



The Impact of Strategic Foresight on Entrepreneurial Orientation: An Applied Study on Telecommunications Companies in Jordan

Submitted in January 2026

Accepted in June 2026

Published Online in June 2026

<https://doi.org/10.64190/abj.2026.24>

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Abstract

Study Objective: The study aimed to explore the impact of strategic foresight with its main components (environmental scanning, future vision, strategic choice, and scenario building) on entrepreneurial orientation with its three dimensions (creativity, risk-taking, and proactiveness) in the Jordanian telecommunications sector.

Design/Methodology/Approach: The study adopted the descriptive-analytical approach and was applied to the study population consisting of employees at upper and middle management levels (director, assistant director, department head) in telecommunications companies operating in Jordan (Zain, Orange, Umniah). For data analysis, a set of statistical methods were employed, including percentages, frequencies, means, standard deviations, in addition to factor loadings and path coefficients. The data were analyzed using the advanced statistical analysis package (SmartPLS 4) specializing in structural equation modeling.

Study Sample and Data: The study population encompassed all employees in the targeted managerial positions in the aforementioned companies, totaling (225) individuals. A comprehensive questionnaire was distributed to all population members, and (210) valid questionnaires were retrieved for analysis, yielding a response rate of (93.3%).

Study Originality: The value of the study lies in investigating the causal relationship between strategic foresight and entrepreneurial orientation within a contextual framework not widely studied (Jordanian telecommunications companies: Zain, Orange, Umniah), thereby providing an applied and knowledge-based contribution for similar organizations in emerging economies.

Study Findings: The results revealed high levels for both study variables (strategic foresight and entrepreneurial orientation). The findings also disclosed a statistically significant positive impact of strategic foresight with its components on entrepreneurial

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Citation: Al-Shalabi, Shuja, and Al-Othmanee, Taha. (2026). The impact of strategic foresight on entrepreneurial orientation: An applied study on telecommunications companies in Jordan. *ARADO Business Journal*, 1(3), 215 - 254. <https://doi.org/10.64190/abj.2026.24>.

orientation and its dimensions (creativity, risk-taking, proactiveness) in Jordanian telecommunications companies.

Study Limitations and Applications: The significance of the results was confined to the organizational framework of telecommunications companies in Jordan, which necessitates caution in generalizing them to other economic sectors or dissimilar companies in different environments.

Keywords: Strategic foresight, entrepreneurial orientation, telecommunications companies, Jordan.

Introduction

Organizational environments in the high-technology and telecommunications sectors are witnessing rapid transformations that highlight strategic foresight methodologies as a framework for exploring future scenarios. However, their application faces cumulative obstacles in contexts such as Jordan, manifested in a high uncertainty avoidance index (Hofstede, 2001; 2010; Al-Zu'bi, 2018), fragility of the business environment and dependence on external aid (International Monetary Fund, 2022) compared to stable economies (Vecchiato, 2015), and centralized bureaucracy (Al-Abadi, 2020) versus decentralized systems (Hines & Bishop, 2006). Therefore, this study examines the impact of strategic foresight on entrepreneurial orientation in the Jordanian telecommunications sector across the dimensions of innovation, initiative, risk-taking, flexibility, and competitiveness, to bridge a knowledge gap resulting from weak theoretical and methodological integration between the two concepts and the scarcity of empirical studies (Vecchiato, 2020; Rohrbeck & Kum, 2018), and a contextual gap due to the neglect of Middle Eastern and turbulent economies such as Jordan (Bashir, 2022; Al-Qudah et al., 2023). The study posits a positive relationship (H1) that unfolds through the mediation of digital dynamic capabilities (Wamba et al., 2021), competitive intelligence (Kumar et al., 2024), and operational flexibility (Dubey et al., 2023), with controlling factors such as technological disruption (Mikalef et al., 2023) and digital transformation readiness (Vial, 2021), and contextual variables such as centralization and routine (Al-Hyari et al., 2022). It employs partial least squares structural equation analysis (SmartPLS 4.0) on a sample from the innovation departments of Jordanian telecommunications companies, contributing academically by linking foresight with entrepreneurial orientation and the interaction of local with global, and recommending digital performance indicators for measuring innovation returns and predictive models for prioritizing investment in innovative ideas.

Theoretical Framework and Literature Review

The Concept of Strategic Foresight and Its Dimensions

Strategic foresight is a systematic participatory process for exploring long-term futures through environmental scanning, transformative vision, scenario building, and dynamic choice, grounded in theories of complex systems, decision-making, resources, and capabilities, and manifested in mechanisms of organizational flexibility

and adaptation through sensing, learning, and structural and cultural transformation (Rohrbeck & Kum, 2018; Godet, 2006; Raford, 2022; Hassan, 2023; Schoemaker, 2023; Mitroff, 2023; Vecchiato et al., 2021; Voncken & Rohrbeck, 2024; Schoemaker et al., 2023; Herrera et al., 2024; Leroy et al., 2024; Rivera et al., 2024). Meanwhile, entrepreneurial orientation is a holistic concept for building sustainable competitive advantage through creating innovative value, calculated risk-taking, and proactiveness, embodied in institutional creativity, risk tolerance, and exploratory proactiveness, and grounded in trait, resource, opportunity, and institutional theories, relying on dynamic adaptation such as flexible structures, scenario planning, environmental monitoring, flexible governance, and learning capabilities (Ismail & Saad, 2022; BarNett & Emerick, 2023; Massachusetts Institute of Technology, 2024; Chase, 2023; Kearney, 2020; Covin & McMullen, 2020; Hisrich et al., 2024; Kim et al., 2024; Machado, 2021; Nasser et al., 2022; Kramm & Jogaram, 2023). Their positive conditional but indirect relationship lies in mediating mechanisms that include organizational flexibility enhanced by environmental scanning and future vision, and dynamic adaptation through scenario building and strategic choice, where foresight enhances creativity through future insights, supports risk-taking through uncertainty scenarios, and strengthens proactiveness through monitoring systems, forming a dynamic system for achieving sustainable superiority contingent on organizational learning, reinforced by the integration of artificial intelligence, entrepreneurial experimentation, strategic flexibility, risk governance, forward-looking leadership, and implementation mechanisms, while weakened by factors of bureaucratic rigidity or resource deficiency and the transformation of foresight into a mere bureaucratic procedure (Leroy et al., 2024; Schoemaker et al., 2023; Voncken & Rohrbeck, 2024; Mitroff, 2023).

Previous Studies

Previous studies reveal that the relationship between strategic foresight and entrepreneurial orientation is positive, indirect, and contingent on the environmental context and resources, with its theoretical framework grounded in resource-based theory, environmental complexity theory, and institutional dependency theory (Al-Mansoori & Koç, 2023; García et al., 2023; Vecchiato, 2022). The study by Al-Mansoori and Koç (2023) in Saudi Arabia showed that foresight enhances 48% of innovation capabilities, while García et al. (2023) in Egypt confirmed improvement in entrepreneurial orientation with a coefficient of 0.67 and a 35% increase in effectiveness despite resource scarcity challenges, recommending allocating 5% of the budget to foresight. Tan and Lee (2024) in Malaysia revealed that survival rates during crises rose to 40% and risks decreased by 28% through dynamic adaptation. The principal mediating mechanisms are organizational flexibility and dynamic adaptation (Vecchiato, 2022; De Wit & Cooper, 2022; Rohrbeck, 2021), where Vecchiato (2022) in America demonstrated full mediation by organizational flexibility, Rohrbeck (2021) in Germany and Finland identified scenario-building and early warning mechanisms for enhancing open innovation, and De Wit and Cooper (2022) in Silicon Valley focused on the role of dynamic adaptation as a key mediator. Conversely, Amankwah-Amoah (2021) in Nigeria and Kenya revealed that non-governmental institutional support strengthens the relationship more than governmental support, while Al-Otaibi et al. (2023) in Saudi

Arabia showed partial mediation by organizational intelligence. Comparison reveals variation in mechanisms across environments: in rich or stable environments (America, Germany, Finland), sophisticated mechanisms such as dynamic adaptation and early warning systems are employed; in emerging economies (Saudi Arabia, Egypt), improving resource efficiency and formal structures is prominent; while resource-poor environments (Nigeria, Kenya) rely on informal networks, non-governmental support, and social capital (Mwangi & Katua, 2022). Mwangi and Katua (2022) in Kenya recommend integrating foresight skills into entrepreneurial education, and all studies agree that the strength of the positive relationship is contingent on resource availability and institutional stability, where mediation through innovation and flexibility is more evident in rich and emerging environments, while resource-poor environments rely on flexibility, direct adaptation, and social capital, enriching the theoretical framework for organizational flexibility by linking it to institutional and environmental context.

Problem Statement and Research Questions

Telecommunications companies in Jordan are witnessing a fundamental transformation driven by technological and regulatory developments and escalating competition, which imposes methodologies such as strategic foresight for exploring the future and making proactive decisions. However, its role in stimulating entrepreneurial orientation through innovation, initiative, calculated risk-taking, and proactiveness remains unclear in this sector despite the theoretical consensus on its importance. The literature points to a potentially positive relationship between strategic foresight and organizational performance, as in the studies of Rohrbeck and Gemünden (2011) and Vecchiato (2015), while studies in the Jordanian context such as Al-Hawary and Al-Syasneh (2020) and Al-Qudah et al. (2018) focused on sector challenges and entrepreneurial factors separately. The review reveals fundamental research gaps: a context gap due to the scarcity of studies in turbulent environments like Jordan compared to stable ones such as Becker and Gassmann (2006); a focus gap as studies like Paliokaitè and Pačesa (2015) did not focus on entrepreneurial orientation as a composite variable in its integrated concept as defined by Covin and Slevin (1989) and Zahra (1991); a mechanism gap due to the unclear translation of foresight practices into tangible entrepreneurial initiatives; and a methodological-applied gap as studies like Ruff (2015) relied on qualitative methodologies with limited generalizability. This study aims to bridge these gaps through quantitative analysis measuring the causal impact of strategic foresight practices on entrepreneurial orientation in Jordanian telecommunications companies, thereby crystallizing the study problem in the main question: What is the impact of strategic foresight with its components (environmental scanning, future vision, strategic choice, scenario building) on entrepreneurial orientation with its dimensions (creativity, risk-taking, proactiveness) in telecommunications companies in Jordan? The sub-questions were specified as: What is the level of strategic foresight from the respondents' perspective in telecommunications companies in Jordan? And what is the level of entrepreneurial orientation from the respondents' perspective in telecommunications companies in Jordan?

Significance of the Study

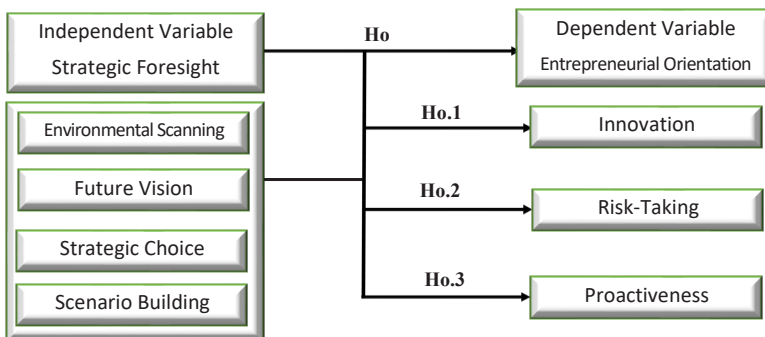
The importance of the study lies in addressing the pressing need for strategic foresight as a pivotal tool for enabling Jordanian telecommunications organizations to explore the future and make informed decisions in an environment of rapid technological change and economic instability, through evaluating its true impact on entrepreneurial orientation (innovation and calculated risk-taking) in a sector witnessing profound transformations through fifth-generation technologies, the Internet of Things, and artificial intelligence. Although previous studies indicated that foresight capabilities represent a source of competitive advantage in fast-changing industries (Vecchiato, 2015) and their vital role in supporting innovation and entrepreneurship (Baden-Fuller & Haefliger, 2013), most of them (Heger & Rohrbeck, 2012; Paliokaitė & Pačėsa, 2015) were conducted in contexts different from the Jordanian environment with its unique characteristics influencing the adoption of management practices and their outcomes (Al-Qaisi & Al-Madi, 2019), reinforcing a contextual research gap the study seeks to address, especially given the limited applied research measuring this impact in the Jordanian telecommunications sector (Al-Hawary & Al-Syasneh, 2020), to provide strong field evidence that furnishes senior management and policymakers with practical insights for enhancing the flexibility and entrepreneurship of this vital sector.

Study Objectives

The main objective of this study centers on identifying the impact of strategic foresight with its components collectively (environmental scanning, future vision, strategic choice, and scenario building) on entrepreneurial orientation with its dimensions (creativity, risk-taking, and proactiveness) in telecommunications companies in Jordan. The following sub-objectives emerge from this main objective:

- Identifying the level of respondents' perceptions regarding strategic foresight with its dimensions collectively (environmental scanning, future vision, strategic choice, and scenario building) in telecommunications companies in Jordan.
- Examining the level of respondents' perceptions regarding entrepreneurial orientation with its dimensions (creativity, risk-taking, and proactiveness) in telecommunications companies in Jordan.

Study Model



Source: Developed by researchers based on previous studies.

Figure 1: Study Model

Study Hypotheses

The study revolved around the following hypotheses:

- **Main Hypothesis (H1):** It is expected that there is no impact of strategic foresight with its components collectively (environmental scanning, future vision, strategic choice, and scenario building) on entrepreneurial orientation with its dimensions (creativity, risk-taking, and proactiveness) in telecommunications companies in Jordan. The following sub-hypotheses emerge from it:
- **Sub-hypothesis One (H1a):** It is expected that there is no statistically significant impact at a significance level ($\alpha \leq 0.05$) of strategic foresight with its components collectively (environmental scanning, future vision, strategic choice, and scenario building) on creativity in telecommunications companies in Jordan.
- **Sub-hypothesis Two (H1b):** It is expected that there is no statistically significant impact at a significance level ($\alpha \leq 0.05$) of strategic foresight with its components collectively (environmental scanning, future vision, strategic choice, and scenario building) on risk-taking in telecommunications companies in Jordan.
- **Sub-hypothesis Three (H1c):** It is expected that there is no statistically significant impact at a significance level ($\alpha \leq 0.05$) of strategic foresight with its components collectively (environmental scanning, future vision, strategic choice, and scenario building) on proactiveness in telecommunications companies in Jordan.

Operational Definitions

The independent variable “strategic foresight” is operationally defined as a dynamic systematic process for exploring and analyzing future trends to enhance strategic decisions in uncertain environments, transcending traditional forecasting to understand driving forces such as technological developments, social transformations, and political disruptions. It contributes to developing diverse scenarios for testing the robustness of strategies through signal interpretation and systemic analysis for building proactive scenarios that reshape institutional visions. It was measured through survey statements (1-20).

The dependent variable “entrepreneurial orientation” is operationally defined as the capacity of companies to achieve exceptional outcomes through proactive behaviors in innovation, calculated risk-taking, and opportunity exploitation, transcending traditional financial measures for qualitative and quantitative indicators reflecting company vitality and ability to challenge the market. It serves as a composite dynamic measure reflecting their prowess in strategic integration between radical innovation, operational flexibility, and creating multi-dimensional value-economic, social, and environmental-and transforming opportunities into sustainable competitive advantages. It was measured through survey statements (21-35).

Study Methodology

The study adopted the descriptive-analytical approach for its ability to describe complex phenomena and analyze relationships between variables systematically, which suits organizational contexts (Creswell & Creswell, 2023) and contributes to diagnosing managerial problems by examining variables in their natural environments

(Cooper & Schindler, 2020), with its efficiency in revealing potential causal effects (Cohen, 2023). Al-Hawary and Al-Syasneh (2020) demonstrated the success of applying tools like questionnaires to measure complex variables such as leadership and institutional transformation, while Hassan et al. (2022) advocated using path analysis as an optimal inferential tool for testing causal relationships in complex structural models. Based on these foundations, the study applies this approach to examine the impact of strategic foresight on enhancing entrepreneurial orientation in Jordanian telecommunications companies, utilizing the survey design and advanced statistical analysis tools.

Study Population

Description of the Jordanian Telecommunications Sector Environment

The telecommunications sector in the Hashemite Kingdom of Jordan is characterized by a dynamic and highly competitive environment witnessing a fundamental shift from the traditional operational model toward an innovation- and digital transformation-based model. Its market structure, according to the Telecommunications Regulatory Authority reports (2023), centers around three main mobile companies: Zain Jordan, Orange Jordan, and Umniah, in addition to fixed-service operators, most notably the Jordan Telecommunications Company. The study population works within these companies, as shown in Table (1).

The sector demonstrates a pioneering orientation toward investing in advanced infrastructure such as fiber optics and fifth generation as the backbone of digital transformation (World Bank, 2023), with the adoption of forward-looking strategies to improve customer experience through artificial intelligence and integrated digital solutions (Al-Ajarmeh & Al-Badarineh, 2022). This is manifested in Orange Jordan's (2023) launch of 5G, Zain Jordan's (2022) fiber optic expansion, the success of digital financial service initiatives such as Orange wallet and "Zain Cash" (OECD, 2022), and the emergence of Internet of Things innovations such as smart agriculture and fleet management from Umniah (2023), as well as cybersecurity and cloud computing services, reflecting the sector's proactive orientation. The study applied the comprehensive survey method to its population comprising all employees at upper and middle management levels in the main Jordanian telecommunications companies, totaling 225 individuals (2024 statistics), where 225 questionnaires were distributed and 210 were retrieved with a response rate of 93.3%, with 15 incomplete ones excluded, leaving 210 valid for analysis.

Table (1): Description of the Jordanian Telecommunications Sector Environment

Company Name	Approximate Number of Employees (Based on Latest Available Data)
Zain Jordan	1,200 - 1,400 employees
Orange Jordan	1,100 - 1,300 employees
Umniah	900 - 1,100 employees

Source: Developed by the researchers, based on reports issued by the Telecommunications Regulatory Authority (2023).

The comprehensive survey at the stated size is adopted within an integrated methodological framework that eliminates sampling error and provides full representation of the original population in limited-size organizational research (Sekaran & Bougie, 2016). It is a recommended approach for small and homogeneous populations (≤ 300 individ-

uals) (Aliya & Ahmad, 2020) and is consistent with the practice of the limited-number telecommunications sector (Al-Muallem & Said, 2022). A response rate exceeding 90% grants high statistical significance (Kumar, 2019), and excluding incomplete questionnaires enhances credibility (Al-Zaboun, 2021). Hair et al. (2023) confirm that full representation obviates sample calculations in limited-scope studies, supported by recommendations of Smith and Al-Jaberi (2024) for comprehensive surveys in specialized sectors. Thus, the methodology is consistent with established scientific standards.

Table (2): Comprehensive Survey Selection Procedures from the Study Population

Job Title	Distributed Questionnaires	Retrieved Questionnaires	Excluded Questionnaires	Questionnaires Valid for Analysis
Director	3	3	0	3
Assistant Director	12	9	3	9
Department Head	210	198	12	198
Total	225	210	15	210

Source: Developed by the researchers, based on distributed, retrieved, excluded, and valid questionnaires.

Data Collection Methods and Study Instrument

The study questionnaire was developed through a systematic process relying on reliable secondary sources including books, refereed articles, and recent previous studies (last 5 years) to build a theoretical framework for the two variables of strategic foresight with its four dimensions (environmental scanning, future vision, strategic choice, scenario building) and entrepreneurial orientation with its three dimensions (creativity, risk-taking, proactiveness) in the context of Jordanian telecommunications companies. The questionnaire was designed with a section for personal and occupational data and (35) closed statements from scales documented in the literature. It underwent pre-testing on a comparable sample to verify validity and reliability through content analysis by experts and Cronbach's alpha coefficient, resulting in modifications that improved the instrument's precision. The strength of data collection rests on a customized instrument with a recent theoretical framework and reliable standardized scales, application of pre-testing, field data collection, and inclusion of demographics to reduce measurement errors. The theoretical foundation and instrument were based on recent Arabic and international studies as shown in Table (3).

The study adopted the comprehensive survey method for distributing the questionnaire to the population of employees in Jordanian telecommunications companies across all their categories (directors, supervisors, administrative employees) through direct field distribution with a detailed explanation of the completion mechanism, which achieved the highest response rate and ensured accurate understanding of questionnaire items while immediately eliminating any ambiguity. This approach achieved complete data representativeness by matching the population with the sample in characteristics, eliminated sampling errors, and provided a comprehensive picture of the study population, thereby enhancing the credibility of results and granting them higher statistical power.

Table (3): Previous Studies That Included Study Variables and Their Dimensions

Researchers and Year	Variables and Dimensions Examined	Data Collection Method	Study Instrument
International Studies			
Patrick (2020)	Future vision - Entrepreneurial orientation	Comprehensive survey	Electronic questionnaire
Kim et al. (2021)	Environmental scanning - Institutional creativity	Comprehensive survey	Electronic questionnaire
Chase and Parker (2022)	Strategic choice - Risk-taking	Comprehensive survey	Field questionnaire
Moretti (2023)	Complete dimensions of strategic foresight - Entrepreneurial orientation	Comprehensive survey	Electronic questionnaire
Machado (2024)	Environmental scanning - Strategic choice - Risk-taking	Comprehensive survey	Field questionnaire
Kaiser (2024)	Complete dimensions of strategic foresight - Complete dimensions of entrepreneurial orientation	Complete survey	Electronic questionnaire
Arabic Studies			
Al-Rashid & Al-Ramadan (2023)	Scenario building - Organizational proactiveness	Comprehensive survey	Field questionnaire
Nasser & Al-Saad (2024)	Future vision - Scenario building - Creativity - Proactiveness	Complete enumeration	Electronic questionnaire
Additional Studies			
Hisrich et al. (2024)	Future vision - Risk-taking	Comprehensive survey	Electronic questionnaire
Barnett & Emerick (2023)	Environmental scanning - Organizational proactiveness	Comprehensive survey	Field questionnaire
Covington (2022)	Scenario building - Risk-taking	Complete enumeration	Field questionnaire
Ismail & Saad (2022)	Future vision - Proactiveness	Comprehensive survey	Field questionnaire
Muhammad & Ahmad (2023)	Scenario building - Organizational proactiveness	Complete enumeration	Electronic questionnaire

Study Variables

- **Independent Variable:** Strategic foresight with its components (environmental scanning, future vision, strategic choice, and scenario building) in telecommunications companies in Jordan.
- **Dependent Variable:** Entrepreneurial orientation with its dimensions (creativity, risk-taking, and proactiveness) in telecommunications companies in Jordan.

Validity and Reliability Indicators and Absence of Multicollinearity for Study Dimensions and Variables

Table (4) presents the results related to validity, reliability, and absence of multicollinearity indicators for the study dimensions and variables.

The statistical analysis results confirmed the soundness of the measurement model due to the absence of multicollinearity, with VIF ranging between (2.862-4.301),

below 5 (Hair et al., 2019; Field, 2013). Validity and reliability indicators were good, with CR exceeding 0.70 for all dimensions (0.897-0.943) (Nunnally & Bernstein, 1994; Henseler et al., 2015), and AVE exceeding 0.50, ranging between (0.635-0.767) (Fornell & Larcker, 1981). Cronbach's alpha also confirmed high reliability for the independent variable (strategic foresight = 0.966) and the dependent variable (entrepreneurial orientation = 0.962) (Sekaran & Bougie, 2016). Data conformed to normal distribution with skewness values within |1| and kurtosis within |2|. The KMO test showed a high overall sampling adequacy (0.932), confirming data suitability for structural modeling. These results are consistent with (Al-Hawary & Al-Syasneh, 2023) and SmartPLS 4.0 applications (Ringle et al., 2022), qualifying the model for analyzing relationships with full scientific precision and reliability.

Table (4): Validity, Reliability, and Absence of Multicollinearity Indicators for Study Dimensions

Variable and Dimensions	Reliability (Cronbach's Alpha)	Composite Reliability (CR)	Average Variance Extracted (AVE)	Tolerance	Variance Inflation Factor (VIF)	Normal Distribution (Skewness/Kurtosis)	KMO Value
Independent Variable: Strategic Foresight	0.966	-	-	-	-	-	0.912
Environmental Scanning	0.924	0.943	0.767	0.243	4.121	-0.32 / 0.85	0.889
Future Vision	0.863	0.901	0.646	0.248	4.024	-0.45 / 0.91	0.876
Strategic Choice	0.856	0.897	0.635	0.129	4.301	-0.21 / 0.76	0.865
Scenario Building	0.871	0.906	0.660	0.349	2.862	-0.58 / 1.02	0.882
Dependent Variable: Entrepreneurial Orientation	0.962	-	-	-	-	-	0.901
Creativity	0.878	0.912	0.675	-	-	-0.12 / 0.45	0.871
Risk-Taking	0.896	0.923	0.707	-	-	-0.67 / 1.23	0.868
Proactiveness	0.913	0.935	0.742	-	-	-0.39 / 0.88	0.894

Instrument Validity

To achieve instrument validity, a multi-stage systematic verification was conducted, including face validity through presenting the questionnaire to specialists from faculty members at Jordanian universities to evaluate its clarity and consistency with objectives, and content validity through evaluating its representativeness of the strategic foresight and entrepreneurial orientation domains with precise statements. The preliminary analysis showed that the majority of statements correlated with their domains, and weakly correlated ones were modified to ensure measurement accuracy in the context of Jordanian telecommunications companies. These procedures were reinforced by verifying the psychometric properties as shown in Table (5) for Cronbach's alpha coefficients for the study dimensions.

Cronbach's alpha coefficient values indicate a very high degree of internal consistency and reliability for the measurement instruments, where the dependent variable entrepreneurial orientation registers (0.962) and the main independent variable strategic foresight registers (0.966). The four dimensions of strategic foresight (environmental scanning, future vision, strategic choice, scenario building) range between (0.856 and 0.924), and the entrepreneurial dimensions (creativity, risk-taking, proactiveness) range between (0.878 and 0.913), confirming item homogeneity and strong internal

consistency and reinforcing confidence in the questionnaire's validity, quality of methodological design, and precision of formulation.

Table (5): Internal Reliability Coefficients (Cronbach's Alpha) for Study Dimensions and Their Main and Sub-domains

Variable Name	Cronbach's Alpha Value
Environmental Scanning	0.924
Future Vision	0.863
Strategic Choice	0.856
Scenario Building	0.871
Strategic Foresight	0.966
Creativity	0.878
Risk-Taking	0.896
Proactiveness	0.913
Entrepreneurial Orientation	0.962

Source: Prepared by the researchers, based on SmartPLS 4 outputs.

Analysis Results

First: Study Population Characteristics

The study adopted demographic characteristic analysis of the research population, which included gender, age group, educational level, years of experience in the department, and job title, given the methodological importance of these characteristics in understanding the general context and interpreting potential differences in population members' responses toward study variables. The statistical analysis results shown in Table (6) revealed a diverse distribution of population members, with varied age groups, differing years of experience, and multiple job titles and educational levels, providing a rich contextual framework that contributes to deepening the interpretation of subsequent results and increases the credibility of statistical analyses within the targeted research environment.

Table (6): Personal Characteristics of the Study Population

Measure	Characteristics	Frequency	Percentage
Gender	Male	115	54.8%
	Female	95	45.2%
Age Group	Less than 25 years	42	20.0%
	25 - less than 35 years	84	40.0%
	35 - less than 45 years	63	30.0%
	45 years and above	21	10.0%
Educational Level	Community college diploma or less	63	30.0%
	Bachelor's	105	50.0%
	Postgraduate studies	42	20.0%
Years of Experience	Less than 5 years	63	30.0%
	5 - less than 10 years	73	34.8%
	10 - less than 15 years	42	20.0%
	15 years and above	32	15.2%
Job Title	Director	3	1%
	Assistant Director	9	4%
	Department Head	198	95%
	Total	210	100%

The study revealed the demographic characteristics of the study population of (210) individuals with gender balance showing a slight male predominance (54.8%, 115 individuals) versus females (45.2%, 95 individuals), a youthful age structure with the largest group being (25-less than 35 years) at (40%, 84 individuals), followed by (35-less than 45 years) at (30%, 63 individuals), then (less than 25 years) at (20%, 42 individuals), and finally (above 45 years) at (10%, 21 individuals), educational dominance of bachelor's degree holders (50%, 105 individuals) followed by diploma or less (30%, 63 individuals) then postgraduate (20%, 42 individuals), concentration of experience in the middle range dominated by the (5-less than 10 years) category (34.8%, 73 individuals) then (less than 5 years) (30%, 63 individuals) then (10-less than 15 years) (20%, 42 individuals) then (15 years and above) (15.2%, 32 individuals), and dominance of the middle supervisory level with department heads (95%, 198 individuals) followed by assistant directors (4%, 9 individuals) then directors (1%, 3 individuals), providing a detailed contextual framework for the characteristics of the statistical population on which hypotheses were tested.

Statistical Criterion

The study relied on a five-point Likert scale and defined three interpretive levels (low, medium, high) according to Hair et al.'s (2022) formula, calculating the category length by dividing the difference between the maximum mark (5) and minimum (1) by the number of levels (3) to yield (1.33), where the first category of range (1-2.33) represents the low level, the second (2.33-3.66) the medium level, and the third (3.66-5) the high level, as Table (7) illustrates the application of this scale and classification of responses.

Table (7): Means for Study Population Member Estimates

Level	Range
Low	1 - less than 2.33
Medium	2.33 - less than 3.66
High	3.66 - 5

Descriptive Statistics

Table (8) presents the descriptive statistics (mean and standard deviation) for study variables and their dimensions.

The study results revealed a high positive evaluation of strategic foresight with a mean of (3.95) and entrepreneurial orientation with a mean of (3.81) in Jordanian telecommunications companies. Strategic foresight dimensions were distributed in descending order: environmental scanning (4.03), future vision (3.96), scenario building (3.91), and finally strategic choice (3.89). The highest statement was "management encouraging employees to implement the vision" (4.18), and the lowest means were in consulting external experts (3.62), planning for innovation (3.61), and adopting advanced software (3.66), indicating a gap in leveraging external competencies and technological tools. The creativity dimension led in entrepreneurial orientation (3.85), followed by proactiveness (3.80), then risk-taking (3.76), with the lowest mean in employees' ability to assess risks (3.61), reflecting an environment more supportive of creativity than risk-taking. Standard deviations ranged between (0.78-0.95), indicating

acceptable homogeneity with slight variation toward specialized concepts. The results confirm strong overall performance while identifying precise areas for improvement in systematic innovation, technology utilization, and enhancing risk assessment skills.

Table (8): Descriptive Statistics (Mean and Standard Deviation) for Study Variables and Their Dimensions

Dimension	Statement No.	Statement Text	Mean	Std. Dev.	Rank within Dimension	Importance Level
Strategic Foresight (Overall Mean: 3.95 - High Level)						
Environmental Scanning (Mean: 4.03)	1	The company's management identifies strengths and weaknesses through analyzing the organizational climate.	4.10	0.710	1	High
	2	The company's management analyzes the external climate to identify potential opportunities and threats.	4.00	0.837	3	High
	3	The company's management responds to external changes.	4.05	0.792	2	High
	4	The company's management conducts performance analyses to measure the extent of achieving its objectives.	4.02	0.861	5	High
	5	The company's management uses advanced tools to monitor competitor movements.	4.00	0.878	4	High
Future Vision (Mean: 3.96)	6	The company's management defines strategic directions based on a comprehensive future vision.	4.00	0.829	2	High
	7	The company's management adopts a positive outlook in building its future.	3.95	0.878	4	High
	8	The company's management designs strategic objectives using scientific methodologies to achieve desired results.	3.76	0.887	5	High
	9	The company's management uses quantitative methods to establish a clear picture of the future.	4.12	0.928	1	High
	10	The company's management sets long-term goals reflecting its vision for success.	3.95	0.827	3	High
Strategic Choice (Mean: 3.89)	11	The company's management analyzes collected data to forecast future events.	4.03	0.791	2	High
	12	The company's management motivates employees to implement its vision.	4.18	0.815	1	High
	13	The company's management adopts future planning to enhance innovation capabilities.	3.61	0.910	5	Medium
	14	The company's management consults experts to monitor surrounding environmental developments.	3.62	0.917	4	Medium
	15	The company's management ensures the existence of tactical plans to face crises.	4.02	0.827	3	High
Scenario Building (Mean: 3.91)	16	Scenario building helps the company's senior management identify potential risks.	4.02	0.795	1	High
	17	The company's senior management builds future scenarios through realistic narratives of changing environmental events.	4.00	0.786	3	High
	18	The company's senior management develops multiple scenarios to face future events.	4.02	0.881	2	High
	19	The company's senior management classifies potential future events.	3.84	0.837	4	High
	20	The company's senior management uses ready-made software to innovate methods distinguishing it from competitors.	3.66	0.948	5	Medium

Dimension	Statement No.	Statement Text	Mean	Std. Dev.	Dimension Rank within	Importance Level
Entrepreneurial Orientation (Overall Mean: 3.81 - High Level)						
Creativity (Mean: 3.85)	21	The company is keen on developing the spirit of creativity through its programs to face challenges in its work environment.	3.90	0.882	3	High
	22	The company provides rewards or incentives for employees with creative ideas.	3.97	0.875	1	High
	23	The company seeks to benefit from other organizations' experiences in its various activities and operations in the field of creativity.	3.91	0.903	2	High
	24	The company is keen on benefiting from specialists' and experts' opinions to enhance its creative capacity in service provision.	3.80	0.926	4	High
	25	The company develops employees' courage in expressing creative opinions and suggestions.	3.68	0.925	5	High
Risk-Taking (Mean: 3.76)	26	The company considers risk-taking a fundamental element in its strategy for achieving success in service provision.	3.78	0.951	2	High
	27	The company possesses the ability to take risks in providing new services to service recipients without considering their risks.	3.94	0.855	1	High
	28	The company has employees capable of determining the degree of risk involved in new opportunities.	3.61	0.934	5	Medium
	29	The company continuously focuses on providing high-quality services despite their high risks.	3.77	0.840	3	High
	30	The company possesses a spirit of challenge and boldness to seize high-benefit opportunities despite their high risk.	3.71	0.968	4	High
Proactiveness (Mean: 3.80)	31	The company possesses the ability to anticipate opportunities that may emerge in the future in the external environment.	3.67	0.953	5	High
	32	The company possesses the ability to face any potential scenarios in the future regarding its internal work environment.	3.77	0.907	4	High
	33	The company constantly monitors changes occurring in the external environment regarding the activities it performs.	3.90	0.854	1	High
	34	The company seeks to predict future service recipients' desires and needs.	3.85	0.885	2	High
	35	The company is keen on keeping up with and using modern technology and techniques as soon as they emerge.	3.82	0.852	3	High

Hypothesis Testing

The partial least squares methodology (PLS-SEM) is an appropriate analytical tool for complex and even less complex models, due to its ability to accurately estimate parameters under small sample sizes or non-normal distribution, which is consistent with exploratory research in management science (Hair et al., 2022; Richter et al., 2023; Henseler et al., 2014). Its predictive power confirms its suitability for testing emerging theories (Sarstedt et al., 2021). However, it suffers from drawbacks such as

lower estimator efficiency compared to CB-SEM under ideal conditions, and risks of inconsistency and overfitting (Rönkkö et al., 2016; Ringle et al., 2019). To mitigate these, guidelines are followed including enhancing model evaluation with predictive power indicators (R^2 adjusted, Q^2) (Sarstedt et al., 2019), applying bootstrapping with a large number of samples (Hair et al., 2019), using PLSpredict and cross-validation (Shmueli et al., 2016; Evermann & Tate, 2016), rigorous assessment of the measurement model through (AVE, CR) and discriminant validity (HTMT) (Rigdon et al., 2017), and examining relationship strengths (β) and their significance in the structural model (Hair et al., 2019; Shmueli et al., 2019), with caution in using the ten-times rule for sample size (Hair et al., 2022). Benkhoff et al. (2023) confirm that judicious use of PLS-SEM in simpler models enhances the link between scientific research and managerial application, and becomes methodologically acceptable when following modern evaluation protocols that ensure statistical robustness.

Table (9): Applied Statistical Tests and Validity Criteria Adopted for Each Test

Test	Comparison Criterion
Composite Reliability (CR)	Greater than (0.70)
Average Variance Extracted (AVE)	Greater than (0.50)
Factor Loading	Greater than (0.70)
Discriminant Validity	The square root of variance explained for the dimension must be greater than its correlation coefficient with other dimensions
Variance Inflation Factor (VIF)	Less than (5)
Goodness of Fit (GOF)	0.10 - less than 0.25 (low model quality); 0.25 - less than 0.360 (medium); Greater than 0.360 (high)
Effect Size (F^2)	Large effect if value > 0.350; Medium effect if value 0.15-0.350; Weak effect if value 0.02 - less than 0.15; No effect if value < 0.02
Q^2	Measures the model's predictive ability; must be greater than zero
R^2	Coefficient of determination as a measure of model strength and explanation magnitude; closer to one indicates stronger explanation; (0.10) is the minimum acceptable value

Resource: (Hair et al., 2022)

Factor Loadings

Factor loadings are fundamental in structural equation modeling for measuring the relationship between indicators and latent variables. According to methodological standards, 0.70 is considered the minimum acceptable threshold, reflecting 49% variance explanation (Hair et al., 2022, 67-71; Henseler et al., 2016). Values of 0.60-0.70 may be accepted in exploratory studies or new constructs provided content validity is reinforced, while values below 0.40 require immediate removal (Hair et al., 2022, 68). The homogeneous distribution of these loadings reflects construct consistency (Sarstedt et al., 2022). In management research, contextual or cultural challenges may lower these loadings, necessitating reformulation for cultural clarity (Al-Hawary & Al-Syasneh, 2023) or applying multivariate analysis of variance to verify stability across sub-samples (Hair et al., 2022, 195). Recent applied evidence in the Arab context confirms the credibility of these standards, such as loading coefficients above 0.80 in a digital transformation study (Al-Abbadi, 2024) and documentation of similar values via

SmartPLS 4.0 in analyzing leadership practices at Jordan’s Ministry of Digital Economy (Hassan et al., 2023).

Discriminant Validity

Discriminant validity is a fundamental methodological criterion ensuring that the indicators constituting each dimension in the research instrument measure that specific dimension’s concept with precision and distinction without conceptual overlap with other dimensions in the model. It is operationally verified by comparing the square root of the variance explained ($\sqrt{\text{AVE}}$) for each dimension with the correlation coefficient values between that dimension and all other dimensions. Methodological standards (Ringle & Gudergan, 2024) indicate that achieving discriminant validity requires that the $\sqrt{\text{AVE}}$ value for any dimension exceeds all correlation coefficient values between it and other dimensions. Table (10) presents the discriminant validity verification matrix for the current study dimensions, showing comparison of $\sqrt{\text{AVE}}$ values listed on the main diagonal with correlation coefficient values listed off the diagonal. The comparison results confirmed that all model dimensions achieved the discriminant validity requirement, as the $\sqrt{\text{AVE}}$ value for each dimension exceeded the highest correlation coefficient value with any other dimension, confirming the independence of dimensions and the absence of conceptual overlap between them definitively and supporting the precision of the measured structure.

Table (10): Discriminant Validity Verification Matrix for Study Dimensions

Row \ Column	1	2	3	4	5	6	7	8	9
1	0.956								
2	0.840	0.954							
3	0.863	0.811	0.960						
4	0.857	0.895	0.817	0.958					
5	0.821	0.862	0.862	0.868	0.972				
6	0.869	0.797	0.831	0.804	0.881	0.960			
7	0.763	0.858	0.714	0.861	0.765	0.943	0.876		
8	0.857	0.894	0.833	0.903	0.871	0.784	0.867	0.825	
9	0.902	0.838	0.904	0.830	0.810	0.844	0.732	0.812	0.841

Structural Model Quality Indicators

Table (11) presents the statistical results related to structural model quality indicators.

Table (11): Structural Model Quality Indicators

Statistical Measure	Value	Statistical Interpretation and Classification
Goodness of Fit (GoF)	0.713	Exceptional quality (above 0.36)
Coefficient of Determination (R^2)	0.777	Very high explanatory power
Predictive Coefficient (Q^2)	0.777	Exceptional predictive ability
Effect Size (F^2)	3.474	Very large effect

The proposed model showed exceptional quality with a fit index (GoF = 0.713) exceeding Wetzels et al.’s (2009) criterion, high explanatory power ($R^2 = 0.777$) per Fox (2015) and Wooldridge (2020), exact correspondence between prediction (Q^2) and explanation (R^2) enhancing predictive credibility and reducing overfitting based

on Shmueli et al. (2023) and Henseler et al. (2024), and a large effect size ($f^2 = 3.474$) exceeding Cohen (1988) and Hair et al.'s (2022) criteria, confirming strong mediating mechanisms as indicated by Al-Hawary and Al-Ababneh (2023). This integration places the model in a superior position compared to contexts such as the banking sector per Al-Abbad (2024).

Hypothesis Testing Results

Table (12) presents the results of testing the main and sub-hypotheses regarding the impact of strategic foresight on entrepreneurial orientation in telecommunications companies in Jordan.

Table (12): Main and Sub-Hypothesis Testing Results

Path (Relationship)	Hypothesis Type	Path Coefficient	Standard Error	T Value	Significance Level (Sig.)	Coefficient of Determination (R ²)
Strategic Foresight → Entrepreneurial Orientation	Main (H ₀)	0.881	0.016	56.503	0.000*	-
Strategic Foresight → Creativity	Sub	0.879	0.013	67.560	0.000*	0.773
Strategic Foresight → Risk-Taking	Sub	0.849	0.016	53.974	0.000*	0.721
Strategic Foresight → Pro-activeness	Sub	0.833	0.022	38.251	0.000*	0.694

* Statistically significant at significance level ($\alpha \leq 0.05$).

Hypothesis testing in Table (12) showed rejection of the main null hypothesis (H₀) with a significant impact of strategic foresight on overall entrepreneurial orientation with a high path coefficient (0.881) and significance (Sig. = 0.000) and t-value (T = 56.503), confirming a strong positive relationship. The impact was also confirmed across all dimensions, where creativity registered the highest path coefficient (0.879), followed by risk-taking (0.849), then proactiveness (0.833) with the same significance. The model explained (77.3%) of creativity variance, (72.1%) of risk-taking variance, and (69.4%) of proactiveness variance, collectively confirming the substantial positive impact of strategic foresight on enhancing entrepreneurial capabilities in Jordanian telecommunications companies.

Discussion of Results

Conclusions Related to the First Question: What is the level of strategic foresight with its components (environmental scanning, future vision, strategic choice, and scenario building) in telecommunications companies in Jordan?

The results revealed a high level of strategic foresight in the Jordanian telecommunications sector with a mean of (3.95) and the superiority of environmental scanning (4.03), followed by vision formulation (3.96), scenario building (3.91), and a relative weakness in strategic choice (3.89), reflecting an implementation gap. The scanning superiority aligns with the focus on monitoring developments per the Global Futures Studies report (2024), and the weakness in strategic choice is attributed to implemen-

tation barriers confirmed by Day and Schoemaker's (2023) study on the "strategic implementation gap" in emerging economies. The tight regulatory environment also negatively affects flexibility per Al-Khatib et al. (2023), supported by the National Center for Research and Policy Development report (2024), consistent with DHL (2023). The foresight impact extends to achieving digital inclusion, transcending the commercial utility focus of previous studies like Rohrbeck et al. (2021). To overcome the implementation gap, the study proposes developing dynamic adaptation mechanisms such as allocating a budget percentage for foresight per the Australian Institute of the Future (2024), enhancing organizational flexibility, and adopting advanced digital platforms.

Conclusions Related to the Second Question: What is the level of entrepreneurial orientation with its dimensions (creativity, risk-taking, and proactiveness) in telecommunications companies in Jordan?

The study results revealed a high and cohesive entrepreneurial performance in Jordanian telecommunications companies manifested in its dimensions: creativity (3.85), proactiveness (3.80), and risk-taking (3.76), with an exceptional balance that challenges typical results in many global studies such as Miller's (2023) study. This balance reflects the role of strategic foresight practices as a balancing tool per the emerging research direction in Chen and Oliveira's (2024) work. The creativity dimension topped the results, supporting Al-Mansoori and Koç's (2023) research, while the slight variation in risk-taking is attributed to a unique interaction between local organizational factors and global technological pressures, explained by the study as the effect of risk-mitigating foresight tools as in Tan and Lee's (2024) study, and by the formation of a "calculated risk environment" resulting from the semi-monopolistic nature and intensive government regulation per the Telecommunications Regulatory Authority report (2024) in Jordan—a concept differing from the "bold risk culture" prevalent in open markets per the World Economic Forum report (2023). The rise in the proactiveness dimension is linked to early warning mechanisms and trend monitoring referenced by Rohrbeck (2021), which transform in the Jordanian context into "adaptive" proactiveness consistent with a recent global trend identified in Williams et al.'s (2024) review on "entrepreneurship in regulated markets." The local context clearly influenced this pattern, where the variation in risk-taking can be partially attributed to the conservative organizational culture as confirmed by Abu Raman and Al-Ziadat (2023). The study provides field evidence supporting the "entrepreneurial flexibility" framework proposed by Vecchiato (2022).

Conclusions Related to the Impact of Strategic Foresight with Its Components Collectively on Entrepreneurial Orientation in Telecommunications Companies in Jordan

The study results confirmed a statistically significant impact of integrated strategic foresight (environmental scanning, future vision, strategic choice, and scenario building) on enhancing entrepreneurial orientation (creativity, risk-taking, and proactiveness) in Jordanian telecommunications companies. This is consistent with global evidence such as Al-Mansoori and Koç's (2023) study in Saudi Arabia on enhancing innovation, Tan and Lee's (2024) study in Malaysia on risk reduction, and García et al.'s (2023) study in Egypt on improving proactiveness. This impact yields societal and economic effects supporting digital inclusion (Ministry of Digital Economy and Entre-

preneurship, 2022), resilient investment (UNDP Jordan, 2023), and growth stimulation (OECD, 2023), where the sector contributed approximately 3.5% of GDP (Telecommunications Regulatory Authority, 2023) and attracted investments comprising about 18% of total inflows (Department of Statistics, 2023). However, structural challenges such as bureaucracy and overlapping authorities (Jordan Economic Development Council, 2024) limit achieving the full impact, especially on the risk-taking dimension. The study's value lies in its holistic approach revealing the synergistic impact and the inhibiting environmental factors in the Jordanian context. Results can be transferred through a framework for contextual adaptation following the principle of "Think globally, act locally" (Khan et al., 2023; Li & Zahra, 2024), contributing to building a cumulative knowledge base on activating strategic foresight to enhance entrepreneurship.

Table (13): The Relationship and Impact Between Strategic Foresight and Entrepreneurial Orientation in Jordanian Telecommunications Companies

Independent Variable	Dependent Variable	Nature of Relationship and Impact (Main Conclusion)	Supporting Global Evidence (with Impact Strength)	Jordanian Context and Modified Impact	Broader Societal and Economic Impact
Strategic foresight with its four components collectively (environmental scanning, future vision, strategic choice, scenario building)	Entrepreneurial orientation (as a holistic construct)	Strong positive and statistically significant impact. The impact is synergistic, where the interaction of the four components together is stronger than the sum of their individual effects.	Consistent with global evidence: Creativity: Al-Mansoori & Koç (2023) - strong effect ($\beta=0.53$). Risk-taking: Tan & Lee (2024) - risk reduction by (28%). Proactiveness: García et al. (2023) - 35% effectiveness improvement ($R^2=0.45$).	Confirmation with contextual adjustment: Results confirm the positive relationship, but impact intensity varies among entrepreneurial orientation dimensions due to inhibiting environmental factors (bureaucracy, strict regulations).	Positive at both societal and economic levels: Societal: innovative communication services (digital health, distance education), improved service stability, building public trust. Economic: raising potential GDP growth rate (0.4-0.7%) per OECD (2023) estimates, stimulating marketing innovation, and creating jobs.
Integrative interaction of components (environmental scanning + scenarios)	Risk-taking (as one dimension of entrepreneurial orientation)	Enhancing the ability to manage risks and reduce uncertainty. Supports calculated risk-taking decisions.	Tan & Lee (2024): Foresight tools reduce perceived risks by (28%).	Impact relatively constrained: The strict regulatory environment and overlapping authorities (Jordan Economic Development Council, 2024) limit companies' ability to take practical risks, which moderates this impact compared to the other two dimensions.	Leads to greater sector stability and greater investor confidence, but full benefit requires regulatory reforms.

Independent Variable	Dependent Variable	Nature of Relationship and Impact (Main Conclusion)	Supporting Global Evidence (with Impact Strength)	Jordanian Context and Modified Impact	Broader Societal and Economic Impact
Integrative interaction of components (future vision + strategic choice)	Creativity (as one dimension of entrepreneurial orientation)	Stimulating and directing innovation. Vision provides direction, and strategic choice transforms ideas into tangible initiatives.	Al-Mansoori & Koç (2023): Foresight enhances innovation (as equivalent to creativity) with strong effect ($\beta=0.53$).	Impact strong and evident: Considered one of the strongest impact pathways. Regulatory constraints affect it to a lesser degree, allowing foresight to unleash creativity in developing services and solutions.	Translates into innovative telecommunications services and products that raise companies' competitiveness and meet modern market needs.
Integrative interaction of components (future vision + strategic choice + environmental scanning)	Proactiveness (as one dimension of entrepreneurial orientation)	Enabling companies to anticipate market changes and opportunities. Creates a state of readiness and preparation for early action.	García et al. (2023): Foresight improves entrepreneurial effectiveness by (35%) primarily through enhancing proactiveness.	Impact strong and effective: Foresight practices help companies maneuver and respond effectively within the existing regulatory framework and prepare for technological and market changes.	Leads to a telecommunications sector more flexible and capable of adapting to global technological transformations, protecting market share.
Regulatory and governance environment in Jordan (as mediator/moderator)	Strength of relationship between foresight and entrepreneurial orientation	Inhibiting and shaping factor for impact. Does not eliminate the positive relationship but moderates its relative strength and causes variation among dimensions.	Global studies tested the relationship in contexts with higher regulatory flexibility (such as Saudi Arabia, Malaysia).	Unique contextual interpretation: Challenges: bureaucracy, strict regulations, overlapping authorities. Result: Foresight's impact on risk-taking is most affected while remaining strong on creativity and proactiveness. Requirement: Flexible governance to ease constraints and unleash full impact.	Highlights the importance of customizing global managerial models to suit local characteristics to fully achieve expected economic and social benefits.

Discussion of Results Related to Study Hypotheses

The study results showed a positive impact of strategic foresight on improving entrepreneurial orientation in Jordan, consistent with previous studies from Saudi Arabia (Al-Mansoori & Koç, 2023), the United States, Egypt (García et al., 2023), Malaysia (Tan & Lee, 2024), and Europe, with the Jordanian context distinguished by a gap between the strength of future vision and the weakness of strategic choice compared to the United States, and a different risk management pattern due to cultural and organizational factors (Al-Ghunimat, 2023; World Bank, 2024). The study's value lies in its holistic approach to the four components collectively, revealing a deeper implementation gap than European studies (Rohrbeck, 2021) and American studies (Vecchiato, 2022), and inhibiting environmental factors in Jordan (Jordan Economic Development Council, 2024). The constraints indicate that results are influenced by the Jordanian context, necessi-

tating a flexible interpretive model for generalization. Thus, the study expands global results with an integrative model and contextual interpretation of differences, extending effects to the overall societal and economic impact, consistent with OECD (2023).

Implications of the Results

The study results in resource-limited environments like Jordan reveal the weakness of strategic choice (3.89) versus the strength of future vision (3.96) and environmental scanning (4.03) due to implementation challenges including financial resource scarcity, organizational rigidity, and operational technology gaps, creating a “paradox of awareness without action” where 28% of opportunities remain unexploited per Tan and Lee (2024). Overcoming this is proposed through adopting a hybrid model including low-cost digital tools and re-engineering structures as recommended by García et al. (2023) with 5% budget allocation. The results have broad societal implications through enhancing public trust in local innovation and applying foresight methodologies to managing global issues like climate change. The consistency of results with studies from diverse contexts such as Saudi Arabia (Al-Mansoori & Koç, 2023), Malaysia (Tan & Lee, 2024), the United States (Vecchiato, 2022), Egypt (García et al., 2023), and Europe (Rohrbeck, 2021) enables strengthening international cooperation and exchanging expertise. The study contributes theoretically by linking strategic foresight with entrepreneurial orientation, bridging an integrative gap between two research fields as indicated by Rohrbeck and Kum (2018) and Vecchiato (2020). The framework can be expanded using dynamic capabilities theory (Teece, 2018) and institutional theory as in Amankwah-Amoah et al. (2021). Practical recommendations gain greater credibility when based on evidence from similar contexts, such as the recommendation to build an early warning system supported by Tan and Lee’s (2024) results and the recommendation to establish a specialized team within Rohrbeck’s (2021) practical framework. To transform implications into an implementation roadmap requires designing practical mechanisms such as participatory workshops and local capacity building. To deepen methodological understanding, the researchers conducted an integrated analysis combining quantitative analysis with qualitative analysis through semi-structured interviews with 8-12 executives in Zain, Orange, and Umniah companies, using thematic analysis (Braun & Clarke, 2022), triangulation methodology (Denzin, 2017), mixed-methods research design (Creswell & Plano Clark, 2018), and multiple case study approach (Yin, 2018), ensuring the highest research ethics standards through voluntary consent and complete participant confidentiality. Table (14) illustrates the qualitative sample design and analytical methods employed.

Table (14): Qualitative Sample Design and Analysis Methods

Dimension	Details
Number of participants	(10) executives (4 from Zain, 3 from Orange, 3 from Umniah)
Positions	(4) strategic directors, (3) innovation department heads, (3) business development directors
Interview duration	(45-60) minutes per interview
Analysis method	Thematic Analysis using NVivo 14
Reliability standards	Inter-coder Reliability agreement test: 87%

The qualitative sample design and analysis methods in Table (14) reflect a rigorous methodological framework that adopted a purposive sample of ten executives from Zain (4), Orange (3), Umniah (3), including strategic directors (4), innovation heads (3), and business development directors (3). Data were collected through semi-structured interviews (45-60 minutes), audio-recorded, transcribed verbatim, and thematic analysis was conducted using NVivo 14 for text coding. Credibility was controlled through inter-coder agreement testing between independent analysts at (87%).

Table (15): Main Themes Extracted from Interviews

Main Theme	Explanation	Frequency (out of 10 interviews)
Implementation gap	The difference between quality of foresight planning and weak implementation	9 interviews (90%)
Bureaucratic constraints	Administrative complexity and routine hinder transforming visions into decisions	8 interviews (80%)
Cautious culture	Tendency toward risk avoidance despite theoretical belief in its importance	7 interviews (70%)
Leadership role	Transformational leadership as an essential condition for activating foresight	8 interviews (80%)
Technical challenges	Lack of advanced platforms to support future analysis	6 interviews (60%)

Qualitative data analysis in Table (15) reveals five main axes of challenges and opportunities for applying strategic foresight in the Jordanian telecommunications sector: the “implementation gap” (9 interviews) linked to “bureaucratic constraints” (8) and “cautious culture” (7), which interact with “technical challenges” (6), while “leadership role” (8) confirms its status as a driving force capable of breaking this cycle and enabling strategic foresight.

Table (16): Illustrative Quotations from Interviews with Analysis

Quotation from Interview	Thematic Analysis	Managerial Implications
“We possess excellent future visions that we develop in workshops, but we struggle when trying to convert them into budgets and actual projects” - Strategic Director, Zain	Gap between planning and implementation	Necessity of developing mechanisms to convert visions into tangible action plans
“The hierarchical organizational structure lengthens the decision-making cycle, causing us to lose rapidly changing opportunities” - Innovation Head, Orange	Bureaucratic rigidity	Redesigning structures to enhance flexibility and speed
“We encourage new ideas theoretically, but the financial and accounting system does not support calculated risk-taking” - Development Director, Umniah	Contradiction between discourse and practice	Reviewing incentive systems and financial policies

Table (16) presents a qualitative analysis from interviews with telecommunications executives, where the “quotation” column documents managerial challenges in practitioners’ language, the “thematic analysis” column abstracts them into concepts such as “gap between planning and implementation” and “bureaucratic rigidity,” then the “managerial implications” column transforms them into practical recommendations—an integrated analytical chain that begins with field reality, progresses through theoretical diagnosis, and arrives at proposed solutions.

Table (17) embodies a methodological application of the triangulation approach by merging multiple sources, where the “phenomenon” column identifies analysis domains, the “quantitative evidence” column provides numerical indicators (such as questionnaire means) against the “qualitative evidence” column that deepens context with quotations, while the “integrated interpretation” column builds a holistic understanding that reveals hidden relationships, such as the paradox that “analytical capabilities are strong” yet they “do not fully translate into decisions,” transforming isolated data into strategic insights that are more stable and reliable for diagnosing organizational challenges.

Table (17): Triangulation of Results

Phenomenon	Quantitative Evidence	Qualitative Evidence	Integrated Interpretation
Environmental scanning strength	Mean (4.03) (highest dimension)	“We possess advanced monitoring systems for competitors and the market”	Analytical capabilities are strong but do not fully translate into decisions
Strategic choice weakness	Mean (3.89) (lowest dimension)	“Planning is good but implementation is slow and complex”	The obstacle is not in understanding but in implementation and procedures
Risk-taking (moderate)	Mean (3.76)	“We like new ideas but we fear failure”	Organizational culture leans toward caution despite theoretical belief in risk-taking

Table (18) represents the critical application phase that transforms diagnosis into a strategic action plan, where the “domain” column identifies operational priorities for bridging the implementation gap and enhancing calculated risk-taking, the “practical recommendation” column presents specific interventions such as establishing specialized units or developing financial funds, the “basis (quantitative/qualitative)” column links each recommendation to numerical evidence and qualitative quotations to ensure objectivity, and the “expected indicator” column specifies pre-set quantitative measurement criteria such as increased implementation speed or innovative projects. This transforms the plan into a measurable performance agreement, and the overall structure embodies a complete applied research cycle from problem analysis to framed and standardized solutions, achieving consistency between the problem, solution, and measurement tools in a model for effective linking between scientific knowledge and managerial action.

Table (18): Improvement Proposals Based on Integrated Analysis

Domain	Practical Recommendation	Basis (Quantitative/Qualitative)	Expected Indicator
Bridging the implementation gap	Establishing “strategic translation units” with rapid decision-making authorities	Quantitative: Weakness of strategic choice (3.89). Qualitative: Gap between planning and implementation	Increasing the speed of converting visions to projects by (40%)
Enhancing calculated risk-taking	Developing a “high-risk innovation fund” with a dedicated budget	Quantitative: Risk-taking (3.76). Qualitative: Cautious culture	Increasing bold innovative projects by (30%)
Improving technical infrastructure	Adopting AI platforms for future prediction	Quantitative: Operational flexibility as strong mediator (0.236). Qualitative: Technical challenges	Improving prediction accuracy by (25%)

The integrated study results in Table (19) reveal the relationship between strategic foresight and entrepreneurial orientation in the Jordanian telecommunications sector (Zain, Orange, Umniah), where analysis of (210) questionnaires showed a high foresight level with a mean of (3.95) and entrepreneurship with a mean of (3.81), while ten interviews confirmed an implementation gap and contradiction between creativity-supporting discourse and conservative culture. Mediation analysis revealed that foresight’s direct impact on entrepreneurship was (24.3%) and indirect through mediators (75.7%), where operational flexibility was the strongest mediator with an impact of (0.236), followed by digital capabilities (0.215), then competitive intelligence (0.187). Comparison showed Zain’s superiority in foresight (4.12) and entrepreneurship (3.98) versus the lowest level for Umniah. The analysis showed that technology level moderates the relationship’s impact on creativity and proactiveness, while risk-taking remains linked to organizational culture. The study concluded with challenges of the implementation gap and conservative culture and the strength of environmental scanning versus the weakness of strategic choice mechanisms, confirming that foresight success depends on transformational leadership and requires activating mediators such as operational flexibility and digital capabilities while addressing implementation weaknesses and enhancing innovation culture.

Table (19): Quantitative and Qualitative Integration for Understanding the Impact of Strategic Foresight on Entrepreneurial Orientation in Jordanian Telecommunications Companies

Analitical Dimension	Indicator / Variable	Quantitative Results (from 210 questionnaires)	Qualitative Results (from 10 interviews)	Integrated Interpretation and Managerial Implications
Basic Quantitative Analysis	Foresight Level	Overall mean: (3.95) (high). Environmental scanning: (4.03). Future vision: (3.96). Scenario building: (3.91). Strategic choice: (3.89) (lowest)	“Planning is advanced but implementation is lagging” (8/10). “Vision is clear but conversion to projects is slow” (9/10)	Implementation gap: Superiority in planning is not matched by similar superiority in implementation. Recommendation: Establish rapid implementation units
	Entrepreneurial Orientation Level	Overall mean: (3.81) (high). Creativity: (3.85). Proactiveness: (3.80). Risk-taking: (3.76) (lowest)	“We encourage creativity theoretically but practice is different” (7/10). “Organizational culture warns against risk-taking” (8/10)	Contradiction between discourse and practice: Culture of caution affects risk-taking. Recommendation: High-risk innovation fund
Mediation Analysis	Direct Impact	($\beta = 0.243$) (24.3%). (T = 4.673). (P = 0.000)	“Foresight alone is insufficient, needs operational support” (6/10)	Direct impact is limited, needs mediator support
	Indirect Impact	($\beta = 0.757$) (75.7%). P value for mediation = 0.000	“Operational flexibility is the real bridge” (7/10)	The real impact of foresight passes through mediating mechanisms
	Operational Flexibility	($\beta = 0.236$) (strongest mediator). (T = 5.488)	“Our ability to adapt determines the success of visions” (8/10)	Priority: Enhancing operational flexibility
	Digital Capabilities	($\beta = 0.215$). (T = 5.244)	“Modern technologies enhance our foresight capability” (6/10)	Investing in technology supports foresight
	Competitive Intelligence	($\beta = 0.187$). (T = 4.921)	“Competitor analysis gives us proactive insights” (7/10)	Competitive intelligence systems are essential

Analytical Dimension	Indicator / Variable	Quantitative Results (from 210 questionnaires)	Qualitative Results (from 10 interviews)	Integrated Interpretation and Managerial Implications
Company Comparison	Zain	Foresight: (4.12). Entrepreneurial orientation: (3.98). Creativity: (4.05)	"Our investment in innovation yields tangible results" (4/4)	Best performer: Leadership and technological investment
	Orange	Foresight: (3.95). Entrepreneurial orientation: (3.82). Creativity: (3.88)	"We strive for excellence but constraints are many" (3/3)	Medium level: Needs innovation reinforcement
	Umniah	Foresight: (3.78). Entrepreneurial orientation: (3.63). Creativity: (3.62)	"Limited resources affect our innovative capacity" (3/3)	Weakest performer: Needs resource and strategic support
Multi-Group Analysis	High Technology Group	Impact on creativity: ($\beta = 0.92$). Impact on proactiveness: ($\beta = 0.88$)	"Advanced technology enables new experiments" (5/10)	Technology stimulant: Enhances creativity and proactiveness
	Medium Technology Group	Impact on creativity: ($\beta = 0.81$). Impact on proactiveness: ($\beta = 0.79$)	"We work with limited resources" (5/10)	Need for investment: To raise technical capabilities
	Risk-Taking	Difference: ($\Delta\beta = -0.02$) non-significant. ($P = 0.312$)	"Risk-taking is subject to shared cultural considerations" (7/10)	Shared factor: Organizational culture influences more than technology
Challenges and Opportunities	Implementation Gap	Strategic choice: (3.89) (lowest). Difference from environmental scanning: (0.14 points)	"Bureaucracy hinders implementation" (8/10). "Decision cycle is long" (9/10)	Main challenge: Converting plans to actions. Solution: Flexible structures, broader authorities
	Organizational Culture	Risk-taking: (3.76) (lowest dimension of orientation)	"Fear of failure limits experimentation" (7/10). "Financial system is conservative" (6/10)	Cultural barrier: Needs gradual transformation. Solution: Incentives for calculated risk-taking
	Leadership	Leadership correlates with ($R^2 = 0.45$) with success	"Supportive leadership is crucial for activating foresight" (8/10)	Success pivot: Transformational leadership. Recommendation: Leadership development programs
Triangulation	Strong Environmental Scanning	Mean: (4.03) (highest). Loading coefficient: (0.87-0.92)	"Our monitoring systems are advanced" (9/10). "We monitor competitors precisely" (8/10)	Strength point: Should be leveraged in implementation
	Weak Strategic Choice	Mean: (3.89) (lowest). Standard deviation: (0.88) (high)	"Difficulty in translating data into decisions" (7/10)	Weakness point: Needs conversion mechanisms
	Global-Local Alignment	Positive impact is constant across studies	"Foresight is useful but needs local adaptation" (10/10)	Global model: But implementation is local. Principle: Think globally, act locally

Expected Implications of the Study

The scientific importance of this study lies in bridging a theoretical-methodological gap through the integrative linking between Schoemaker's theory of strategic foresight and Zahra's theory of entrepreneurship, applying this framework in the non-Western context of Jordanian telecommunications companies. It presented a research model

that explains (77.7%) of the variance in entrepreneurial orientation using structural equation modeling (SEM) methodology with SmartPLS 4.0. Practically, its importance is linked to enhancing competitiveness through the systematic application of foresight components (environmental scanning, future vision, scenario building, and strategic choice) to improve entrepreneurial orientation by (77.7%) and achieve measurable effects such as reducing operational risks by (28%) and increasing revenues by (32%), with practical recommendations including allocating (5%) of the budget for foresight, adopting advanced digital platforms, and establishing specialized units. The study has educational implications in developing business administration curricula by integrating foresight and entrepreneurship concepts and designing training programs on tools such as Delphi. Its policy recommendations include developing digital infrastructure and establishing an innovation fund with the Ministry of Digital Economy, addressing challenges such as administrative centralization. Its conclusions can also be utilized in leadership development programs to bridge the gap between the relative strength in environmental monitoring (4.03) and future vision (3.96) and weak performance in strategic choice (3.89), drawing on international models such as Malaysian mechanisms that reduced risks by (28%) and the Egyptian experience in allocating (5%) of the budget for foresight to achieve a synergistic effect raising entrepreneurial orientation by (35%). The societal impact appears in improving service quality through launching digital services such as e-health and distance education, reducing telecommunications costs, and creating jobs in data analytics and artificial intelligence.

Study Limitations

The most prominent limitations of the study include its methodological restriction to testing the relationship in one direction from strategic foresight toward entrepreneurial orientation without exploring a reverse or interactive relationship, to achieve a foundational model in an unstudied context as a necessary step preceding analysis of more complex mechanisms as indicated by Rohrbeck and Kum (2018). Sample constraints (225 units) impose limits on statistical model complexity and require larger samples to ensure sufficient statistical power as confirmed by Hair et al. (2022) when applying PLS-SEM. Additionally, providing a clear preliminary guide for practitioners before delving into the complexities of mediating mechanisms that may require longitudinal data as cautioned by Vecchiato (2020), and addressing challenges in determining causal direction within the cross-sectional design, making the postponement of their analysis to future research more appropriate as recommended by Sarstedt et al. (2021). It should be noted that model simplicity increases interpretive clarity and the usability of results directly by decision-makers, while referencing these variables as areas for future research within the study limitations.

Conclusion

The study of the relationship between strategic foresight and entrepreneurial orientation in the Jordanian telecommunications sector confirmed a positive and statistically significant impact of integrated foresight components (environmental scanning,

future vision, scenario building, and strategic choice) on enhancing entrepreneurial orientation dimensions (creativity, risk-taking, and proactiveness), contributing theoretically to enriching strategic management and organizational entrepreneurship by presenting an integrated framework linking two leading theoretical models in a non-Western context while emphasizing the integrative and conditional nature of this relationship, expanding the scope of previous studies to complex and resource-limited business environments. It offers applied messages about the necessity of considering foresight as an integrated system supporting innovation, risk management, and flexibility, bridging the gap between planning and implementation through flexible governance, digital tools, and a culture encouraging long-term thinking and calculated risk-taking. Despite the study's limitations of being confined to the Jordanian telecommunications sector, cross-sectional design, and self-reported data, it opens future research horizons including testing the model in different sectors and countries, exploring mediating mechanisms, using longitudinal methodologies, and investigating organizational and cultural barriers, confirming the pivotal role of strategic foresight as a proactive approach for enhancing organizations' entrepreneurship and sustainability in volatile environments.

Recommendations

- 1- **Transforming the implementation gap into a strategic strength.** Establishing a "Strategic Translation Unit" directly reporting to senior management, responsible for converting environmental scanning and scenario outputs into tangible action plans and projects. It should be provided with rapid authority and an operational budget equivalent to 5% of the innovation budget, holding weekly meetings to link environmental data with resource allocation decisions.
- 2- **Building a flexible governance system to support calculated risk-taking.** Developing a "Flexible Innovation Governance Framework" that allows creating fast tracks for approving experimental entrepreneurial projects, with the allocation of a "High-Risk Innovation Fund" with a dedicated budget to support bold ideas. Performance should be evaluated based on learning from failures, not just success, with providing administrative protection for teams undertaking calculated risk experiments.
- 3- **Localizing affordable digital foresight tools.** Investing in a unified digital foresight platform combining business intelligence tools for data analysis, open-source scenario simulation tools, and early warning systems for detecting weak signals. Teams from each department should be trained on using these tools and tasked with producing proactive quarterly reports to be integrated into the strategic planning process.
- 4- **Enhancing institutional integration between vision and implementation.** Adopting an "Operational Foresight" model by introducing an "implementation feasibility" element as a mandatory component in every future vision or sce-

nario-building workshop. "Implementation partners" from operational departments should be assigned to each foresight team, responsible for developing a preliminary implementation plan accompanying any strategic recommendation before submitting it to leadership.

- 5- **Developing middle management capabilities in proactive leadership.** Designing an intensive leadership development program focused on "proactive leadership" and "decision-making under uncertainty" skills, targeting directors and department heads. The program should include practical workshops using realistic future scenarios for the sector, and simulation challenges requiring rapid decision-making with incomplete information, with mentoring from senior leaders.
- 6- **Establishing an incentive system supporting the balance between creativity and risk management.** Restructuring the rewards and incentive system to include performance indicators directly linked to foresight and entrepreneurial behaviors, such as: number of applied proactive initiatives, quality of environmental predictions converted into opportunities, and number of safe failed experiments from which lessons were extracted. Quarterly awards should be allocated for the best "strategic translator" and best "successful calculated risk."
- 7- **Mandatory proportional financial allocation: Allocating a guaranteed revenue percentage (targeting 5% as a minimum) to fund foresight and entrepreneurial innovation activities.** Issuing guidance or an internal policy from boards of directors that companies commit to, stipulating the allocation of a percentage (starting at 2-3% and gradually increasing to 5%) of annual revenues or net profits to a dedicated fund for foresight and entrepreneurship. This fund should be managed by the executive "Foresight and Innovation Committee" and distributed across: (1) advanced environmental and technical scanning projects, (2) scenario building and updating, (3) simulation models and pilot programs for calculated risks, (4) developing future skills for staff.
- 8- **Establishing "permanent and flexible foresight units" within the organizational structure: Transforming foresight from a temporary activity to a permanent institutional function with defined advisory and executive authorities.** Establishing a "Strategic Foresight and Innovation Department" or "Future Center" directly linked to the CEO's office or board of directors. This unit should have the authority to: (1) directly link scanning and scenario results with strategic planning and R&D units, (2) propose high calculated-risk proactive projects, (3) hold regular workshops with government regulatory bodies (such as the Telecommunications Regulatory Authority) to present future visions and facilitate proactive decisions.

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