




“Startup adaptability and resilience as drivers of entrepreneurial orientation: A quantitative analysis of Greek startups”

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STARTUP ADAPTABILITY AND RESILIENCE AS DRIVERS OF ENTREPRENEURIAL ORIENTATION: A QUANTITATIVE ANALYSIS OF GREEK STARTUPS

Abstract

This paper explores the extent to which adaptability and resilience affect dimensions of entrepreneurial orientation in a sample of 239 Greek startups operating in various sectors registered in Elevate Greece. A quantitative research design was applied to collect data from November 2024 to May 2025, using a structured 18-item questionnaire developed from existing measurement scales of entrepreneurial orientation and measured on a 5-point Likert scale. Descriptive statistics, chi-square independence tests, hypothesis testing, and multiple regression analyses were applied to examine the relationships between adaptability, resilience-related factors, and dimensions of entrepreneurial orientation. Statistical analysis documents a strong association between entrepreneurial orientation and both adaptability and resilience, as all hypotheses are strongly supported ($p < .001$). In addition, the findings indicate that adaptability-related factors significantly predict proactiveness ($p < .001$), while two of the three resilience-related factors (allocation of research and development resources and strategic alliances) appear to have a strong positive effect on innovativeness ($p < .001$). Autonomy demonstrates partial strong associations with both constructs, through one adaptability factor (organizational structure) and one resilience factor (employees' connection to work). Finally, resilience-related factors have less predictive effect on risk-taking. Overall, the results indicate that the adaptability and resilience of Greek startups require a combination of internal and external capabilities.

Keywords

Greek startups, dimensions of entrepreneurial orientation, adaptability, resilience

JEL Classification

L20, L26, L29

INTRODUCTION

Today's business landscape demands that startups not only innovate but also entrepreneurially navigate dynamic modern markets. Entrepreneurial orientation is characterized by innovativeness, proactiveness, risk-taking, competitive aggressiveness, and autonomy; it has emerged as an essential element of new ventures – that is, the performance of startups. Understanding how entrepreneurial orientation influences startups can be valuable for entrepreneurs, investors, and policymakers in fostering the startup ecosystem (Covin & Wales, 2019). Entrepreneurial orientation provides startups with a strategic framework that fosters creativity, encourages proactive market engagement, and supports risk-taking. Despite the benefits of entrepreneurial orientation, startups often fail due to internal factors, which affect their value chain and capabilities, such as timing of realization, team, marketing strategy, product fit, and external factors related to the macro environment of the startup ecosystem (Rozas & Er, 2024). Operational inefficiencies, as well as challenges such as inefficient processes and the lack of scalable systems, are additional factors that lead to the failure of startups (Eisenmann, 2021).

Successful startups are characterized by their willingness to take risks and innovate (Anderson et al., 2015). They tend to have a strong business model, relevant previous experience, and market orientation. Startups with a strong entrepreneurial orientation are more likely to distinguish themselves in ways that attract investors and enable further development (Morgan et al., 2009). They are also more likely to develop unique products and services and to respond effectively to the pressure of market changes. Innovativeness enables startups to introduce novel products, while proactiveness enables them to identify and satisfy customer needs in a timely manner. Risk-taking empowers startups to invest in strong alliances with other ventures, either to defend their market position or to penetrate new markets (Rosenbusch et al., 2011). Indeed, Govender (2020) argues that entrepreneurial orientation and strategic agility are both key factors that enhance decision-making and organizational performance.

The risks of entrepreneurial actions remain because the mechanisms through which entrepreneurial orientation influences resilience and adaptability are not fully understood. Existing research has highlighted short-term outcomes and performance, while overlooking how entrepreneurial orientation leverages the resilience of startups (Covin & Wales, 2019). While the concept of entrepreneurial orientation and startups has attracted intense scholarly interest, important research questions have not been adequately addressed, including the relationship between the level of entrepreneurial orientation and its dimensions with the ability of startups to adapt quickly to drastic shifts and the long-term resilience of startups.

1. LITERATURE REVIEW AND HYPOTHESES

The concept of entrepreneurial orientation encompasses the way a firm is organized. It also reflects the entrepreneur's management style. Entrepreneurial orientation refers to the extent to which top managers are willing to take risks, foster innovativeness, and apply proactive behaviors (Vij & Bedi, 2012). As the examination of the entrepreneurial orientation concept has developed, researchers have identified several dimensions for the construct and concluded that the key ingredients of entrepreneurial orientation are innovativeness, risk-taking, and proactiveness (Covin & Slevin, 1991). Lumpkin and Dess (2001) expanded the existing concept by adding competitive aggressiveness and autonomy, but these two additional dimensions have not achieved scholarly consensus. For example, Hough and Scheepers (2008) argue that they cannot be considered separate dimensions but as internal organizational factors. For this research, four dimensions of entrepreneurial orientation are considered, integrating the dimension of autonomy into the initial definition of the construct, as autonomy is a crucial factor in organizational structure and culture (Alriyami et al., 2024).

The first dimension of entrepreneurial orientation, innovativeness, refers to the achievement of novelty and a creative process through experimentation

(Lumpkin & Dess, 2001). This dimension originated in Schumpeter's theory of creative destruction as a process that takes place when wealth is created by the introduction of new products, services, and processes, which cause a turbulent market environment (Kraus et al., 2012). Proactiveness is the anticipation of future demands or changes. The firm's proactive behavior encompasses a forward-looking perspective that pursues business opportunities, thereby enabling the organization to become a pioneer and gain a competitive advantage by securing and protecting its market share (Vij & Bedi, 2012). Risk-taking describes the actions of the entrepreneur and the degree of risk he or she is willing to take. Covin and Slevin (1991) highlight that an appropriate level of risk-taking is essential for startup performance. However, excessive risk-taking without proper management can lead to failures, which indicates the need for a balanced approach. Autonomy fosters an environment where employees can take the initiative, which leads to higher motivation and productivity. Freedom of choice in how to perform work empowers employees to participate in decision-making (Alriyami et al., 2024). Employees with autonomy carry out their work based on their critical thinking, personality traits, and knowledge. According to Lumpkin et al. (2009), autonomy in an organizational context fosters a more innovative culture, thus contributing to overall high performance.

The technological orientation of a business is a key component of entrepreneurial orientation for companies that want to have a lead in the market. These companies seek to acquire and apply the latest technologies, which allow them to react faster, to design better products/services, and to achieve innovation faster due to technical skills and R&D expenses (Masa'deh et al., 2018; Renko et al., 2009; Urban & Barreria, 2010). Technology orientation is strongly linked to innovation and influences the organization's long-term success by shaping flexibility and willingness to change, as the coordination of technological and entrepreneurial capabilities can yield innovation that drives fundamental change and creates wealth for the firm (Zawislak et al., 2012).

Entrepreneurial orientation theory highlights the importance of organizational structure and conditions in the adoption of entrepreneurial orientation behavior. According to Yaseen et al. (2023), organizational structure is a key factor of successful organizations with an entrepreneurial orientation mindset. More specifically, this organic organizational structure should be flexible, with authorities decentralized and few rules and regulations. This can be interpreted as the autonomy dimension of entrepreneurial orientation. In this context, it is very important for employees to participate in entrepreneurial activities and take the initiative in ways supported by top managers and facilitated through the firm's networks and procedures. Ireland et al. (2009), as noted by Kraus et al. (2012), argue that the internal business environment must promote a less hierarchical organizational structure, thereby leveraging process flexibility and facilitating information access.

Prior studies have examined the relationship between entrepreneurial orientation, strategic human resource management, and organizational commitment in small and medium-sized enterprises (SMEs), documenting the direct and positive impact of entrepreneurial orientation on organizational commitment, job satisfaction, and employee performance (Javalgi & Todd, 2011; Soomro & Shah, 2019; Zehir et al., 2016). De Clercq and Rius (2007) argue that strong firm entrepreneurial orientation can predict strong employee commitment because internal organizational factors, such as organizational climate and

procedures, strengthen employees and offer them a high degree of autonomy. This can be translated into higher performance at the individual and firm levels, as employees feel closer to the firm and put in more effort.

Scholars have also examined the relationship between entrepreneurial orientation and strategic alliances. For example, Li et al. (2017) explored how the entrepreneurial orientation of firms defines the success of a strategic alliance. They highlighted its importance from a macro-level perspective while arguing that the relational characteristics of the alliance are crucial for the desired outcomes. They concluded that the entrepreneurial behavior of the leadership fosters the entrepreneurial orientation level of the firm, thereby enhancing its market positioning and achieving a competitive advantage. Collaboration between large companies and startups is essential to foster innovation and organizational growth (Giglio et al., 2025). Successful partnerships are based on goal alignment, the parties' agility in adapting to change, effective communication, and mutual trust. In such collaborations, both parties are also called upon to face challenges such as power dynamics and conflicts of interest. Arfara and Samanta (2020) also acknowledge the mutual benefits of strategic alliances, including strengthening negotiation capability, reputation, resource acquisition, and organizational performance. Neyens et al. (2010) examined the factors that play a key role in alliance duration; they focused on startups' innovation performance, both radical and incremental, and concluded that the time frame of the alliance is essential in both continuous and discontinuous alliances.

The term "startup" was first used in the 1970s to describe new and innovative businesses with high growth potential and the ability to shake existing markets (Blank & Dorf, 2012). Startups are usually characterized by their small initial operating scale, their flexibility, and intense dependence on technology and innovation (Ries, 2011). One of their main features is scalability, as well as the development of products or services for large and international markets. Startups also usually operate in uncertainty, with high risk and limited resources, but with significant prospects for high yields (Bhide, 2000). Researchers have focused on

various issues related to startups, such as their creation process, innovation strategies, funding, and market survival (Cohen & Hochberg, 2014). The factors affecting the success and failure of startups, such as team culture, leadership, and resource management (Eisenmann, 2021), have also been explored. At the same time, significant emphasis has been placed on the impact of the ecosystem in which they operate, and on how supportive bodies, such as accelerators and business capital investors, can affect the growth and success of startups (Isabelle, 2013). Startups experience high failure rates, with only a third surviving for three years. They often fail due to financial challenges, insufficient knowledge or team management, inadequate support mechanisms, and unfavorable environmental conditions (Salamzadeh & Kesim, 2015).

Santisteban et al. (2021) examined the results of 1,013 surveys analyzing the main factors in startup failure. They categorized them into three large groups – organizational, individual, and external – related to the stage of startup development: seed, early, growth, and expansion. It was concluded that founders' prior experience and supportive state policies determine the success of startups at the seed stage, while startups' technological capabilities determine growth and expansion. Inadequate market analysis, lack of funding, and inadequate management strategies can contribute to startup failure. From an economic perspective, Díaz-Santamaría and Bulchand-Gidumal (2021) identify partners' dedication, the presence of incubators/accelerators, and prior startup experience as factors in securing financing.

Although the concept of entrepreneurial orientation has been examined in depth, the relationship between entrepreneurial orientation and startups has not been studied to the same extent. According to Kropp et al. (2008), innovativeness has little impact on the decisions of startups, but proactiveness, risk-taking, and the age of the lead entrepreneur all have a positive correlation. Kraus et al. (2012) concluded that the proactiveness and innovativeness of SMEs have a positive effect on firm performance, especially in unstable environments, where SMEs perform better when interacting with market turbulence. Unlikely, risk-taking was found to have a significant negative correlation with business performance. Korpysa (2019)

emphasizes the significance of innovative activity and the exploration of market opportunities of startups as key factors for their development and growth. According to Brahma (2020), three entrepreneurial orientation dimensions – innovativeness, proactiveness, and risk-taking – are linked to small business performance metrics such as return on sales, profitability index, sales growth, profit, and investment. The findings of Sungthong et al. (2023) suggest that entrepreneurial orientation is directly correlated with innovation and the financial performance of startups. They studied entrepreneurial orientation as a single variable, integrating items that are related to risk-taking, autonomy, competitive aggression, innovativeness, and reactivity, without testing the effect of each dimension separately. The relationship between entrepreneurial orientation and new venture performance has been examined by Donbesuur et al. (2020), who highlight entrepreneurial opportunity as a moderating factor; their key findings focus on the important role of relational capital of businesses and the supportive environment.

Abrantes and Furtado (2021) revealed the practices that leverage startups' agility and their benefits, the main limitations faced, and the main tools applied to support an agile organizational structure and reduce development time. They concluded that fundamental organizational procedures and teamwork, among others, form the key agile development practices. These practices promote process optimization, quality improvement, and fast release. They also noted a list of technological tools that small businesses used most in order to achieve an adequate level of adaptability.

Karani and Mshenga (2021) also provide insights into the sustainability of entrepreneurial startups. They suggest that startups should invest in the external environment and, specifically, in promising networking and partnerships to address resource limitations. They also focused on the importance of contextual factors, such as processes and the crucial role of mentoring through incubation. In the same vein, Zighan et al. (2022) developed a framework based on entrepreneurial orientation elements to foster SMEs' resilience in the face of major threats or disruptions. They argue that the employment of entrepreneurial orientation in SMEs increases firms' confidence and enhances

their tolerance and adaptability in turbulent environments. Firms that manage to balance short-term operational actions with long-term strategic thinking – which incorporates networking, alliances, knowledge acquisition, learning capability, agile leadership, and mastering change – are the firms that achieve a high degree of resilience.

Based on the literature review, the organizational structure and technological orientation, and therefore its overall technological readiness, emerge as adaptability-related factors. Resilience is further related to factors such as employees' connection to their work, the allocation of R&D resources, and the development of strategic alliances. While the concepts of entrepreneurial orientation and startups have separately attracted the intense interest of scholars, the exploration of the relationship between the level of entrepreneurial orientation and its dimensions with startups' adaptability and resilience through the moderating role of the above-mentioned factors has not been adequately addressed.

This paper aims to examine how adaptability and resilience-related factors influence the entrepreneurial orientation of startups. In this context, the following hypotheses (H) were formulated:

- H1: The level of entrepreneurial orientation is related to the degree of technological readiness.*
- H2: The level of entrepreneurial orientation is correlated with the organizational structure.*
- H3: Startups with strong entrepreneurial orientation are more effective in fostering employees' connection to their work.*
- H4: The allocation of R&D resources is dependent on the scale of entrepreneurial orientation.*
- H5: Startups with strong entrepreneurial orientation are more effective in forming and maintaining strategic alliances.*

2. METHOD

The methodology was based on a quantitative design, following a clearly structured process for data collection and analysis. Initially, the research

questions and hypotheses were formulated. The questionnaire was then developed based on the proposed conceptual model and existing measurement scales, and subjected to pilot testing to ensure clarity, coherence, and reliability. Primary data were collected through an online survey via Google Forms.

The survey was addressed to the founders of Greek startups that are listed in Elevate Greece, which is the official digital gateway for startups that aims to strengthen, develop, and expand the Greek innovation ecosystem. The collection took place from November 2024 to May 2025 and yielded 239 usable questionnaires, recording a response rate at 28.8%. The questionnaire contained two sections. Section 1 consisted of 18 questions using a 5-point Likert scale (1 = strongly disagree and 5 = strongly agree). Technological readiness was measured by a three-item scale developed by Saraf et al. (2007) related to the extent to which information systems are scalable, interoperable, and appropriately designed to effectively support business processes and relationships. For the measurement of organizational structure, the four-item scale of Zahra (1993) was used to examine the extent to which a company structures and coordinates its units, provides appropriate autonomy, and establishes procedures that enhance performance and support employee input. Following the instruments of Saunila and Ukko (2013) and Atuahene-Gima and Ko (2001) on employees' connection to work, we assessed the extent to which organizations facilitate idea sharing, provide incentives and recognition for innovative contributions, and foster a dynamic and flexible work environment. The measurement developed by Atuahene-Gima and Ko (2001) was also used to examine the allocation of R&D resources. Finally, the perspective of startup founders regarding strategic alliances was measured using the scales developed by Saunila and Ukko (2013) and Zott and Amit (2008). Section 2 provided general data on the founders' profiles and the startup as an organization.

Table 1 provides an overview of the respondents' characteristics, including demographic variables and business profile information (Table 1).

Descriptive statistics were used to analyze primary data, thus summarizing and describing the

Table 1. Profile of respondents

Variable	Category	N	%
Gender	Male	199	83.3
	Female	40	16.7
Age group	Gen X (born <1980)	103	43.0
	Millennials	105	43.9
	Gen Z (born >1996)	31	56.9
Education level	Master's Degree	129	54.0
	Ph.D.	56	23.4
	Bachelor's Degree	48	20.1
	Missing	6	2.5
Work experience prior to founding	15+ years	123	51.5
	4–10 years	49	20.5
	0–3 years	30	12.6
	11–15 years	29	12.1
	Missing	8	3.3
Number of founders	2 founders	102	42.7
	1 founder	62	25.9
	3 founders	43	18.0
	4 founders	19	7.9
	5+ founders	9	3.7
	Missing	4	1.7
Number of employees (excluding founders)	0	68	28.5
	2	25	10.5
	1	24	10.0
	3	21	8.8
	4	19	7.9
	5	15	6.3
	8	13	5.4
	7	9	3.8
	10	7	2.9
	6	5	2.1
	9	5	2.1
	More than 10	27	11.3
	Missing	1	0.4
Type of service offered	B2B	180	75.3
	B2C	49	20.5
	B2G	8	3.3
Business plan availability	Yes	236	98.7
	No	3	1.3
Business plan designed by	Founders	103	43.1
	Founders + mentor	71	29.7
	Founders + external consultant	51	21.3
	Missing	10	4.2
Initial capital	€10,001–50,000	95	39.8
	€0–10,000	78	32.6
	€50,001–200,000	49	20.5
	> €200,000	14	5.9
	Missing	1	0.4
Source of initial capital	Personal investment	117	49
	Partners	41	17.2
	Family and friends	30	12.6
	Other combinations	22	9.5
	Incubator/Accelerator	12	5
	Venture Capital	10	4.2
	Awards	4	1.7
	Angel investors	2	0.8

Table 1 (cont.). Profile of respondents

Variable	Category	N	%
External funding received	Yes	123	51.5
	No	114	47.7
Year of external funding	1	43	18
	2	35	14.6
	3	27	11.3
	4	9	3.8
	5+	9	3.8
	Continuous	3	1.3
Industry sector	ICT	71	29.7
	Life sciences and health	36	15.1
	Tourism and hospitality	25	10.5
	Fintech/Insurance	23	9.6
	Agri-food	14	5.9
	Industry 4.0/IoT	10	4.2
	Other sectors	60	25

characteristics of the sample and the variables. The hypotheses were tested using the chi-square test of independence to investigate the relationships between the variables, as well as multiple regression analysis to evaluate the effects of multiple independent variables on the dependent variable. All analyses were conducted in SPSS software with a significance level of $\alpha = 0.05$, while the validity conditions of the statistical tests were checked. In addition, the ethical principles of the research were fully respected through informed consent and by ensuring the anonymity of the participants.

3. RESULTS

Cronbach's alpha coefficient was used to estimate data reliability. The obtained value (0.79) indicates satisfactory reliability, as values above 0.7 confirm the high internal consistency of the data and the overall acceptance of the instrument applied to the research.

Of the 239 startups, 83.3% were founded by men, 43% of the participants were born before 1980 (Gen X), while 43.9% were Millennials. Just over three-quarters (77.4%) of startup founders had completed postgraduate studies, with significant working experience of over 10 years (63.6%). Most (86.6%) of the startups were established by one to three founders, while 62 (25.9%) were founded by a solo entrepreneur. 11.3% of the startups employed more than 10 employees and had a B2B business model. Only 3 out of 239 startups did not have a

business plan, while 43.1% of the startups formulated their business plan together with a mentor or external consultant. For around half of the startups (51%), the business plan was developed by the founders. Nearly two-fifths (39.8%) of the startups invested 10,000–50,000 euros, while for 32.6% the required capital did not exceed 10,000 euros. Most (86.4%) of the startups received funding during the first 3 years of operation. A total of 29.7% of startups were in the ICT sector, 15% in the health sector, and 10.4% in the tourism sector. Just over half (51.5%) of the startups were funded, with the 85.4% of them receiving funding in their first 3 years of operation. The Greek startups examined demonstrated a high level of entrepreneurial orientation ($M = 4.07$) with an emphasis on innovativeness ($M = 4.34$) and proactiveness ($M = 4.10$). Founders of startups were quite open to risk-taking ($M = 3.96$) but more reserved toward autonomy ($M = 3.94$), which recorded higher standard deviations, thus suggesting that their opinions differed significantly (standard deviations: 61.9 and 73.61, respectively).

To examine hypothesis 1 (H1), a chi-square test of independence (χ^2) was applied. The results showed statistically significant correlations between the variables; however, a very high percentage of cells had expected frequencies of less than 5, and as a result, the χ^2 values cannot be considered reliable. For this reason, a Monte Carlo simulation was used, which confirmed the significance of the result ($p = .000$), and the Cramér's V index showed high values, indicating a very strong correlation

Table 2. Examination of H1

Item	N	df	Pearson χ^2	Monte Carlo Sig. (2-sided)	Cramér's V	Results
Our information systems are highly scalable*	235	156	502,126	.000	.731	Supported
Most of our software applications work seamlessly across our customers' multiple machines from multiple vendors**	237	117	349,055	.000	.701	Supported
Our information system is designed to support business relationships easily***	239	120	393,054	.000	.740	Supported

Note: *191 cells (95.5%) have expected count less than 5. The minimum expected count is 0.03. Based on 10000 sampled tables with a starting seed of 475497203. The standardized statistic is .423. **152 cells (95.0%) have expected count less than 5. The minimum expected count is 0.01. Based on 10000 sampled tables with a starting seed of 475497203. The standardized statistic is 5.036. ***155 cells (94.5%) have expected count less than 5. The minimum expected count is 0.07. Based on 10000 sampled tables with a starting seed of 475497203. The standardized statistic is 8.241.

between the variables, according to Akoglu (2018). The degrees of freedom were calculated at the 95% confidence level, with a significance level of 5%. The *p*-values were less than 0.05, indicating that all were supported and all items have a very strong influence on the entrepreneurial orientation of startups (Table 2).

The results demonstrate that technological readiness, including scalability, interoperability, and support for business relationships through information systems, is a critical determinant for enhancing entrepreneurial orientation.

A chi-square test of independence (χ^2) was also applied to examine hypothesis 2 (H2). However, the assumptions of the χ^2 test were not met, since over 94% of the cells had expected frequencies less than 5. To obtain a more accurate estimation of statistical significance under these conditions, a Monte Carlo simulation (10,000 samples) was applied. The Monte Carlo *p*-values were significant for all

items (*p* < .001). Cramér's V coefficient indicated strong associations (*V* = .704–.791). Therefore, the results provide support for H2 as shown in Table 3.

The results highlight the impact of organizational practices such as employee participation, departmental autonomy, and organizational collaboration for enhancing entrepreneurial orientation.

The same test [chi-square test of independence (χ^2)] was employed to examine hypothesis 3 (H3), which posits an association between entrepreneurial orientation and the employees' connection to their work. The test's assumptions were not met, as more than 94% of the cells exhibited expected frequencies below 5. Consequently, a Monte Carlo simulation was applied to derive more reliable results under these conditions. The resulting Monte Carlo *p*-values were significant across all three items (*p* < .001), and Cramér's V values (*V* = .755–.766) indicated strong associations. These findings provide empirical support for H3, as presented in Table 4.

Table 3. Examination of H2

Item	N	df	Pearson χ^2	Monte Carlo Sig. (2-sided)	Cramér's V	Results
We reorganize units and divisions to increase performance*	239	160	474,022	.000	.704	Supported
Activities among units coordinated to enhance company performance**	238	117	420,376	.000	.767	Supported
We increase the autonomy (independence) of different units to enhance their creativity***	237	114	415,040	.000	.764	Supported
We establish procedures to facilitate employees' suggestions****	239	160	598,609	.000	.791	Supported

Note: *198 cells (96.6%) have expected count less than 5. The minimum expected count is 0.03. Based on 10000 sampled tables with a starting seed of 1066061003. The standardized statistic is 6.410. *151 cells (94.4%) have expected count less than 5. The minimum expected count is 0.03. Based on 10000 sampled tables with a starting seed of 1066061003. The standardized statistic is 6.536. ***147 cells (94.2%) have expected count less than 5. The minimum expected count is 0.05. Based on 10000 sampled tables with a starting seed of 1066061003. The standardized statistic is 8.234. ****193 cells (94.1%) have expected count less than 5. The minimum expected count is 0.04. Based on 10000 sampled tables with a starting seed of 1066061003. The standardized statistic is 11.492.

Table 4. Examination of H3

Item	N	df	Pearson χ^2	Monte Carlo Sig. (2-sided)	Cramér's V	Results
We implement channels such as suggestion boxes, online portals, and regular brainstorming sessions to gather employee ideas and feedback*	239	160	552,049	.000	.760	Supported
We offer substantial incentives, bonuses, and recognition programs for employees who contribute to innovative projects and initiatives**	239	160	545,375	.000	.755	Supported
We implement flat hierarchies, cross-functional teams, and flexible work arrangements to foster a dynamic work environment***	239	160	561,140	.000	.766	Supported

Note: *199 cells (97.1%) have expected count less than 5. The minimum expected count is 0.05. Based on 10000 sampled tables with a starting seed of 876491272. The standardized statistic is 11.277. **197 cells (96.1%) have expected count less than 5. The minimum expected count is 0.03. Based on 10000 sampled tables with a starting seed of 876491272. The standardized statistic is 8.805. *** 197 cells (96.1%) have expected count less than 5. The minimum expected count is 0.01. Based on 10000 sampled tables with a starting seed of 876491272. The standardized statistic is 4.997.

The results for H3 indicated that practices to enhance employee participation, provide incentives for innovation, and promote flexible and interoperable work structures are related to strong entrepreneurial orientation.

To test hypothesis 4 (H4), the Monte Carlo method was also employed to ensure the reliability of the results. The Monte Carlo *p*-value was statistically significant ($p < .001$), and the Cramér's V coefficient ($V = .730$) indicated a strong association between entrepreneurial orientation and R&D resources (Table 5).

The results revealed a strong and statistically significant relationship between R&D resources and the level of entrepreneurial orientation. This finding suggests that increased investment in R&D ac-

tivities is associated with higher levels of entrepreneurial orientation, which reinforces the view that innovation and strategic entrepreneurship are interrelated factors in organizational dynamics.

Finally, hypothesis 5 (H5) was examined using the same chi-square test of independence, drawing on the significance of the Monte Carlo and the corresponding Cramér's V values. The Cramér's V coefficients for the two items ranged from .630 to .664, thereby supporting the relationship between entrepreneurial orientation and strategic alliances (Table 6).

The results for H5 demonstrated that practices to enhance strategic alliances and active collaboration with stakeholders are important factors in enhancing entrepreneurial orientation in startups.

Table 5. Examination of H4

Item	N	df	Pearson χ^2	Monte Carlo Sig. (2-sided)	Cramér's V	Results
A strong emphasis is given to R&D and technological leadership*	239	160	509,528	.000	.730	Supported

Note: *196 cells (95.6%) have expected count less than 5. The minimum expected count is 0.04. Based on 10000 sampled tables with a starting seed of 619230322. The standardized statistic is 8.028.

Table 6. Examination of H5

Item	N	df	Pearson χ^2	Monte Carlo Sig. (2-sided)	Cramér's V	Results
We seek strategic alliances and joint ventures in order to develop, produce, and launch a new product/service*	238	117	314,853	.000	.664	Supported
We develop our actions together with our stakeholders**	239	160	379,927	.000	.630	Supported

Note: *145 cells (90.6%) have expected count less than 5. The minimum expected count is 0.01. Based on 10000 sampled tables with a starting seed of 102891863. The standardized statistic is 6.516. **196 cells (95.6%) have expected count less than 5. The minimum expected count is 0.02. Based on 10000 sampled tables with a starting seed of 102891863. The standardized statistic is 5.381.

Table 7. Multiple regression analysis

		Proactiveness Adjusted R ² = 0.715		Innovativeness Adjusted R ² = 0.707		Autonomy Adjusted R ² = 0.869		Risk Taking Adjusted R ² = 0.457	
		B	Sig	B	Sig	B	Sig	B	Sig
Adaptability-related factors	Tech readiness	0.355	.000	0.154	.001	0.025	.401	0.107	.083
	Organizational structure	0.569	.000	0.035	.476	0.434	.000	-0.076	.256
Resilience-related factors	Employees' connection to work	0.039	.381	0.037	.417	0.621	.000	0.562	.000
	Allocation of R&D resources	-0.195	.000	0.556	.000	0.084	.003	0.180	.002
	Strategic alliances	0.163	.000	0.446	.000	-0.055	.040	0.080	.138

Note: Dependent variables: Proactiveness, innovativeness, autonomy, risk-taking. Predictors: Tech readiness, organizational structure, employees' connection to work, allocation of R&D resources, and strategic alliances.

A multiple regression analysis (MRA) was also applied to examine the relationship between the dependent variable (dimensions of entrepreneurial orientation) and the independent variables (tech readiness, organizational structure, employees' connection to work, allocation of R&D resources, and strategic alliances). An in-depth view of the results of this regression indicated the unequal impact of these independent variables (Table 7).

The MRA results for proactiveness showed that the model is statistically significant ($F(5,233) = 116.947$, $p < .001$) with the R^2 value explaining 71.5% of the variance of the dependent variable (proactiveness). Organizational structure ($\beta = 0.569$, $p < .001$) and tech readiness ($\beta = 0.355$, $p < .001$) were the strongest positive predictors, which demonstrates that both of these variables enhance proactiveness. Strategic alliances ($\beta = 0.163$, $p < .001$) also had a positive but moderate effect. R&D resources ($\beta = -0.195$, $p < .001$), meanwhile, negatively affected proactiveness, which can be interpreted as a result of short-term expenses limiting immediate flexibility. Finally, employees' connection to work ($p = .381$) was not statistically significant.

The multiple linear regression documented the statistical significance of the model for innovativeness ($F(5,233) = 112.275$, $p < .001$), which explains 70.7% of the variance of the dependent variable ($R^2 = 0.707$). The independent variables R&D resources ($\beta = 0.556$, $p < .001$) and strategic alliances ($\beta = 0.446$, $p < .001$) were the strongest positive predictors of innovation, suggesting that both investment in research and development of strategic partnerships contribute to strengthening the capabilities of companies to inno-

vate. Tech readiness ($\beta = 0.154$, $p = .001$) also showed a statistically significant but smaller positive effect, which suggests that technological readiness is a supportive factor for innovation, although less powerful than R&D spending and strategic alliances. In contrast, organizational structure ($p = .476$) and employees' connection to work ($p = .417$) did not have a statistically significant effect on the dependent variable, which indicates that these are not critical factors for predicting innovation.

The examination of the third dimension of entrepreneurial orientation, autonomy, revealed a strong and statistically significant model, as it explained 86.9% of the variance ($R^2 = 0.869$). The high percentage of variance demonstrated that the selected factors predicted the level of autonomy within the organization to a very large extent. Specifically, the independent variable employees' connection to work ($\beta = 0.621$, $p < .001$) emerged as the most important predictive factor, which indicates that the commitment and connection of employees to their work is the strongest determinant for fostering autonomy. The organizational structure ($\beta = 0.434$, $p < .001$) also contributed substantially, which shows that an appropriate organizational structure favors the development of autonomous practices. Furthermore, R&D resources ($\beta = 0.084$, $p = .003$) had a positive but more limited effect. Strategic alliances ($\beta = -0.055$, $p = .040$), meanwhile, showed a negative relationship with autonomy, which can be interpreted as a result of the increased dependence and coordination required by collaborations with external entities. Finally, tech readiness ($p = .401$) did not appear to affect autonomy.

Finally, for the dimension of risk-taking, the multiple linear regression yielded a statistically significant model ($F(5,233) = 39,236, p < .001$) that explained 45.7% of the variance ($R^2 = 0.457$). Compared to the previous models, the explanatory power is lower, which suggests that risk-taking is also influenced by other factors that were not included in the present model. Employees' connection to work ($\beta = 0.562, p < .001$) emerged as the most significant positive predictive factor, which indicates that employees' commitment to their work increases their willingness to take risks. R&D resources ($\beta = 0.180, p = .002$) also showed a positive and statistically significant effect, which suggests that investments in research and development enhance the tendency for risky strategic choices. On the other hand, organizational structure ($p = .256$), strategic alliances ($p = .138$), and tech readiness ($p = .083$) did not prove to be statistically significant factors.

4. DISCUSSION

This study explored the extent to which the ability of startups to adapt to intense environmental changes and contribute to their long-term organizational resilience shapes dimensions of entrepreneurial orientation. Although previous research has extensively documented the characteristics of the startup ecosystem, success factors, and their effects on job creation/destruction (Decker et al., 2014; Kane, 2010; Kim et al., 2018; Ojaghi et al., 2019; Prohorovs & Bistrova, 2019; Tripathi et al., 2019), the empirical examination of how elements of entrepreneurial orientation interact with startups' ability to adapt to environmental changes and their long-term organizational resilience has not been thoroughly explored.

The empirical findings document a strong relationship between entrepreneurial orientation and critical organizational and strategic parameters, including technological readiness, organizational adaptability, strategic human resource management, investments in R&D, and strategic alliances. At the technological level, startups with higher levels of entrepreneurial orientation are characterized by the development of flexible and scalable information infrastructures, as well as the adoption of software that ensures interoperabil-

ity between different devices and platforms. This finding is consistent with the existing literature (Masa'deh et al., 2018; Renko et al., 2009), where technological readiness is recognized as a key mechanism for promoting innovation. The emphasis on designing systems that facilitate business collaborations also suggests that technology functions not only as a support tool but as a key factor for wealth creation (Zawislak et al., 2012). R&D investments proved to be significant, thus confirming the approach of scholars regarding absorptive capacity (Masa'deh et al., 2018; Renko et al., 2009; Urban & Barreria, 2010; Zawislak et al., 2012). This dimension demonstrates that investment in the creation of new knowledge and technological progress is a key condition for ensuring the long-term resilience of Greek startups. Correspondingly, the organizational dimension of entrepreneurial orientation was confirmed through the particularly high strength of practices that include departmental reorganization, effective coordination, strengthening autonomy, and institutionalizing proposal submission procedures. These findings are aligned with the theoretical context that organizational structure and active employee involvement are fundamental prerequisites for innovation (Yaseen et al., 2023). Employee engagement and the cultivation of a dynamic work environment with a flat hierarchy also emerged as critical variables. This finding is consistent with the literature (Javalgi & Todd, 2011; Soomro & Shah, 2019; Zehir et al., 2016), according to which incentives reinforce behaviors that contribute decisively to organizational performance and success (De Clercq & Rius, 2007). At the same time, strategic alliances and collaborations with critical stakeholders reinforce the existing theory about social capital networks (Arfara & Samanta, 2020; Li et al., 2017) and offer access to critical resources and knowledge, thus increasing the negotiating power and therefore the competitiveness of startups.

Of particular importance is the finding that each dimension of entrepreneurial orientation is influenced by diverse factors with varying intensity, which reflects the complexity of organizational dynamics in Greek startups. Specifically, proactiveness is mainly enhanced by internal organizational factors, such as internal structure and technological readiness.

This finding indicates that proactive strategic behavior is enabled by management style, structural capital, working environment, and incentives that facilitate anticipation. The positive but weaker effect of strategic alliances suggests that external collaboration supports proactiveness without substituting for internal capabilities. The absence of a significant effect of employees' connection to work implies that proactiveness is less dependent on employees' motivation and more shaped by leadership-driven structures and systems, reflecting the efficiency-oriented decision-making commonly observed in early-stage startups.

Results also highlight the dependence of innovativeness in Greek startups on strategic partnerships and R&D resources, with less weight given to tech readiness. This finding demonstrates that innovativeness draws strength from organizations' ability to leverage resources and networks outside their internal structures, while organizational structure and employees' connection to work did not prove significant. Although technological readiness contributes positively, its comparatively smaller effect suggests that technology-orientated decisions can be considered as an enabling condition rather than a primary driver of innovation. The lack of significance of organizational structure and employees' connection to work further indicates that innovativeness is less embedded in internal organizational arrangements and more dependent on strategic investment choices and networking.

Autonomy is strengthened by the connection of employees to their work and the appropriate organizational structure, which highlights the essen-

tial role of the human factor and internal culture in strengthening the independence of the organization's members. This finding reinforces leadership and organizational culture perspectives, which view autonomy as a socially based outcome rather than a technologically determined one. Enhancing autonomy is thus not linked to technological maturity, but to other parameters such as flexibility, collaborative culture, and team dynamics. The limited positive effect of R&D resources suggests that innovation-oriented investment may indirectly support autonomy, while the negative association with strategic alliances reflects the coordination demands and interdependencies that alliances impose, potentially constraining the level of autonomy.

Finally, risk-taking demonstrates a comparatively lower explanatory power, indicating that it is influenced by additional factors beyond those included in the model – such as culture, personal leadership characteristics, and market environment – that were not included in this model. However, the significant effect of employees' connection to their work underscores the importance of human resources as a lever to stimulate entrepreneurial risk-taking. Investments in R&D also contributed positively to the willingness to take risks, which suggests that strategic commitment to innovative activities enhances a culture of greater acceptance of uncertainty, while tech readiness, organizational structure, and strategic alliance cannot be considered as determinants of the tendency to take risks. The absence of significant effects reinforces the view that risk-taking is primarily behavioral and cultural rather than structurally embedded.

CONCLUSION

This paper explores the extent to which Greek startups' adaptability and resilience affect dimensions of entrepreneurial orientation, and by addressing this gap in the literature, the theoretical understanding of entrepreneurial orientation in startups beyond the traditional frameworks is extended.

The results indicate that the entrepreneurial orientation dimensions of startups should be examined separately, as empirical evidence indicates that each dimension of entrepreneurial orientation is influenced by diverse factors with varying intensity. The strong relationship of adaptability with proactiveness is documented, as well as the impact of resilience on innovativeness. The partial relationship between autonomy and factors related to both adaptability and resilience is also supported, while risk-taking seems to be influenced by resilience factors in a model that is not as strong.

These findings reflect the complexity of organizational dynamics in Greek startups and highlight an important paradox in the entrepreneurial mindset of founders: although entrepreneurial orientation is strongly reflected in startup practices, the role of adaptability and resilience as strategic drivers shaping its dimensions appears to be uneven. As a result, they often fail to adopt the policies necessary to foster these capabilities within their organizations. This study contributes to the field with empirical evidence that the entrepreneurial orientation dimensions of startups are strongly related to adaptive and resilience factors, thus providing a more holistic understanding of how the adaptability and resilience of startups drive entrepreneurial orientation.

Future research should focus on how the individual characteristics and entrepreneurial mindset of founders shape the relationship between adaptability and resilience factors and dimensions of entrepreneurial orientation in different types of startups. Distinguishing between technology and non-technology firms, as well as between early-stage and scaling-stage organizations, may highlight differences in the intensity and nature of these effects. Such findings will contribute to a deeper understanding of the mechanisms through which founder characteristics and the startup profile influence the level of entrepreneurial orientation.

Finally, the paper suggests a framework for developing practical policies for founders and executives of startups seeking to strengthen entrepreneurial orientation through adaptability and resilience by offering valuable guidance for entrepreneurs, investors, and policymakers aiming to cultivate a vibrant and effective Greek startup ecosystem.

AUTHOR CONTRIBUTIONS

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REFERENCES

1. Abrantes, P. C., & Furtado, A. P. (2021). Agile development practices applied to software startups: A systematic mapping review. *2021 17th Iberian Conference on Information Systems and Technologies (CISTI)*. <https://doi.org/10.23919/CISTI52073.2021.9476368>
2. Akoglu, H. (2018). User's guide to correlation coefficients. *Turkish Journal of Emergency Medicine*, 18(3), 91-93. <https://doi.org/10.1016/j.tjem.2018.08.001>
3. Aliyami, H. M., Alneyadi, K., Alnuaimi, H., & Kampouris, I. (2024). Employees trust, perceived justice, on task performance: Mediating and moderating role of autonomy and organizational culture. *International Journal of Industrial Ergonomics*, 104, Article 103647. <https://doi.org/10.1016/j.ergon.2024.103647>
4. Anderson, B. S., Kreiser, P. M., Kuratko, D. F., Hornsby, J. S., & Eshima, Y. (2015). Reconceptualizing entrepreneurial orientation. *Strategic Management Journal*,

- 36(10), 1579-1596. <https://doi.org/10.1002/smj.2298>
5. Arfara, C., & Samanta, I. (2020). The impact of green strategy on organisations' relational capital. *European Journal of Studies in Management and Business*, 15, 29-42. <https://doi.org/10.32038/mbrq.2020.15.03>
 6. Atuahene-Gima, K., & Ko, A. (2001). An empirical investigation of the effect of market orientation and entrepreneurship orientation alignment on product innovation. *Organization Science*, 12(1), 54-74. <https://doi.org/10.1287/orsc.12.1.54.10121>
 7. Bhide, A. (2000). *The origin and evolution of new businesses*. Oxford University Press. Retrieved from https://www.researchgate.net/publication/227466793_The_Origins_and_Evolution_of_New_Businesses
 8. Blank, S., & Dorf, B. (2012). *The startup owner's manual: The step-by-step guide for building a great company*. K&S Ranch Publishing Division.
 9. Brahma, G. J. (2020). Entrepreneurial orientation and business performance: An assessment of start-up companies. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3594143>
 10. Cohen, S., & Hochberg, Y. V. (2014). Accelerating startups: The seed accelerator phenomenon. *The Journal of Business Venturing*, 29(1), 88-105. <https://doi.org/10.2139/ssrn.2418000>
 11. Covin, J. G., & Slevin, D. P. (1991). A conceptual model of entrepreneurship as firm behavior. *Entrepreneurship Theory and Practice*, 16(1), 7-25. <https://doi.org/10.1177/104225879101600102>
 12. Covin, J. G., & Wales, W. J. (2019). Crafting high-impact entrepreneurial orientation research: Some suggested guidelines. *Entrepreneurship Theory and Practice*, 43(1), 3-18. <https://doi.org/10.1177/104225871877318>
 13. De Clercq, D., & Rius, I. B. (2007). Organizational commitment in Mexican small and medium-sized firms: The role of work status, organizational climate, and entrepreneurial orientation. *Journal of Small Business Management*, 45(4), 467-490. <https://doi.org/10.1111/j.1540-627X.2007.00223.x>
 14. Decker, R., Haltiwanger, J., Jarmin, R., & Miranda, J. (2014). The role of entrepreneurship in US job creation and economic dynamism. *Journal of Economic Perspectives*, 28(3), 3-24. <https://doi.org/10.1257/jep.28.3.3>
 15. Díaz-Santamaría, C., & Bulchand-Gidumal, J. (2021). Econometric estimation of the factors that influence startup success. *Sustainability*, 13(4), Article 2242. <https://doi.org/10.3390/su13042242>
 16. Donbesuur, F., Boso, N., & Hultman, M. (2020). The effect of entrepreneurial orientation on new venture performance: Contingency roles of entrepreneurial actions. *Journal of Business Research*, 118, 150-161. <https://doi.org/10.1016/j.jbusres.2020.06.042>
 17. Eisenmann, T. R. (2021). *Why startups fail: A new roadmap for entrepreneurial*. Harvard Business School Press. Retrieved from <https://www.hbs.edu/faculty/Pages/item.aspx?num=59201>
 18. Giglio, C., Corvello, V., Coniglio, I. M., Kraus, S., & Gast, J. (2025). Cooperation between large companies and start-ups: An overview of the current state of research. *European Management Journal*, 43(1), 142-153. <https://doi.org/10.1016/j.emj.2023.08.002>
 19. Govender, D. (2020). *The moderating role of strategic agility on the relationship between entrepreneurial orientation and organisational performance*. University of Pretoria. Retrieved from <https://repository.up.ac.za/items/fc400d0f-cdd0-455c-ad01-804e5dea3f4d>
 20. Hough, J., & Scheepers, R. (2008). Creating corporate entrepreneurship through strategic leadership. *Journal of Global Strategic Management*, 2(1), 17-25. <https://doi.org/10.20460/JGSM.2008218496>
 21. Isabelle, D. A. (2013). Key factors affecting a technology entrepreneur's choice of incubator or accelerator. *Technology Innovation Management Review*, 3(2), 16-22. Retrieved from https://timreview.ca/sites/default/files/article_PDF/Isabelle_TIMReview_February2013.pdf
 22. Javalgi, R. R. G., & Todd, P. R. (2011). Entrepreneurial orientation, management commitment, and human capital: The internationalization of SMEs in India. *Journal of Business Research*, 64(9), 1004-1010. <https://doi.org/10.1016/j.jbusres.2010.11.024>
 23. Kane, T. J. (2010). The importance of startups in job creation and job destruction. *SSRN Electronic Journal*. <http://dx.doi.org/10.2139/ssrn.1646934>
 24. Karani, C., & Mshenga, P. (2021). Steering the sustainability of entrepreneurial start-ups. *Journal of Global Entrepreneurship Research*, 11(1), 223-239. <https://doi.org/10.1007/s40497-021-00279-w>
 25. Kim, B., Kim, H., & Jeon, Y. (2018). Critical success factors of a design startup business. *Sustainability*, 10(9), Article 2981. <https://doi.org/10.3390/su10092981>
 26. Korpysa, J. (2019). Entrepreneurial orientation of startups: Research results. *Przedsiębiorczość Międzynarodowa*, 5(2), 37-51. <https://doi.org/10.15678/ier.2019.0502.03>
 27. Kraus, S., Rigtering, J. C., Hughes, M., & Hosman, V. (2012). Entrepreneurial orientation and the business performance of SMEs: A quantitative study from the Netherlands. *Review of Managerial Science*, 6, 161-182. <https://doi.org/10.1007/s11846-011-0062-9>
 28. Kropp, F., Lindsay, N. J., & Shoham, A. (2008). Entrepreneurial orientation and international entrepreneurial business venture startup. *International Journal of Entrepreneurial Behavior & Research*, 14(2), 102-117. <https://doi.org/10.1108/13552550810863080>
 29. Li, L., Jiang, F., Pei, Y., & Jiang, N. (2017). Entrepreneurial orientation and strategic alliance success: The contingency role of relational factors. *Journal of Business*

- Research*, 72, 46-56. <https://doi.org/10.1016/j.jbusres.2016.11.011>
30. Lumpkin, G. T., & Dess, G. G. (2001). Linking two dimensions of entrepreneurial orientation to firm performance: The moderating role of environment and industry life cycle. *Journal of Business Venturing*, 16(5), 429-451. [https://doi.org/10.1016/S0883-9026\(00\)00048-3](https://doi.org/10.1016/S0883-9026(00)00048-3)
 31. Lumpkin, G. T., Cogliser, C. C., & Schneider, D. R. (2009). Understanding and measuring autonomy: An entrepreneurial orientation perspective. *Entrepreneurship Theory and Practice*, 33(1), 47-69. <https://doi.org/10.1111/j.1540-6520.2008.00280.x>
 32. Masa'deh, R. E., Al-Henzab, J., Tarhini, A., & Obeidat, B. Y. (2018). The associations among market orientation, technology orientation, entrepreneurial orientation and organizational performance. *Benchmarking: An International Journal*, 25(8), 3117-3142. <https://doi.org/10.1108/BIJ-02-2017-0024>
 33. Morgan, N. A., Vorhies, D. W., & Mason, C. H. (2009). Market orientation, marketing capabilities, and firm performance. *Strategic Management Journal*, 30(8), 909-920. <https://doi.org/10.1002/smj.764>
 34. Neyens, I., Faems, D., & Sels, L. (2010). The impact of continuous and discontinuous alliance strategies on startup innovation performance. *International Journal of Technology Management*, 52(3/4), 392-410. <https://doi.org/10.1504/IJTM.2010.035982>
 35. Ojaghi, H., Mohammadi, M., & Yazdani, H. R. (2019). A synthesized framework for the formation of startups' innovation ecosystem: A systematic literature review. *Journal of Science and Technology Policy Management*, 10(5), 1063-1097. <https://doi.org/10.1108/JSTPM-07-2018-0071>
 36. Prohorovs, A., & Bistrova, J. (2019). Startup success factors in the capital attraction stage: Founders' perspective. *Journal of East-West Business*, 25(1), 26-51. <http://dx.doi.org/10.2139/ssrn.3523990>
 37. Renko, M., Carsrud, A., & Brännback, M. (2009). The effect of a market orientation, entrepreneurial orientation, and technological capability on innovativeness: A study of young biotechnology ventures in the United States and in Scandinavia. *Journal of Small Business Management*, 47(3), 331-369. <https://doi.org/10.1111/j.1540-627X.2009.00274.x>
 38. Ries, E. (2011). *The lean startup: How today's entrepreneurs use continuous innovation to create radically successful businesses*. Crown Publishing Group. Retrieved from <https://ia800509.us.archive.org/7/items/TheLeanStartupErickRies/The%20Lean%20Startup%20-%20Erick%20Ries.pdf>
 39. Rozas, I., & Er, M. (2024). Internal and external challenges in digital startup ecosystem: A systematic literature review. *2nd International Symposium on Information Technology and Digital Innovation (ISITDI)*, 142-148. <https://doi.org/10.1109/isitdi62380.2024.10796749>
 40. Rosenbusch, N., Brinckmann, J., & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing*, 26(4), 441-457. <https://doi.org/10.1016/j.jbusvent.2009.12.002>
 41. Salamzadeh, A., & Kesim, H. K. (2015). Startup companies: Life cycle and challenges. *4th International Conference on Employment, Education and Entrepreneurship (EEE)*. Belgrade, Serbia. <https://doi.org/10.2139/ssrn.2628861>
 42. Santisteban, J., Inche, J., & Mauricio, D. (2021). Critical success factors throughout the life cycle of information technology start-ups. *Entrepreneurship and Sustainability Issues*, 8(4), 446-466. [http://dx.doi.org/10.9770/jesi.2021.8.4\(27\)](http://dx.doi.org/10.9770/jesi.2021.8.4(27))
 43. Saraf, N., Langdon, C. S., & Gosain, S. (2007). IS application capabilities and relational value in interfirm partnerships. *Information Systems Research*, 18(3), 320-339. <http://dx.doi.org/10.1287/isre.1070.0133>
 44. Saunila, M., & Ukko, J. (2013). Facilitating innovation capability through performance measurement: A study of Finnish SMEs. *Management Research Review*, 36(10), 991-1010. <https://doi.org/10.1108/MRR-11-2011-0252>
 45. Soomro, B. A., & Shah, N. (2019). Determining the impact of entrepreneurial orientation and organizational culture on job satisfaction, organizational commitment, and employee's performance. *South Asian Journal of Business Studies*, 8(3), 266-282. <https://doi.org/10.1108/SAJBS-12-2018-0142>
 46. Sungthong, S., Aujirapongpan, S., & Meesook, K. (2023). Exploring the relationship between entrepreneurial orientation, innovation and financial performance: The mediating role of absorptive capacity and technological innovation capability. *ABAC Journal*, 43(4). Retrieved from <https://assumptionjournal.au.edu/index.php/abacjournal/article/view/7435>
 47. Tripathi, N., Seppänen, P., Boominathan, G., Oivo, M., & Liukkunen, K. (2019). Insights into startup ecosystems through exploration of multi-vocal literature. *Information and Software Technology*, 105, 56-77. <https://doi.org/10.1016/j.infsof.2018.08.005>
 48. Urban, B., & Barreria, J. (2010). Empirical investigations into firm technology orientation and entrepreneurial orientation. *International Journal of Innovation and Technology Management*, 7(04), 329-351. <https://doi.org/10.1142/S0219877010001969>
 49. Vij, S., & Bedi, H. S. (2012). Relationship between entrepreneurial orientation and business performance: A review of literature. *The IUP Journal of Business Strategy*, 9(3), 17-31. Retrieved from <https://ssrn.com/abstract=2179844>
 50. Yaseen, S., El-Qirem, I., Nussair, M., & Sa'd, H. (2023). Intellectual capital components and entrepreneurial orientation: The mediating role of absorptive capacity. *Business Process Management Journal*, 29, 2129-2146. <https://doi.org/10.1108/bpmj-03-2023-0194>

51. Zahra, S. A. (1993). Environment, corporate entrepreneurship, and financial performance: A taxonomic approach. *Journal of Business Venturing*, 8(4), 319-340. [https://doi.org/10.1016/0883-9026\(93\)90003-N](https://doi.org/10.1016/0883-9026(93)90003-N)
52. Zawislak, P. A., Cherubini Alves, A., Tello-Gamara, J., Barbieux, D., & Reichert, F. M. (2012). Innovation capability: From technology development to transaction capability. *Journal of Technology Management & Innovation*, 7(2), 14-27. <http://dx.doi.org/10.4067/S0718-27242012000200002>
53. Zehir, C., Gurol, Y., Karaboga, T., & Kole, M. (2016). Strategic human resource management and firm performance: The mediating role of entrepreneurial orientation. *Procedia – Social and Behavioral Sciences*, 235, 372-381. <https://doi.org/10.1016/j.sbspro.2016.11.045>
54. Zighan, S., Abualqumboz, M., Dwaikat, N., & Alkalha, Z. (2022). The role of entrepreneurial orientation in developing SMEs resilience capabilities throughout COVID-19. *The International Journal of Entrepreneurship and Innovation*, 23(4), 227-239. <https://doi.org/10.1177/14657503211046849>
55. Zott, C., & Amit, R. (2008). The fit between product market strategy and business model: Implications for firm performance. *Strategic Management Journal*, 29(1), 1-26. <https://doi.org/10.1002/smj.642>