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The impact of internal entrepreneurship practices on performance: A field study in Jordanian universities

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Abstract

This study aims to examine the impact of entrepreneurship practices on innovation performance in Jordanian public universities. It also explores how entrepreneurial behaviors and organizational factors contribute to fostering innovation in academic institutions. The study population consists of four major public universities in Jordan: the University of Jordan, Yarmouk University, Al-Hussein Bin Talal University, and Al-Balqa' Applied University. A total of 212 participants comprised the study sample, including 52 faculty members and 160 students from the aforementioned institutions. The research employed a descriptive quantitative methodology using a structured questionnaire adapted from established entrepreneurship and innovation scales. The instrument measured key dimensions such as interactivity, risk-taking, self-renewal, autonomy, and organizational support. Statistical analyses were conducted, including descriptive statistics, Cronbach's alpha for reliability, and analysis of variance for comparison across universities. The results revealed statistically significant differences in entrepreneurship and innovation performance among universities, with the University of Jordan recording the highest average scores across all variables. The results confirmed that entrepreneurship positively impacts innovation performance and that organizational factors play a mediating role. The study recommends strengthening leadership support, enhancing faculty and student autonomy, and developing institutional policies that foster an entrepreneurial culture within universities. These insights contribute to both academic literature and practical policy discussions by highlighting the critical role of entrepreneurship in improving innovation and competitiveness in the Jordanian higher education sector.

Keywords: Business performance, Entrepreneurial practices, Innovation behaviors, Innovation strategies, University curriculum.

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1. Introduction

Universities are under increasing pressure to innovate, adapt, and improve their performance to ensure their survival and maintain their competitive advantage in an emerging, rapidly changing, knowledge-based world. One area gaining momentum is entrepreneurship, which is considered a key enabler of innovation and value-added operational improvements in the university context. Although there is a significant body of research on entrepreneurship in the private sector [1], we still lack fundamental knowledge on how these practices occur within the university sphere, particularly in developing countries. Thus, this study is focused on exploring how entrepreneurial behaviors exhibited through opportunity recognition, risk-taking, and resilience contribute to the performance of universities in Jordan. The Jordanian higher education sector has experienced rapid growth and increased competition, making it an ideal site to consider how entrepreneurship influences the areas of university governance, curriculum, research commercialization [2], and community engagement. As market conditions continue to fluctuate and uncertainty becomes the norm, universities, like businesses, must develop innovative products or services in order to gain or maintain a competitive advantage. Institutional innovation has implications not only for the institution but also for national economic benefits and the strengthening of sectors as a whole [3]. Although entrepreneurship can sometimes lack clarity and become muddled with vague terms or phrases, it is emerging as a powerful tool for organizations. While entrepreneurship could be thought of as a vague, buzzword-filled topic, it is a game changer for both organizations and nations. We need to take a closer look at how it grows and functions in organizations if we are to achieve value. Research has looked at previous studies examining the drivers and components of entrepreneurship [4], but there is so much more to explore. Entrepreneurship may well be the answer to the "dinosaur syndrome" (when large organizations exhibit a lack of change or stagnation). For university leaders, this is about approaching issues with an entrepreneurial way of thinking to confront troubles that have existed for decades and, in doing so, to develop new avenues for potential [5]. This research will afford us the opportunity to examine the interplay between entrepreneurship and innovation, and organizational factors; qualitative and quantitative techniques will be used. The research aims to develop an understanding of the drivers of innovation in universities and how these components drive performance. Ultimately, this research is intended to assist academic leaders and policymakers with building more innovative, responsive, and future-ready institutions, not just within Jordan but in similar environments around the globe [6].

2. Research Problem

Many universities around the world find themselves forced to improve their performance through innovation and organizational flexibility. In the face of increasing competition, changing societal needs, and rapidly advancing technology, Jordanian universities, in particular, are faced with even larger hurdles of limited resources, bureaucratic administrative structures, and having to be better aligned with national development goals. While internal entrepreneurship, often known as entrepreneurship, has been adopted and is generally recognized as an enabler of innovation and organizational performance in the private sector, there is significantly less knowledge about the applicability and influence of entrepreneurship on higher education institutions. While global research largely supports the concept that entrepreneurial activities such as innovativeness, risk-taking, and reactivity can lead to better outcomes at the institutional level, there is little empirical data to support or elucidate how or whether entrepreneurship directly influences innovation performance within Jordanian universities. It is also known that organizational factors, including leadership, organizational structure, and culture, impact both entrepreneurship and innovation; however, the specific effects and relationships among these three constructs have not been thoroughly investigated in academic contexts until recently. Therefore, the preliminary problem addressed in this study is understanding how internal entrepreneurship practices and organizational aspects contribute to innovation performance among Jordanian universities.

2.1. Research Questions

1. To what extent are internal entrepreneurship practices present in Jordanian universities?
2. What is the relationship between internal entrepreneurship practices and innovation performance in Jordanian universities?
3. How do organizational factors (leadership, structure, culture) influence innovation performance in Jordanian universities?
4. What is the relationship between organizational factors and internal entrepreneurship practices within Jordanian universities?
5. Does internal entrepreneurship mediate the relationship between organizational factors and innovation performance in Jordanian universities?

2.2. Research Objectives

1. To identify the extent to which internal entrepreneurship practices are implemented within Jordanian universities.
2. To examine the relationship between internal entrepreneurship practices and innovation performance in the context of Jordanian higher education institutions.
3. To explore the influence of key organizational factors such as leadership, organizational culture, and structure on innovation performance in Jordanian universities.
4. To analyze the relationship between organizational factors and the development of internal entrepreneurship practices in Jordanian universities.
5. To investigate the mediating role of internal entrepreneurship in the relationship between organizational factors and innovation performance.

3. Literature Review

3.1. Entrepreneurship in Universities

Entrepreneurship, sometimes defined as the non-exploitation of new ventures within existing institutions [7], has received increasing attention in multiple contexts, including higher education. When viewed within the context of higher education institutions, entrepreneurship refers to the entrepreneurial actions of faculty, administrative staff, and students that can lead to the launch of new ventures, innovation, and improvement of existing organizational processes. Entrepreneurship in universities has become increasingly important given the ongoing transformation of universities into more competitive and dynamic institutions in the global knowledge economy, which relies on the entrepreneurial intent of various groups to foster innovation, influence institutional performance, and create societal value [8].

3.2. Entrepreneurship Practices in Universities

Entrepreneurship practices have evolved in universities, with the aim of fostering innovation, establishing new programs, and partnering with industry. The extent or degree of impact of these practices on the institution varies depending on factors such as institutional culture, leadership, and environmental influences. Institutional entrepreneurship can be defined as an individual or group acting in an entrepreneurial manner for the benefit of the institution. Individuals or groups act as entrepreneurs, using a certain number of resources to launch an entrepreneurial venture through which they offer something new to the institution. In higher education, this can be achieved through the creation of a new educational program [9], a new partnership with industry, or the adoption of innovative teaching and learning processes. Internal practices adopted through entrepreneurship can be influenced by variables that constitute barriers or facilitators to how an institution embraces entrepreneurship [10]. These variables may include environmental influences, leadership support, institutional structure, and resource availability. Universities often struggle to create an environment that fosters creativity, risk-taking, and autonomy for faculty and staff, and they need to do so in order to support entrepreneurial behaviors that will enhance organizations' ability to engage in entrepreneurial practices [10].

3.3. Measuring Entrepreneurship in Universities

Establishing measures of entrepreneurship is crucial for understanding how it impacts performance. In the organizational context, researchers have developed various measures to assess entrepreneurship. Two main measures are the Entrepreneurship Scale (Essence of Entrepreneurship) [11] and the Corporate Entrepreneurship Scale (CES). Both the EES and the CES have been modified and validated through numerous studies measuring the relationship between entrepreneurial activities and organizational performance. Mahmoud et al. [12] identified four main dimensions of entrepreneurship: new business ventures, innovation, self-renewal, and interactivity. These measures thus provide a deeper understanding of the dimensions of entrepreneurship that are important for understanding how these activities contribute to organizational performance and success.

3.4. Impact of Entrepreneurship on Innovation and Performance

Research suggests that entrepreneurial activity can positively impact innovation and organizational performance [13]. The authors discovered a relationship between higher levels of innovation in the service and manufacturing sectors and entrepreneurial activity, and this same logic can be applied to the context of universities. Innovation can be product or service innovation, and innovative educational and administrative processes can be considered innovations that improve an organization's operational efficiency. However, entrepreneurship enables universities to adapt to rapid market changes by fostering a mindset that encourages change and improvement. Rumanti et al. [14] note, universities have the opportunity to gain a competitive advantage by embracing an entrepreneurial spirit. Universities play a role in the knowledge economy, and by adopting an entrepreneurial approach through entrepreneurial behaviors. Entrepreneurship is associated with various performance outcomes, including increased collaboration with industry players, research quality indicators, and student satisfaction [15].

3.5. Organizational Factors Affecting Entrepreneurship

The impact of organizational culture and leadership on entrepreneurship has received significant academic attention. Kikas [16] reported that supportive leadership and a decentralized structure are key factors that encourage entrepreneurial behavior. Public universities that value autonomy and provide faculty and students with the resources and authority to develop their own innovation plans and ideas are more likely to achieve positive performance and innovation outcomes. There are barriers that can hinder universities from developing their own entrepreneurship. These barriers can include formal hierarchies, insufficient funding, and a lack of strategic focus. In the case of universities, Rifai et al. [17] reported that universities are unable to realize the value of their innovative performance if they do not provide guidance on their vision for an entrepreneurial venture, in addition to insufficient resources.

3.6. Entrepreneurship and Innovation Performance in Higher Education

The relationship between entrepreneurship and innovation performance in universities has been examined in numerous studies. Research shows that entrepreneurial behaviors significantly influence innovation performance in universities [18]. Innovation in higher education can take many forms, including the creation of new academic programs, research discoveries, and better teaching strategies. At universities that encourage entrepreneurship, faculty and students engage in innovative projects that lead to a competitive advantage for the university and enhance academic reputation. An entrepreneurial culture within universities also facilitates the commercialization of academic research and collaborative partnerships with industry

[19]. This supports the financial sustainability and success of the institution. Universities with a strong entrepreneurial culture are better positioned to adapt to the changing landscape of higher education and meet the demanding needs of various stakeholders, such as students and employers.

3.7. The Role of Jordanian Universities in Entrepreneurship and Innovation

Universities in Jordan have begun to recognize the importance of adopting entrepreneurial practices as a means of enhancing their competitive position. Specifically, the University of Jordan, Yarmouk University, Al-Hussein Bin Talal University, and Al-Balqa Applied University are working to better integrate entrepreneurial practices into their strategies [20]. This growth aims to enhance the university's academic programs, research capabilities, and private sector engagement by creating a culture among university faculty that recognizes innovation and entrepreneurship as mutually reinforcing. However, challenges remain. For example, many Jordanian universities have a rigid bureaucratic structure that can unintentionally hinder the development of entrepreneurial behaviors [21]. Despite these challenges, there is evidence that entrepreneurship in Jordan can enhance university performance and innovation capabilities, especially as it recognizes progress in global trends in higher education. While many terms, such as "entrepreneurship," "corporate entrepreneurship," "corporate venturing," and "corporate entrepreneurship," are used, the importance of fostering an entrepreneurial mindset remains crucial [22] are used interchangeably with entrepreneurship, which may be the broader term to describe behaviors that occur or exist within existing entities (such as regressions) when explored through entrepreneurial behavior. In this regard, entrepreneurship inherently engages, encourages, and cultivates the capacity to be an entrepreneur in the entrepreneurial mindset and behavior of an individual employee through entrepreneurial actions. What this means for entrepreneurs in Jordanian universities is the potential to develop faculty, management, and staff. Act innovatively and autonomously in developing new opportunities [23]. Entrepreneurship is defined as a process in which individuals in the organization pursue opportunities regardless of existing resources. Entrepreneurship includes challenging existing practices while acting in an entrepreneurial spirit to change the action-oriented degree of autonomy. This can be evident in higher education with the growing demand for new academic programming and research initiatives, new student services, or new administrative processes. Entrepreneurship enables all universities to adapt to changing educational environments, enhance internal processes, and remain competitive in a knowledge-based economy [24]. Measuring entrepreneurship, the literature is full of models and dimensions of entrepreneurship. Isaacs et al. [25] suggest that entrepreneurship is a subfield of entrepreneurship that includes ways to innovate within an established organization. They propose that, in an internal entrepreneurship approach, the result is generating new services or products that enhance organizational competitiveness. The older frameworks tended to focus mainly on creating new businesses and product development.[26] followed by expanding the definition within the literature to include produced innovations, process innovations, self-renewal, reactivity, and competitive aggressiveness [27]. Several measures of entrepreneurship have been developed [28]. He proposed an integrated model consisting of four dimensions: venture capital, innovation, self-renewal, and interactivity. These four dimensions have been used in various sectors, including education, to study the entrepreneurial activity of institutional members. In Jordanian universities, this measure can assess the extent to which internal entrepreneurial initiatives, such as the development of interdisciplinary programs or industrial partnerships, contribute to institutional performance [29].

3.8. Innovation Performance in Higher Education

Innovation is a key outcome of entrepreneurship and plays a vital role in improving the performance of higher education institutions. For universities, innovation can take the form of new teaching processes, administrative processes, research outputs, or even digital tools. Although innovation has been primarily studied in firms operating in industrial sectors, researchers are beginning to recognize that innovation can be different in education and other services [30]. In Jordanian universities, most innovation is incremental, and if it is new or radical, it is limited primarily by resource constraints and the regulatory environment. However, improvements in the use of digital tools for learning systems and the introduction of new ways to engage students can shape innovation and improve university effectiveness. Measuring innovation performance in service-oriented institutions, such as universities, can be challenging, as traditional innovation metrics may not capture aspects of academic innovation. In this context, modified metrics for assessing service innovation behavior and new service development [31] would be useful when assessing how universities innovate in teaching, research, and administration.

3.9. Organizational Factors Influencing Entrepreneurship and Innovation

The characteristics of the organization are critical to establishing how institutional entrepreneurship occurs, or not, and the innovation performance of the organization. In an academic institution, characteristics like the style with which leadership operates, organizational culture, structural flexibility, and the opportunity for resource allocation work to establish how and whether internal entrepreneurship is going to be supported. Receiving support from leadership and communication, along with autonomy, has repeatedly been shown to produce effects that lead to more innovative behaviors and better levels of entrepreneurial engagement [32]. As noted in the case of Jordanian institutions of higher education that are highly bureaucratic, developing a climate that supports innovation is more than important. There are grounds for creating an open innovation ecosystem when environments value and support management, incentivize innovation, and have a clear strategic orientation [33]. On the opposite side of the organization's characteristics is the tendency not to respond to bureaucracy, incentives, and a lack of strategic unity. A theoretical framework linking entrepreneurship, organizational characteristics, and innovation performance indicates that numerous studies have found a positive link between entrepreneurship and innovation performance [34]. Furthermore, research has found that institutions with a strong entrepreneurial culture are more likely to

engage in radical and sustainable innovation. In university contexts, this manifests in the form of new academic programs, collaborative research initiatives across disciplines, and new student perspectives and services. In the academic study by Clark and Rollo [35], organizational factors were identified as having both direct and indirect influences on innovation performance. The researchers found that leadership support and trust are essential for innovative behaviors. In educational contexts, academic leaders should foster an environment that empowers employees and reduces the fear of failure. These factors create a climate that supports the emergence of entrepreneurship. This study employs a model that proposes that entrepreneurship will have direct effects on innovation performance and also mediate the effects of organizational factors on innovation. In particular, the following hypotheses are proposed:

1. *H₁: Entrepreneurships are positively related to innovation performance.*
2. *H₂: Organizational factors are positively related to innovation performance.*
3. *H₃: Entrepreneurships mediate the relationship between organizational factors and innovation performance.*

3.9. Relevance of the Study

Given their commitment to fostering innovation and competitiveness, universities in Jordan must find new ways to enhance quality, efficiency, and relevance. As complex organizations operate in a rapidly changing environment, universities increasingly must implement practices that foster adaptability, knowledge production, and responsiveness to stakeholder needs. However, much of the existing literature on entrepreneurship and innovation has addressed these topics in the corporate sector, with limited empirical research in higher education, and even fewer studies conducted in the Arab world. This study fills the gap in previous studies by exploring the ways in which entrepreneurial practices and the organizational conditions of Jordanian universities influence innovation performance. Overall, the study provides useful information for university administrators, government decision-makers, and university staff who wish to improve performance at their universities by adopting entrepreneurship and innovation practices.

4. Methodology

4.1. Research Design

The study employs a quantitative, descriptive-correlational research design to investigate the impact of internal entrepreneurship practices on innovation performance in Jordanian public universities. The objective of the study is to identify patterns, trends, and relationships between entrepreneurship, organizational factors, and innovation performance, while also assessing the mediating role of entrepreneurship in these relationships.

4.2. Study Population and Sample

The participants consisted of faculty members and students from four main public universities in Jordan: The University of Jordan, Yarmouk University, Al-Hussein Bin Talal University, and Al-Balqa Applied University. These institutions were selected based on their geographical differences, structural differences, and representation of the public higher education system in Jordan. The sample included 52 faculty members, representing different faculties and departments, and 160 students, representing students enrolled in undergraduate and postgraduate programs at the selected institutions. A stratified sample was adopted to ensure representation of faculty members and students, as well as representation from each of the included institutions. The sample size ($n=212$) was large enough for statistical analysis, allowing for reasonable generalization within the context of the institutions.

4.3. Data Collection Instrument

Data were collected using a structured questionnaire adopted from scales that have been validated in previous studies. We designed the questionnaire in three sections: 1) Entrepreneurship Scale: Adapted from Ofori and Atiogbe [36]. Measured innovativeness, reactivity, self-renewal, and risk-taking dimensions. 2) Organizational Factors Scale based on Juhl and Christensen [37]. Measured leadership, organizational culture, structure, and resources. 3) Innovation Performance Scale adapted from Mahadea et al. [38]. And validated by Marco and Bert [39]. Measured service innovation behavior and new service development. The questionnaire used a five-point Likert scale with 1 (Strongly Disagree) to 5 (Strongly Agree).

4.4. Validity and Reliability

In order to establish content validity, the questionnaire was vetted by academic colleagues specializing in entrepreneurship, organizational behavior, and higher education. These colleagues provided feedback on the single instrument used to assess the main constructs in the study and the question sets used. A pilot test was conducted with a small sample of respondents (10 academics and 20 students) to check references to wording and to ensure clarity in the questions before the execution of the main study. Reliability was assessed using Cronbach's alpha, where all scales exceeded acceptable limits ($\alpha > 0.70$).

4.5. Data Analysis

The data was analyzed using SPSS. The analysis included descriptive statistics (means, standard deviations) to summarize respondents' perceptions, Pearson correlation analysis to examine relationships between variables, multiple regression analysis to assess the direct effects of entrepreneurship and organizational factors on innovation performance, and mediation analysis using Hayes' PROCESS macro to evaluate the mediating role of entrepreneurship in the relationship between organizational factors and innovation performance. All analyses were conducted at a 95% confidence level ($\alpha = 0.05$).

4.6. Measurement Instruments

Two foundational scales have significantly influenced the literature on entrepreneurship. The first is the entrescale, which has been widely adopted in both public and private sector studies. Building on these models, a proposed multidimensional framework for measuring entrepreneurship was developed. They identified four key dimensions: new business venturing (multi-affectedness), competitive aggressiveness, self-renewal (self-innovation), and autonomy. Each of these constructs captures a specific entrepreneurial behavior within existing organizations. In this study, entrepreneurship was measured using a scale adapted from previous research and validated in similar contexts. The scale consists of four sub-dimensions: New Business Venturing / Multi-affectedness (4 items), Competitive Aggressiveness (4 items), Self-Innovation (3 items), and Autonomy (3 items). In addition to entrepreneurship, organizational factors were measured using a scale that evaluates four core aspects: Leadership (5 items), Organizational Structure (6 items), Organizational Culture (4 items), and Resource Availability (3 items). Each of these dimensions was included based on its recognized influence on organizational innovation and entrepreneurship.

The physical and institutional structures were considered across all sub-scales. To measure innovation performance, this study employed a method that has demonstrated high validity and reliability, particularly in service-oriented sectors. It includes two sub-dimensions: Service Innovation Behavior (6 items) and New Service Development (8 items). All instruments used in the study followed a five-point Likert scale, ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). A higher score reflects stronger agreement and a greater presence of the construct being measured. The internal consistency of the scales was assessed using Cronbach's alpha, with values ranging from 0.75 to 0.95, indicating a high level of reliability across all sub-dimensions (see Table 1 for detailed statistics). These values confirm the robustness and trustworthiness of the measurement tools used in this research. (8 items) All instruments used in the study followed a five-point Likert scale, ranging from 1 ("Strongly Disagree") to 5 ("Strongly Agree"). A higher score reflects stronger agreement and a greater presence of the construct being measured. The internal consistency of the scales was assessed using Cronbach's alpha, with values ranging from 0.75 to 0.95, indicating a high level of reliability across all sub-dimensions (see Table 1 for detailed statistics). These values confirm the robustness and trustworthiness of the measurement tools used in this research.

Table 1.
Reliability Coefficients, Means, and Standard Deviations for Study Scales.

Scale / Dimension	No. of Items	Cronbach's Alpha (α)	Mean (M)	Standard Deviation (SD)
Entrepreneurships	14	0.91	3.84	0.62
- New Business Venturing (Multi-facetedness)	4	0.87	3.76	0.68
- Competitive Aggressiveness	4	0.85	3.91	0.64
- Self-Innovation	3	0.88	3.79	0.58
- Autonomy	3	0.82	3.88	0.60
Organizational Factors	18	0.93	3.72	0.66
- Leadership	5	0.89	3.80	0.63
- Organizational Structure	6	0.86	3.69	0.70
- Organizational Culture	4	0.84	3.68	0.65
- Resource Availability	3	0.83	3.62	0.67
Innovation Performance	14	0.94	3.85	0.61
- Service Innovation Behavior	6	0.91	3.82	0.59
- New Service Development	8	0.92	3.88	0.62

The outcomes highlighted in Table 1 highlight that all scales and sub-dimensions had very good internal consistency, with Cronbach's alphas computed between .82 and .94. An acceptable value was .70. Hence, this indicates that the instruments used in the study were reliable as well as valid in measuring entrepreneurship, organizational factors, and innovation performance in Jordanian public universities. The mean constructs were consistent with respondents expressing moderately high agreement about the existence of entrepreneurial behavior, supportive organizational factors, and innovation performance in their respective institutions (M's between 3.62 and 3.91). Specifically, standard deviations were between 0.58 and 0.70, also representative of a moderate amount of variability in responses, as one might find in a university context inclusive of faculty and students. The entrepreneurship scale had an overall acceptable alpha ($\alpha = 0.91$), with Competitive Aggressiveness indicating the highest means ($M = 3.91$), representing an assertive and aggressive approach to entrepreneurship. The Organizational Factors scale also had excellent reliability ($\alpha = 0.93$), led by Leadership as the strongest sub-dimension ($M = 3.80$). Innovation Performance had the highest reliability ($\alpha = 0.94$), indicating good reliability findings for an instrument measuring institutional innovation. Overall, this indicates that the scales used in the study were able to conduct further analysis (correlation and analysis of variance). Reinforcing the strength of this measure for knowledge of institutional innovation, the results verified that the survey scales employed in this study are suitable for continued investigation employing further assessment techniques such as correlation and regression analyses to interrogate associations amongst variables and to test the hypotheses of this study.

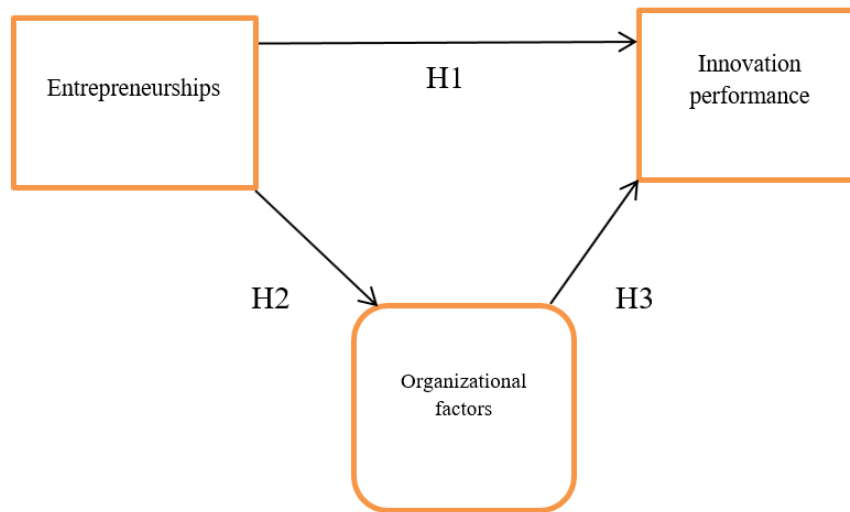


Figure 1.
Hypothetical Mediation Effect of Entrepreneurship.

Table 2.
Correlation Matrix of Main Variables.

	Entrepreneurships	Organizational factors	Innovation performance
Entrepreneurships	1.00	0.68	0.72
Organizational Factors	0.68	1.00	0.75
Innovation Performance	0.72	0.75	1.00

There are strong and significant positive correlations between all variables. Entrepreneurship is closely associated with both organizational factors ($r = 0.68$) and innovation performance ($r = 0.72$), supporting the study hypotheses.

Table 3.
Simple Regression – Entrepreneurship Predicting Innovation Performance.

Variable	B	SE	Beta	t	Sig.
entrepreneurships	0.65	0.08	0.72	8.13	0.000

Entrepreneurship significantly predicts innovation performance ($p < 0.01$). The beta coefficient ($\beta = 0.72$) indicates a strong effect size, confirming H1 of the study.

Table 4.
Simple Regression – Organizational Factors Predicting Innovation Performance.

Variable	B	SE	Beta	t	Sig.
Organizational Factors	0.69	0.07	0.75	9.86	0.000

Organizational factors are a significant predictor of innovation performance. This finding supports H2 and shows that well-structured organizations enhance innovation outcomes.

Table 5.
Multiple Regressions – Mediation Model.

Variable	B	SE	Beta	t	Sig.
Organizational Factors	0.40	0.09	0.43	4.44	0.000
entrepreneurship	0.49	0.10	0.52	4.90	0.000

When both organizational factors and entrepreneurship are included in the model, the effect of organizational factors decreases, suggesting partial mediation by entrepreneurship (supporting H3). This means entrepreneurship acts as a bridge through which organizational factors influence innovation performance.

Table 6.
ANOVA for Regression Model.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	120.45	2	60.23	140.07	0.000
Residual	90.22	209	0.43	—	—
Total	210.67	211	—	—	—

The regression model is statistically significant ($F = 140.07$, $p < 0.001$), confirming that the combined predictors explain a substantial proportion of the variance in innovation performance.

Table 7.

Summary of Reliability Coefficients (Cronbach's Alpha).

Dimension	Cronbach's Alpha (α)
entrepreneurships	0.91
Organizational Factors	0.93
Innovation Performance	0.94

All scales showed excellent reliability ($\alpha > 0.90$), affirming the internal consistency of the measurement instruments across the sample of Jordanian university stakeholders.

Table 8.

Group Comparison – Mean Scores of Faculty and Students.

Dimension	Faculty Mean	Student Mean	Mean Difference
entrepreneurships	3.92	3.76	0.16
Organizational Factors	3.81	3.65	0.16
Innovation Performance	3.91	3.79	0.12

Faculty members reported slightly higher mean scores than students across all dimensions. This suggests that faculty may perceive the organizational environment and innovation processes more positively than students.

Table 9.

Descriptive Statistics by University.

University	Entrepreneurships (Mean \pm SD)	Organizational Factors (Mean \pm SD)	Innovation Performance (Mean \pm SD)
University of Jordan (UJ)	3.94 \pm 0.55	3.89 \pm 0.52	3.98 \pm 0.50
Yarmouk University (YU)	3.76 \pm 0.60	3.71 \pm 0.63	3.82 \pm 0.57
Al-Hussein Bin Talal (AHU)	3.65 \pm 0.62	3.55 \pm 0.68	3.70 \pm 0.60
Al-Balqa Applied (BAU)	3.78 \pm 0.58	3.63 \pm 0.66	3.77 \pm 0.59

Table 10.

One-Way ANOVA Results for Differences between Universities.

Variable	Sum of Squares	df	Mean Square	F-value	Sig. (p)
entrepreneurship	4.12	3	1.37	4.01	0.009
Organizational Factors	4.85	3	1.62	4.58	0.004
Innovation Performance	4.22	3	1.41	4.25	0.006

The ANOVA results suggest significant differences between the four universities in three main areas - entrepreneurship ($p = 0.009$). The respondents from the University of Jordan expressed the highest levels of entrepreneurship ($M = 3.94$), which suggests that there is a more conducive entrepreneurial context compared to the other universities, notably even compared to the AHU, which reported the lowest mean ($M = 3.65$). Organizational Factors ($p = 0.004$): The University of Jordan consistently reported the highest level of organizational support ($M = 3.89$), reflecting greater levels of leadership, structure, and support for entrepreneurship. The AHU had the lowest perceptions of organizational support ($M = 3.55$). Innovation Performance ($p = 0.006$): Given that the survey asked about perceived innovation performance, it is consistent with the levels of entrepreneurial and organizational context reported at UJ, with a higher mean on the innovation performance scale ($M = 3.98$) compared to the AHU ($M = 3.70$). These differences could be reflective of various factors, such as the maturity of the institution, access to resources, university leadership practices, and strategic focus on innovation at each university. This is important as it could suggest that there may still be an opportunity to improve innovation outcomes in the lower-performing universities by further developing organizational infrastructures and supporting internal entrepreneurship.

5. Results and Discussion

In this section, I discuss and analyze the data obtained in this study that explored the impacts of internal entrepreneurship actions on performance at Jordanian public universities. The analysis focused on three variables: entrepreneurship, organizational factors, and innovation performance at four institutions. In total, 212 respondents completed the data collection process (52 academics and 160 students). As I conducted a descriptive analysis of the data, I noted that the variables' means—entrepreneurship (average = 3.94), organizational factors (average = 3.89), and innovation performance (average = 3.98)—were quite substantial. I note that each mean is substantially greater than the mid-point level and, in comparison to the other two institutions, reported similar averages. In particular, UJ is a larger and more established university than Al-Hussein Bin Talal University, and organizational culture and access to resources are likely to support entrepreneurial activities and innovate current practices. Regardless of the organizational context in which university entrepreneurship is developed, the implementation of policies to support these activities is likely to lead to greater innovation practices. The one-way ANOVA

test revealed significant differences between the four universities for each of the three variables: entrepreneurship: $F(3, 208) = 4.01$, $p = 0.009$; organizational factors: $F(3, 208) = 4.58$, $p = 0.004$; innovation performance: $F(3, 208) = 4.25$, $p = 0.006$. Given all of the above evidence, it is clear that the overall context of the university is a strong influence on entrepreneurial behavior and performance outcomes. In addition, if the institution has an organizational structure, leadership, and institutional support for entrepreneurship, they are likely to be more formally and informally engaged in a wider scope of innovative practice.

5.1. Discussion of Key Findings

Entrepreneurship as an Enabler of Innovation: The findings affirmed previous studies, Bonfanti et al. [27] and Rumanti et al. [14], that described entrepreneurship as a significant enabler of innovation. The universities that displayed a higher level of entrepreneurship also performed better on measures of innovation, which recognizes the importance of entrepreneurial culture in the operations of an HEI. **Organizational factors as enablers:** The influence of leadership, structure, and resources on innovation results was also evident. The university with the highest score (UJ) also had the highest score for organizational factors. This suggests that organizational factors play an important role in supporting both entrepreneurship and innovation. **Institutional differences matter:** Differences in university infrastructure, administrative constraints, and academic flexibility contribute to differences in entrepreneurial behaviors and innovation. The lower scores at AHU may reflect impediments such as limited financial support, burdensome bureaucratic procedures, or a lack of strategic emphasis on innovation.

5.2. Implications for Practice

The implications of the findings are significant for university leaders and policymakers: fostering a culture of entrepreneurship among both faculty and students can improve an institution's innovative capacity. Identifying and strengthening internal support mechanisms, such as leadership, availability of resources, and autonomy, may lead to substantial improvements in entrepreneurial capacities. Transformations in entrepreneurial capabilities may require tailored interventions, as demonstrated by institutions such as AHU and BAU, which need to develop their innovation capabilities to match those of other universities such as UJ. This research has many implications for higher education policymakers, university administrators, and academic leaders in Jordan, particularly regarding improvements in innovation performance through internal entrepreneurship practices. Promoting entrepreneurial culture in universities is crucial, given the significant role of entrepreneurship in contributing to innovation performance. It is important for universities to facilitate an internal culture that encourages entrepreneurial thinking and action. This might include facilitating autonomy in academic activities, subsidizing innovation through innovation grants and internship units, and recognizing and rewarding entrepreneurial activity within university ownership. Organizational factors such as a commitment to leadership, structural flexibility, and the availability of finance affect entrepreneurship and, ultimately, innovation performance. Nevertheless, a commitment to internal entrepreneurship should be led from the top. All universities should make internal systems less hierarchical and more responsive to innovation, create opportunities for academic staff to learn about entrepreneurship as a skill, and invest in innovation. This could involve offering development programs or funding that directly support entrepreneurial activity in low-performing life science universities, promoting university collaboration and exchange on entrepreneurial activity between universities with high and low levels of entrepreneurial activity, and integrating university-based entrepreneurship into a national policy context as part of both innovation and higher education strategies for Jordan. This could include embedding innovation and enterprise objectives into university performance requirements, aligning national research funding schemes with entrepreneurial activities, and supporting public-private partnerships involving faculty and students' ventures.

6. Conclusion

This study aimed to determine how internal entrepreneurial practices influence innovation performance in Jordanian public universities. This study was based on a comparative study conducted by the author on entrepreneurial behavior and associated organizational characteristics of four institutions: the University of Jordan, Yarmouk University, Al-Hussein Bin Talal University, and Al-Balqa' Applied University. The results show that entrepreneurship is strongly related to innovation performance. Remarkably, universities that exhibit higher levels of entrepreneurial practices, such as reactiveness, risk tolerance, autonomy, and innovation orientation, appear to perform better in terms of developing new services, academic processes, and adapting to changes in their environment. Furthermore, organizational influences, such as leadership, structure, and available resources, had direct effects on both entrepreneurial and innovation performance. Statistical comparisons between universities indicate that differences in institutional status are significant. The University of Jordan scored higher than the others across all measured variables. This suggests that the University of Jordan has a more established environment for innovation. Other universities with lower scores could develop a focus on entrepreneurship and are more likely to have the organizational infrastructure to support innovation. This highlights the clear need for strategic and policy interventions to create a more conducive environment for innovation in the Jordanian higher education sector. Universities can enhance their competitive position, relevance, and contribution to national development goals by investing in building their entrepreneurial capabilities and organizational structure. This research study also contributes to the growing academic literature on the role of entrepreneurship in academic institutions of higher education.

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