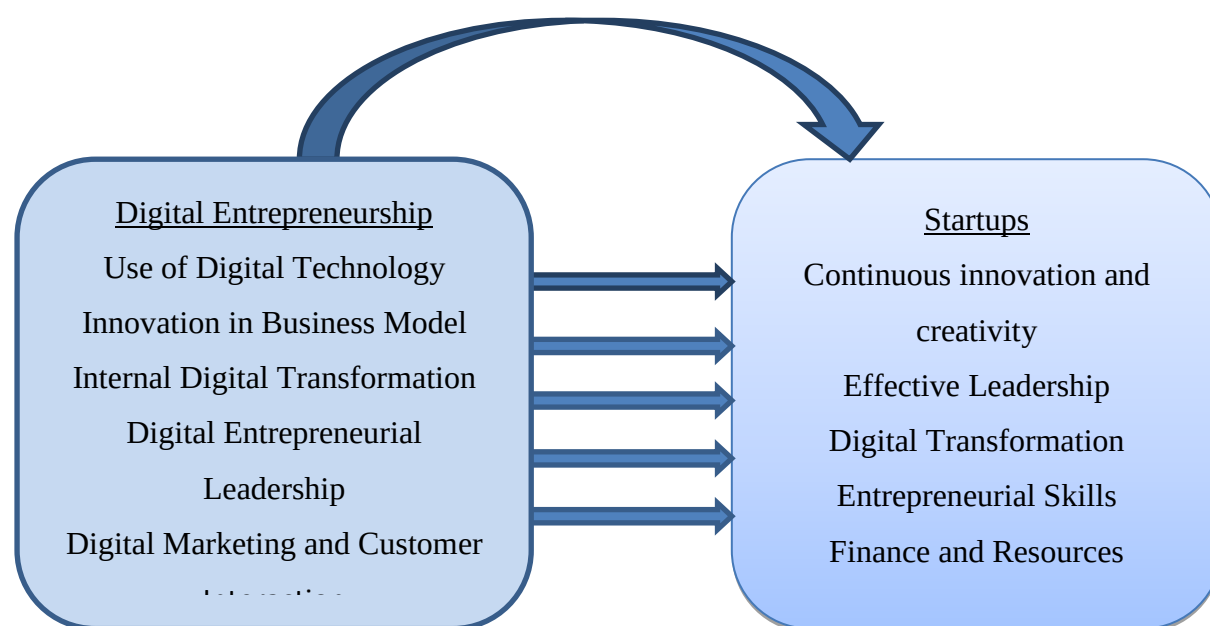
Kraus et al. also noted. (2019, p. 358) indicate that businesses that build data-driven digital business models are more resilient and able to adapt to crises than traditional businesses. This was clearly demonstrated during the COVID-19 pandemic, where digital businesses were able to survive and expand thanks to their reliance on e-commerce and cloud technologies.

Theoretical Frameworks Explaining the Relationship

- **Technological Innovation Theory:** Attributed to Joseph Schumpeter (1934, p. 66), it asserts that innovation is the driving force of economic development. From this perspective, digital entrepreneurship represents a modern form of "creative innovation" that reshapes markets and creates new opportunities for growth.
- **Dynamic Capabilities Theory:** This theory explains that the success of startups depends on their ability to continually reconfigure their resources to meet environmental and technological changes (Teece, 2018, p. 47). In this context, digital capabilities represent one of the most important aspects of this dynamic flexibility that ensures competitive sustainability.
- **Entrepreneurial Ecosystem Theory:** According to Isenberg (2011, p. 13), an integrated entrepreneurial environment, which includes financing, education, legislation, and entrepreneurial culture, is a crucial factor in supporting the success of digital entrepreneurial ventures, especially in developing economies

II- Method and Tools

II-1 The Study Model



Source: Prepared by the researcher

II-2 Study Approach

Given the nature of the research topic, which is based on examining the effect of an independent variable (digital entrepreneurship) on a dependent variable (startup success), the study relied on the descriptive-analytical approach, which is considered one of the most appropriate approaches for measuring the relationships between economic and administrative phenomena.

This approach aims to describe the phenomenon as it exists, collect field data from a sample representing startups in developing economies, and then analyze it statistically to extract implications for the relationship between the study variables and test the validity of the previously established hypotheses.

II-3 Objectives of the Field Study

The field study aims to achieve the following objectives:

- To determine the level of adoption of digital entrepreneurship practices within startups in developing economies.
- To measure the impact of the use of digital technology, business model innovation, and internal digital transformation on startup success.
- To analyze the nature of the relationship between digital entrepreneurial leadership, digital marketing, and customer engagement, and indicators of organizational success.
- To provide an explanatory model of the digital factors influencing the overall performance of startups in a developing economic environment.

II-4 Study Population and Field

The study population consists of all digital startups operating in developing Arab countries: Algeria, Tunisia, Egypt, and Jordan. These countries were selected as developing economies experiencing rapid digital transformations in recent years, with increasing official interest in the digital economy and support for entrepreneurial initiatives.

The study population includes multiple sectors, such as:

- E-commerce,
- Digital services,
- Financial technology (FinTech),
- E-learning (EdTech),
- Smart services and digital social entrepreneurship.

II-5 Study Sample

The researcher adopted a purposive sampling method, given the varying sizes of startups and the difficulty of accurately identifying them. The questionnaire was distributed to 240 startups in the four aforementioned countries, and 200 valid questionnaires were returned for statistical analysis, with a response rate of 83.3%. The sample was distributed as follows:

Table n°1: The sample distribution

Country	Number of Questionnaires Retrieved	Percentage
Algeria	60	30%
Tunisia	50	25%
Egypt	55	27.5%
Jordan	35	17.5%
Total	200	100%

Source: Prepared by the researcher

II-6 Data Collection Tool

The questionnaire was adopted as the primary data collection tool, given its suitability for quantitative research aimed at measuring the opinions of a broad sample of respondents. The questionnaire consisted of three main sections:

- General data on respondents: This includes demographic variables (country, company age, number of employees, capital, sector).
- Digital entrepreneurship axis (independent variable): This includes five main dimensions distributed over 20 items, as follows:
 - ✓ Use of digital technology (4 items)
 - ✓ Business model innovation (4 items)
 - ✓ Internal digital transformation (4 items)
 - ✓ Digital entrepreneurial leadership (4 items)
 - ✓ Digital marketing and customer engagement (4 items)
- Startup success axis (dependent variable): This includes five main indicators distributed over 10 items. All questionnaire items were based on a five-point Likert scale from (1 = strongly disagree) to (5 = strongly agree).

II-7 Validity of the Study Tool

The apparent validity of the tool was confirmed by presenting it to five academic referees specializing in entrepreneurship and digital management, who provided feedback that was incorporated into the final version.

II-8 Reliability of the Study Tool

Reliability was verified using Cronbach's Alpha, with the following values:

Table n°2: Cronbach's Alpha values

Dimension	Number of Items	α Value
Use of Digital Technology	4	0.88
Innovation in Business Model	4	0.86
Internal Digital Transformation	4	0.84
Digital Entrepreneurial Leadership	4	0.81
Digital Marketing and Customer Interaction	4	0.83
Startup Success	10	0.89
Total Instrument Score	30	0.87

Source: Output generated by SPSS

These values indicate a high level of reliability, exceeding the minimum acceptable level (0.70), enhancing the reliability of the measurement tool.

II-9 Statistical Processing Methods

SPSS v.26 was used to analyze the field data, relying on the following statistical methods:

- Descriptive statistics: To calculate frequencies, percentages, arithmetic means, and standard deviations to describe sample characteristics and response levels.
- Pearson correlation coefficients: To measure the relationship between the dimensions of digital entrepreneurship and indicators of startup success.
- Multiple linear regression analysis: To test the effect of the independent variable (with its five dimensions) on the dependent variable.
- t-test and F-test: To measure the significance of statistical differences and the accuracy of the model.
- Analysis of variance (ANOVA): To determine differences in the impact of digital dimensions by country or company size.

II-10 Statistical Hypotheses of the Study

The statistical hypotheses that the study will test are formulated as follows:

- Main Hypothesis:
 - ✓ There is a statistically significant relationship between the level of adoption of digital entrepreneurship and the success of startups in developing economies.
- Sub-Hypotheses:
 - ✓ There is a statistically significant effect of the use of digital technology on startup success.
 - ✓ There is a statistically significant effect of business model innovation on startup success.
 - ✓ There is a statistically significant effect of internal digital transformation on startup success.
 - ✓ There is a statistically significant effect of digital entrepreneurial leadership on startup success.
 - ✓ There is a statistically significant effect of digital marketing and customer engagement on startup success.

II-11 Study Limitations

- Spatial Limitations: The study was limited to digital startups in Algeria, Tunisia, Egypt, and Jordan.
- Temporal Limits: The study was conducted from January to August 2025.
- Objective Limits: Analyzing the impact of digital entrepreneurship dimensions on institutional success indicators without addressing environmental factors and government policies.

III-Presentation and Analysis of Field Study Results

This section aims to present and statistically analyze the field results of the study, allowing for testing the previously established hypotheses. Data were analyzed using the SPSS statistical program (version 26), where the results were presented in the form of tables and quantitative descriptions to clarify the nature of the responses and the strength of the relationships between the study variables.

III-1 Characteristics of the Study Sample

The following table shows the general characteristics of the study sample, consisting of (200) digital startup companies distributed across four developing countries (Algeria, Tunisia, Egypt, and Jordan):

Table n°3: The general characteristics of the study sample

Characteristic	Category	Frequency	Percentage (%)
Country	Algeria	60	30.0
	Tunisia	50	25.0
	Egypt	55	27.5
	Jordan	35	17.5
Years of Operation	Less than 2 years	40	20.0
	2–5 years	105	52.5
	More than 5 years	55	27.5
Number of Employees	Fewer than 10	110	55.0
	10–25	60	30.0
	More than 25	30	15.0
Field of Activity	E-commerce	80	40.0
	Digital services	45	22.5
	Financial technology (FinTech)	35	17.5
	E-learning	25	12.5
	Digital social entrepreneurship	15	7.5

Source: Output generated by SPSS

The table shows that the majority of the startups in the sample operate in the e-commerce sector (40%), and that most of them are newly established (between two and five years old, representing 52.5%), reflecting the dynamic nature of digital entrepreneurship in developing economies.

III-2 Descriptive Analysis of Study Variables

Averages and standard deviations were calculated for each dimension of digital entrepreneurship and for the startup success index, as shown in the following table:

Table n°4: Descriptive Analysis of Study Variables

Dimension / Indicator	Mean	Standard Deviation	Rank	Assessment Level
Use of Digital Technology	3.85	0.78	1	High
Innovation in Business Model	3.67	0.81	2	Moderately High
Internal Digital Transformation	3.54	0.86	4	Moderately High
Digital Entrepreneurial Leadership	3.48	0.74	5	Moderate
Digital Marketing and Customer Interaction	3.63	0.69	3	Moderately High
Digital Entrepreneurship	3.69	0.77	Moderately High	
Startup Success	3.71	0.73	Relatively High	

Source: Output generated by SPSS

The table shows that the level of adoption of digital entrepreneurship practices in the startups in the study sample was high, with an overall average of 3.69, while the overall average for company success was 3.71, indicating a positive correlation between the two variables.

III-3 Correlation Analysis of Study Variables

To measure the strength of the relationship between the dimensions of digital entrepreneurship and startup success, the Pearson Correlation Coefficient was used, as shown in the following table:

Table n°5: Correlation Analysis of Study Variables

Dimensions of Digital Entrepreneurship	Correlation Coefficient (r)	Significance Level (Sig.)	Interpretation
Use of Digital Technology	0.58	0.000	Strong, positive, and significant relationship
Innovation in Business Model	0.55	0.000	Strong, positive, and significant relationship
Internal Digital Transformation	0.49	0.000	Moderate, positive, and significant relationship
Digital Entrepreneurial Leadership	0.43	0.001	Moderate, positive, and significant relationship
Digital Marketing and Customer Interaction	0.39	0.004	Weak, positive, and significant relationship

Source: Output generated by SPSS

The results show that all five dimensions of digital entrepreneurship are positively related to startup success, with the highest correlation being in the digital technology use dimension ($r = 0.58$) and the lowest in the digital marketing dimension ($r = 0.39$).

All of these relationships are statistically significant at the $\alpha \geq 0.01$ level.

III-4 Multiple Linear Regression Analysis

Multiple linear regression analysis was applied to test the explanatory effect of the digital entrepreneurship dimensions on startup success, and the results were as follows:

Table n°6: Multiple Linear Regression Analysis

Independent Variable	Regression Coefficient (B)	Beta (β)	t-Value	Significance Level (Sig.)
Use of Digital Technology	0.38	0.34	6.92	0.000
Innovation in Business Model	0.31	0.28	5.01	0.000
Internal Digital Transformation	0.19	0.17	2.88	0.004
Digital Entrepreneurial Leadership	0.12	0.11	1.98	0.049
Digital Marketing and Customer Interaction	0.08	0.09	1.54	0.125
Constant	0.46	—	3.67	0.000

Source: Output generated by SPSS

Overall Model Results:

- Coefficient of Determination (R^2) = 0.57
- Multiple Correlation Coefficient (R) = 0.75
- F-Statistics = 51.32, with a degree of freedom of (5.194), and a significance level of ($p = 0.000$)

This indicates that the regression model is highly statistically significant, and that the digital entrepreneurship dimensions combined explain approximately 57% of the variance in startup success.

The multiple reference analysis results indicate that the statistical model has high explanatory power, with a multiple coefficient of variation ($R = 0.75$) and a coefficient of determination ($R^2 = 0.57$), including findings that the dimensions of digital task leadership explain 57% of the variance in startup success. The F-value ($F = 51.32$, $p < 0.001$) further confirms the statistical significance of the accelerated model. At the intermediate modern level, the use of digital technology scored highest on standard innovation and was statistically significant ($\beta = 0.34$, $p < 0.001$), followed by starting a business ($\beta = 0.28$, $p < 0.001$), while digital transformation ($\beta = 0.17$, $p = 0.004$) and sports leadership ($\beta = 0.11$, $p = 0.049$) also showed significant innovation at different levels. In contrast, digital marketing and customer engagement did not have a statistically significant impact ($\beta = 0.09$, $p = 0.125$). These results confirm that the impact of digital entrepreneurship dimensions on successful startups is incomplete, with general technology dominating the explanatory power of the model.

III-5 Statistical Hypothesis Testing**Table n°7: Hypothesis Testing Statistics**

Hypothesis No.	Hypothesis Statement	Statistical Result	Decision
H1a	There is an effect of the use of digital technology on the success of startups.	$\beta = 0.34$, $p = 0.000$	Accepted
H1b	There is an effect of innovation in the business model on the success of startups.	$\beta = 0.28$, $p = 0.000$	Accepted
H1c	There is an effect of internal digital transformation on the success of startups.	$\beta = 0.17$, $p = 0.004$	Accepted
H1d	There is an effect of digital entrepreneurial leadership on the success of startups.	$\beta = 0.11$, $p = 0.049$	Partially accepted
H1e	There is an effect of digital marketing and customer interaction on the success of startups.	$\beta = 0.09$, $p = 0.125$	Rejected

Source: Output generated by SPSS

The table shows that four sub-hypotheses (H1a, H1b, H1c, H1d) were accepted due to a statistically significant effect, while the fifth hypothesis (H1e) was rejected due to a lack of significance at the 0.05 level. This indicates that digital leadership has varying degrees of influence on the success of startups, with the strongest effect being the use of technology and innovation in the business model

IV- Discussion of Results

This section aims to interpret and analyze the results obtained in the previous section in light of previous studies and relevant theoretical frameworks, presenting the most important general conclusions and proposed recommendations.

IV-1 The impact of digital technology uses on startup success:

The results showed that this dimension was the most influential ($\beta = 0.34$, $p < 0.001$), meaning that startups' reliance on electronic platforms, online sales systems, and analytical tools significantly contributes to improving their financial and operational performance.

This result is consistent with the findings of Nguyen et al. (2025, p. 141309) in their study on ASEAN countries, which confirmed that digital transformation enhances innovative performance and increases the efficiency of startups.

It is also consistent with Elia et al. (2020, p. 8) who stated that digital technology represents a "strategic lever" for growth in developing markets by reducing operating costs and facilitating geographic expansion.

This demonstrates that the use of digital technology is a key variable for achieving organizational success, especially in an environment characterized by limited material resources and weak traditional infrastructure.

IV-2 The Impact of Business Model Innovation:

This dimension ranked second in terms of impact ($\beta = 0.28$, $p < 0.001$), indicating that companies that developed innovative digital business models were able to achieve higher financial growth and sustainability.

This aligns with the findings of Kraus et al. (2019, p. 354), who confirmed that business model innovation is one of the most important determinants of success in the digital economy, as it allows for the generation of new value and the adaptation of services to changing consumer needs.

This finding also aligns with Al-Sharabi (2020, p. 45), who explained that innovation represents the backbone of entrepreneurship in the Arab region, given its role in overcoming traditional barriers in developing markets. Thus, business model innovation is a key indicator of startups' ability to achieve a sustainable competitive advantage.

IV-3 The Impact of Internal Digital Transformation:

The impact of this dimension was moderate ($\beta = 0.17$, $p = 0.004$), attributed to the variation in the maturity level of internal digital systems among startups.

This result indicates that internal digitization in the areas of management, operations, and production leads to improved operational efficiency and reduced human error. This result is consistent with Teece (2018, p. 45) within the dynamic capabilities theory, who explained that organizations capable of continuously digitally reconfiguring their resources achieve superior performance in a changing environment.

In the Arab context, this result is consistent with Al-Awadhi (2022, p. 87), who emphasized that the internal digital transformation of SMEs is a prerequisite for sustainable competitiveness. Thus, strategically adopting internal digital transformation enhances the operational efficiency and flexibility of startups.

IV-4 The Impact of Digital Entrepreneurial Leadership:

The results showed that this dimension had a relatively weak positive impact ($\beta = 0.11$, $p = 0.049$). This is attributed to the fact that most leaders in startups in developing economies lack specialized digital leadership experience, despite their entrepreneurial spirit.

This finding supports Al-Hashemi (2021, p. 63), who asserted that weak leadership competencies in the digital field represent a fundamental challenge to entrepreneurship in Arab countries.

In contrast, the general trend aligns with the findings of Isenberg (2011, p. 14) in his study on the entrepreneurial ecosystem, which emphasized that transformational leadership plays a mediating role in transforming innovation into actual success. Accordingly, enhancing the digital leadership capabilities of young entrepreneurs is essential for building an innovative and change-supportive corporate culture.

IV-5 The impact of digital marketing and customer engagement:

The result for this dimension was not statistically significant ($\beta = 0.09$, $p = 0.125$), indicating that the impact of digital marketing on corporate success remains limited in the sample studied.

This is likely due to weak marketing strategies across online platforms or the limited use of professional customer behavior analysis tools. This result is consistent with the observations of Elia et al. (2020, p. 9), who indicated that organizations in developing economies are still in the early stages of investing in digital marketing tools and often rely on traditional channels. Thus, it can be argued that digital marketing represents a promising but still underutilized field in the Arab startup environment.

In light of the above, the most important conclusions can be summarized as follows:

- Digital entrepreneurship is a key determinant of the success of startups in developing economies, explaining more than 50% of the variance in institutional performance.
- The use of digital technology and business model innovation are the most influential dimensions in achieving growth and sustainability.
- Internal digital transformation contributes to improving operational efficiency, but it requires financial and technical support from governments and financial institutions.
- Digital entrepreneurial leadership is still in its early stages of maturity in developing countries, necessitating the development of training and qualification programs for digital leaders.
- Digital marketing represents an underutilized opportunity, especially for small companies that lack advanced digital strategies.
- The study confirms that the digital environment in developing economies holds significant growth potential, but requires integrated efforts between the public and private sectors to overcome technical and regulatory obstacles.

Conclusion

This field study examined the influence of digital entrepreneurship on the success of startups in developing economies, based on the premise that adopting digital practices has become a decisive factor for the sustainability and growth of entrepreneurial ventures amid rapid global technological change. By surveying 200 digital startups across Algeria, Tunisia, Egypt, and Jordan, the study produced important findings that enhance understanding of digital entrepreneurship in emerging economies.

The results showed that digital entrepreneurship goes beyond the mere use of technology; it represents an integrated intellectual and organizational system combining innovation, digital transformation, entrepreneurial leadership, and digital marketing. The five dimensions studied, technology use, business model innovation, internal digital transformation, digital entrepreneurial leadership, and digital marketing, each form an essential pillar for building competitive startup projects.

Statistical analysis revealed that effective technology use has the strongest impact, helping startups improve operational efficiency, broaden their customer reach, and access new markets at lower costs. Business model innovation ranked second, enabling companies to adapt quickly to market shifts and anticipate customer needs, thus gaining a sustained competitive edge. Internal digital transformation improved administrative coordination but showed only moderate impact due to disparities in financial and technical capabilities. Digital entrepreneurial leadership had a relatively weak effect, reflecting limited leadership experience in developing contexts, while digital marketing also showed limited statistical impact, indicating that promotional practices remain basic and unstrategic.

The findings confirm that digital entrepreneurship is now essential for institutional success in the knowledge economy, and that developing economies cannot achieve significant progress without empowering entrepreneurs with digital transformation and innovation tools. Startup success increasingly depends on knowledge generation and creative use of data rather than solely on financial resources.

Practically, the study highlights that despite regulatory and technical constraints, developing countries possess promising youth potential capable of driving a digital economy if supported by appropriate policies. The findings offer valuable guidance for policymakers in innovation and sustainable development, emphasizing the need to strengthen digital infrastructure and establish regulatory frameworks that facilitate the growth of digital startups. Furthermore, the transition to a digital economy requires building a comprehensive digital culture and creating an integrated ecosystem involving universities, investors, incubators, financial institutions, and government agencies. Without such integration, individual startup efforts will remain limited and unable to achieve the desired transformation in developing economies.

Recommendations

Based on the previous findings, the study recommends the following:

- Encouraging governments to support the digital transformation of startups through tax incentives and funding programs dedicated to digital projects.
- Enhancing digital infrastructure in developing countries by improving internet services and facilitating access to cloud platforms.
- Integrating digital entrepreneurship education into university curricula and innovation centers to develop digital leadership and creativity skills.

- Encouraging innovation in business models through technology incubators and accelerators that focus on scalable local solutions.
- Launching specialized training programs in digital marketing and data analysis to develop startups' competitive capabilities.

Suggestions for Future Studies

- Conducting comparative studies between digital and non-digital companies in developing countries to measure the impact of digital transformation on performance.
- Studying the impact of digital entrepreneurial leadership on institutional innovation from an in-depth qualitative perspective.
- Analyzing the role of digital human capital as a mediating factor between digital entrepreneurship and organizational success.
- Expanding the scope of the research to include African and Asian contexts to understand cultural and organizational differences in adopting digital entrepreneurship

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